

**OREGON
ENVIRONMENTAL QUALITY
COMMISSION MEETING
MATERIALS 04/19/2007**



**State of Oregon
Department of
Environmental
Quality**

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FINAL

EQC Meeting Agenda
Thursday, April 19 and Friday, April 20, 2007
River House
Bend, Oregon

Thursday, April 19--Regular Meeting

Time	Item	Topic	Presenter/Status
9:00 15 min	A	Preliminary Commission Business: Adoption of Minutes of the February Meeting	
9:15 30 min	B	Informational Item: UMCDF Update	Joni Hammond and Rich Duval
9:45 30 min.	C	Action Item: Review and Approval of Sewage System Plans at Windmaster Corners	Larry Knudsen, Joni Hammond, Eric Nigg
10:15 15 min.		Break	
10:30 4+ hours		Gather in lobby of Riverhouse for tour. Box lunches on bus. Tour Metolius Heritage Demonstration Project with brief stops at Mount Washington viewpoint and logging area near Camp Sherman.	Marianne Fitzgerald, Rick Wagner of ODF, Amy Waltz of the Nature Conservancy, Greg McClarren of Friends of the Metolius and others.
~3:00		EQC break before Town Hall	Rest, eat.
6:00 – 7:30		Town Hall Meeting	At Riverhouse.

Friday, April 20--Regular Meeting

Time	Item	Topic	Presenter/Status
9:00 3 hours, with break	D	Smoke Management informational item	Andy Ginsburg of DEQ, Paul Bell of ODF, Brian Finneran and Larry Calkins of DEQ, Charlie Stone of ODF and Jim Trost of ODF, and Barbara Craig of Oregon Board of Forestry.
12:00 60 min		Working Lunch - Executive Session	
1:00 30 min.	E	Update on Mercury Recovery Efforts	Alan Kiphut, Greg Pettit, Kevin Masterson
1:30 45 min.	F	Public Forum	
2:15 30 min.	G	Director's Dialogue	Dick Pedersen
2:45 15 min.	H	Commissioners' Reports	
3:00		Adjourn	

Please Sign In

Environmental Quality Commission Meeting
Bend, Oregon April 19 9:00 AM

Name	Organization	Phone/email
MIKE DYKZEU	OFIC	503-586-1244
William Knight	DIA	5680
Barb Cray	BOF	503-294-9166
Charlie Stone	ODF	503-945-7436
Margie Schumann	GSAG Lapine	536-5726
Cathy Jursy	GSAG Lapine	judybug7669@peoplepc.com
Gay + Karen Duncan	GSAG Lapine	536-1699
Liz + Monte Kramer	GSAG ..	536-3725
DARBY S. Hughes	GSAG Lapine	536-1691
STEVE WERT.	WERT ASSOCIATES	617-9100
Diona MacNeil		diona@teleport.com

Please Sign In

Environmental Quality Commission Town Hall Meeting

Bend Oregon - April 19 - 6:00 to 7:30 pm

Name

Organization

Phone or email address

DAN VARGOES LaPine Chamber 541-815-4654
Mertyn Hough Lane Regional Air Protection Agency Mertyn@LRAPA.
Mally Baker LaPine resident LaPineMally@aol.^{org}
SANDRA + Mike Neary LA Pine nearypatents@MSN.com

(19-20)

Please Sign In

Environmental Quality Commission Meeting

Bend, Oregon April 20 9:00 - 3:00 pm

Name	Organization	Phone/email
John Elliott	Klamath Co Commissioner	jwellioth@co.klamath.or.us
MIKE DYKZEV	OFIC	503-586-1244
David Cramsey	Rosburg Forest Products	541 430 8658
Harold Merritt	Plum Creek Timberlands	541-267-1857
WAYNE KINNEY	SEN RON WYDEN	336-9142
Delbert Bell	Klamath County	883-1122
GREGORY R McCLAREN	Clean Air Comm & SBCAP	541-923-6670
Merlyn Hough	Lane Regional Air Protection Agency	Merlyn@LRAPA.org
Gary Springer	Starkey Forests, Inc	541-929-2477
Diane Shufelberger	Local Ground Rule	541-536-3609
GREG GULBRANDSEN	KFXO FOX NEWS	541-749-4472
SANDRA + MIKE NEARY	LAPINE ACTION	NEARYPATENTS@MSN.COM
Joe + Karen Duncan	Local Rule - Lapine	541-536-7699
John Boyke	committee chair for 5 county commission	536-9772
Janet Brown	Governor's Office	541 475 0557

Town Hall Meeting -
April 19, 2007

Bill Blosser - U. Chair EQC -

Ken Williamson - Corvallis - OSU
- Public Health

Judy Urbelak - RN, Attorney, legislature

Steve Wort

Margie LaPine } several - Service Dist.
Jan. LaPine }

Barry - Red -

Bob Foster - Red

Shanna ← ~~Open Forum~~

More AQ Monitoring necessary -

Mike Eric - Confused between interaction between DEQ & County
Graduate - S. of LaPine -

- If county decides - 7 mg/l - Action Trigger

DEQ won't supervise if metals stalled

Margie - DEQ declares emergency regarding glw Nitrate pollution
∴ Deschutes Co. retrofit

Skeptical of Gut Organization - in paper work -

Steve Wort - County takes the lead -

County make statement Transient, Emergency.

Not DEQ - Put responsibility on community -
core hires expertise

We don't have an emergency - concerned w/ glw

- Need time to digest info. in room
- 2 of the Commissioners said they can have time
- DEQ Great to work w/ - Need liaison in S. County
- Complicated issue -
- Affecting New Development only -
- Preexisting home w/in 10 yrs.

DRK P - DEQ writes the contract w/ County -
 County is the Agency for implementing the
 on-site program -

DEQ look @ protection is being met -
 Peter-Desah. Co. -

- Planning - \$1/2 MM study -
- results of models - shared
- studies - if continues poses problem in future
- start reducing load now more flexibility

- Install denitrifying systems - stay w/in
 130 - wastewater rule - current

- County didn't adopt ordinance -

County can use 71-130 to solve a public
 problem

Theona McNeal - Little River - confusion between Co. & DEQ
 Co. denies
 DEQ issues variance

10 yrs ago man issue - Mule Deer -

Lots of inconsistency Get Double Talk

Citizen's - S. County - Called 200 houses of people -

Feel mad - describe citizen's upsetting -

Is this a model for other counties

Desirable resort?

Failure to contact all citizens -

Financial effects devastating -

Local rules pass - liens on property 1-10 yrs -

Results Realtors out of business 10 yrs -

Sell home - can't put new septic in

Who has property -

Data - shows no need now

80 yr old people - loose house

Young couple all \$ in home - loose home

Others - out of home don't know where go

loose renters - increase \$ to renters

Sell & lease

Very low income area -

Limited septic use

Alarm goes off - neighbors blessed w/ seal -

Filter change \$7K each

1/4 Acre needed for installed -

Cost - County price - \$7K retrofit - incredible
\$20-\$25K whole system -

May Quabbin on peoples mind -

Removal, disposal, container change \$2K

Recording fee \$50.

Repair \$300.

Replacement of Deck etc. \$1-\$10K

put area back into shape

Saltillos - very new \$10K

Every property different

Total low \$36K \$49-50K

Burney - What priority does DEQ - have

Bill

Bend - By Passed 70's - 8th Street

56 homes - By Passed - City Sewer -
using drill holes -

From CID - Most don't want to go along

What relief - dealing w/ City

Are there some rules?

4 drill holes - 1 drainfield

Eric Nigg - WA - DEQ 300 feet - Must connect -

City - 100 feet - must connect

city doesn't require through the next property

city mstr plan - served asap -

New dev. -

1000 w/in city of Bend only connect to city sewer.

Citizen - Lots of Housing Development -

mess up AQ -

Roads -

No one had asthma - inhalers

Gotta stop

Ewo. like China -

Citizen - Does DEQ have some way of determining
best system? - Composting toilet

Bill West - \$ of - Need help for community systems be placed
in County - Difficult

onsite & cluster systems - works best - 60's 70's

- Incorporate whole area -

- Goal 11 - Wall - Need County proposal for district

Minutes are not final until approved by the Commission.

Oregon Environmental Quality Commission Minutes of the Three Hundred and Thirty-sixth Meeting

February 22 - 23, 2007 Meeting

Thursday, February 22 – Regular meeting began at 9:00
Oregon Department of Fish and Wildlife Headquarters Building
3406 Cherry Ave. NE, Keizer, Oregon

Regular Meeting¹

The Environmental Quality Commission (EQC, Commission) held a public meeting beginning at 9:00 a.m. on February 22, at the Oregon Department of Fish and Wildlife Headquarters Building, 3406 Cherry Ave. NE, Keizer, Oregon

The following members of the Environmental Quality Commission were present:

Lynn Hampton, Chair
Bill Blosser, Vice Chair
Kenneth Williamson, Member
Judy Uherbelau, Member

A. Preliminary Commission Business: Adoption of Minutes of the December 14 - 15, 2006 Meeting

The Commission reviewed, amended, and approved draft minutes of the December 14 - 15, Commission meeting.

B. Informational Item: Update on the Status of the Umatilla Chemical Agent Disposal Facility (UMCDF)

Joni Hammond, DEQ Eastern Region Division Administrator, Rich Duval, Administrator of DEQ's Chemical Demilitarization Program, along with Lt. Col. Donna Rutten, Commanding Officer, Umatilla Chemical Depot and Don Barclay, Site Project Manager, Umatilla Chemical Agent Disposal Facility, gave an update on the status of recent activities at the

¹ The staff reports for this meeting can be viewed and printed from DEQ's Web site at <http://www.deq.state.or.us/about/eqc/eqc.htm>. To request a copy to be sent by mail, contact DEQ, Office of the Director, Helen Lottridge, 811 SW Sixth Avenue, Portland, Oregon 97204; phone: (503) 229-5990.

Umatilla Chemical Agent Disposal Facility (UMCDF). In August 2004, the Commission gave approval to start chemical weapon destruction at UMCDF and DEQ's Chemical Demilitarization Program continues close oversight of work at the facility.

C. Action Item: Recommendation that the EQC Delegate Review of Proposed Facilities and Schedule

Windmaster Corners, an area outside the Urban Growth Boundary (UGB) of the City of Hood River has an ongoing public health concern due to failing onsite waste systems. Hood River County has filed a resolution seeking the creation of a sanitary district that would serve this area near the Hood River Airport. The EQC or its delegate will need to approve plans and schedules for facility construction.

The Department believes that it would be most efficient for the Commission to delegate the review and certification of approval or disapproval, and also to delegate the review of alternative proposals, if any, under health hazard annexation provisions (ORS 431.705 to 431.750) to the Director. This type of review is largely of a technical nature and legal counsel has advised that the Commission has legal authority to delegate this function to the Department.

The Commissioners discussed the proposal and did not arrive at a consensus, and therefore took no action on the proposal. The EQC's review of the Windmaster Corners proposed facilities will take place during the April EQC meeting.

D. Action Item: Rule Adoption: Portland-Vancouver and Salem Ozone Maintenance Plan and Supporting Rule Revisions

The federal Clean Air Act requires that each state adopt and submit to the U.S. Environmental Protection Agency (EPA) a plan which provides for implementation, maintenance and enforcement of any new air quality standard within three years of the date EPA designates an area in attainment or nonattainment with the standard. The Department of Environmental Quality (DEQ) recommends that the EQC adopt the Portland-Vancouver Air Quality Maintenance Area (Oregon portion) and Salem-Keizer Area Ozone Maintenance Plan, and amend and repeal rules that implement control strategies described in the plan.

Andy Ginsburg and Marianne Fitzgerald, Department of Environmental Quality

Commissioner Ken Williamson moved that the Commission adopt the rule as proposed in Attachment A of the DEQ staff report, as an amendment to the State Clean Air Act Implementation Plan. Vice Chair Bill Blosser seconded the motion, which then carried unanimously.

E. Public Forum

The Commission provided members of the public an opportunity to speak to the Commission on environmental issues that were not part of the agenda, or for which there was otherwise no public testimony at this meeting.

Carroll D. Johnston, affiliated with Physicians for Social Responsibility, Oregon Chapter, submitted written and oral testimony regarding his concerns about the permitting process and

health hazards surrounding the Covanta incinerator in Brooks, Oregon.

Ellen Twist, commenting as an individual, expressed concerns about pollution and the lack of testing surrounding the Covanta incinerator in Brooks, Oregon.

Heidi Dahlin, a concerned citizen, testified that mixing zones present a health and environmental hazard.

Nancy Hatch, a concerned citizen, also commented on her concerns about mixing zones and the associated environmental and health hazards.

F. Informational Item: Update - Fish Consumption Rate Project

On October 6th, 2006, the Department of Environmental Quality (DEQ), the Environmental Protection Agency (EPA), and the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) presented a plan to the Environmental Quality Commission (EQC) to begin a collaborative review of Oregon's fish consumption rate. The fish consumption rate is one variable used to calculate the human health water quality criteria, which are a part of Oregon's water quality standards. This agenda item was an update and status report on the project.

The Commission heard the report and discussed some of the challenges surrounding this complex issue. There will be two public workshops in March, one in Portland on March 13, and one in Coos Bay on March 14, 2007. Additional workshops will follow over the next several months in various locations.

G. Action Item: Rule Adoption: Revision of Oregon Temperature and Mixing Zone Rules to Align with EPA Action.

Under the federal Clean Water Act, states adopt water quality standards to protect public health, fish and the environment. Water quality standards identify the levels of chemical substances and the physical characteristics of water bodies needed to protect the uses of the state's waters. The Environmental Protection Agency (EPA) has the authority to disapprove state standards if EPA concludes the standards do not adequately protect the uses of the state's waters, and has disapproved certain state standards. DEQ and the EPA have conferred about the issues and the DEQ presented rule revisions that reflect the compromise that both DEQ and EPA can accept.

The DEQ presented the proposed rule revisions. Vice Chair Bill Blosser moved to adopt the rule changes as proposed in the staff report; Commissioner Judy Uherbelau seconded the motion, which then carried unanimously.

H. Action Item: Rule Adoption: Error Corrections and Clarifications to 2003 and 2004 Water Quality Standards Rules

The purpose of this rulemaking is to correct and clarify Oregon's water quality standards rules as follow-up to major revisions in 2003 and additional revisions in 2004.

Vice Chair Bill Blosser moved that the Commission adopt the rule changes as proposed in the DEQ staff report; Commissioner Judy Uherbelau seconded the motion, which then carried unanimously.

I. Action Item: Director's Transactions for Commission Review

Oregon Accounting Policy and DEQ policy require that the EQC review and approve certain financial transactions of the DEQ Director annually.

René-Marc Mangin, Department of Environmental Quality

Commissioner Ken Williamson moved to approve the Director's transactions for January 1, 2006 through December 31, 2006; Vice Chair Bill Blosser seconded the motion, which then carried unanimously.

J. Informational Item: Annual Performance Measures Report to Legislature

This update on DEQ performance measure results marked DEQ's first semi-annual report to the Environmental Quality Commission. DEQ has committed to providing semi-annual review of agency Executive Measures as part of its efforts to meaningfully involve the Commission in high-level policy and planning efforts and as a "best practice" for the EQC.

The Commission heard and discussed the report.

K. Informational Item: Director's Dialogue

Stephanie Hallock, DEQ Director, discussed current events and issues involving the Department and the state with Commissioners.

Friday, February 23 – Regular meeting began at 8:30

*Oregon Department of Fish and Wildlife Headquarters Building
3406 Cherry Ave. NE, Keizer, Oregon*

The Environmental Quality Commission (EQC, Commission) held a public meeting beginning at 8:30 a.m. on December 15, 2006, at the Oregon Department of Fish and Wildlife Headquarters Building, 3406 Cherry Ave. NE, Keizer, Oregon.

L. Commissioners' Reports

Commissioner Ken Williamson serves on the Oregon Watershed Enhancement Board (OWEB), and reported that OWEB is proposing to take on basin-wide efforts, focusing on one to two basins, investing \$5 -\$10 million in each basin to improve environmental conditions. He stressed the importance of DEQ involvement in these efforts, and reported that OWEB will have a retreat soon to choose the basins.

Commissioner Williamson also serves on the Federal Forest Advisory Committee, and commended DEQ staff person Marianne Fitzgerald on the outstanding job she is doing in supporting the committee. The goal of the committee is to increase federal buy-in to sustainable forestry. These efforts relate to water quality and climate change, which are issues of high interest to DEQ.

Vice Chair Bill Blosser related challenges in the recovery plan for salmon and steelhead in

the Willamette Basin. The available information points to the Corps of Engineers as both a significant cause of the problem and the solution. The dams inhibit salmon passage and also affect the water temperature. Some dams may need to be emptied, and it is possible that one would never be dammed again. The Army Corps of Engineers is not adverse to the solutions, but they need for Congress to provide funds for the work.

M. Informational Item: Budget and Legislative Update

The DEQ presented an update on the agency's budget request.

Representative Jackie Dingfelder joined the EQC during the budget and legislative report, expressing appreciation for the Commission's work, complimenting DEQ staff and providing an update on EQC-related issues in her committee.

N. Action Item: Petition for Rulemaking on Rigid Plastic Containers.

The EQC considered a petition for amendment of Oregon rules related to rigid plastic containers. Paul Cosgrove filed the petition on behalf of 11 industry associations requesting changes in the definition of *recycled in Oregon* and in the methods used to calculate the minimum recycled content in rigid plastic containers. The Department has invited written comment on the petition through February 12th, and the EQC will hear oral comments from the public at this meeting. The notice requesting public comment and the petition are available on the Department's website at: <http://www.deq.state.or.us/lq/sw/recovery/rpc.htm>.

The EQC heard the DEQ staff presentation and also testimony from Paul Cosgrove, who appeared on behalf of the petitioners.

Eight people testified before the Commission prior to EQC action on the petition:

Kristan Mitchell, Oregon Refuse and Recycling Association, commented that the current recycling system is working, as evidenced by the 49.1% recovery rate overall, near the goal of 50%. Plastics recycling has increased. Better data is needed.

Dennis Griesling, Soap and Detergent Association, stressed that the petition for rulemaking is essential for both large and small companies.

Jeremiah Baumann, OSPIRG, opposed the rule change, saying that industry should invest in actions to improve recycling rates, and noted that the proposed rule would define recycling in such a way that it would include products that are never recycled.

Jeff Murray, Far West Fibers Recycler, observed that they have improved on sorting processes, including a significant investment in sorting equipment. He also pointed out that there should be more recycling containers in public places.

Julie Brandis, Association of Oregon Industries, testified in support of the petition for rulemaking, and noted that it is difficult to know how to comply under the current regulations. Businesses need more lead time to comply with requirements.

Rob Guttridge, Recycling Advocates, opposes the petition, wanting manufacturers to be part of the solution. He stated that the petition is continued avoidance of manufacturers to participate, and that they could choose more environmentally friendly containers.

Jim Craven, Oregon AeA (formerly the American Electronics Association), supported finding ways to resolve this issue without huge market disruptions.

Alex Cuyler, City of Eugene, opposed the petition, saying that the opportunity to recycle and the opportunity to intend to recycle are not the same thing.

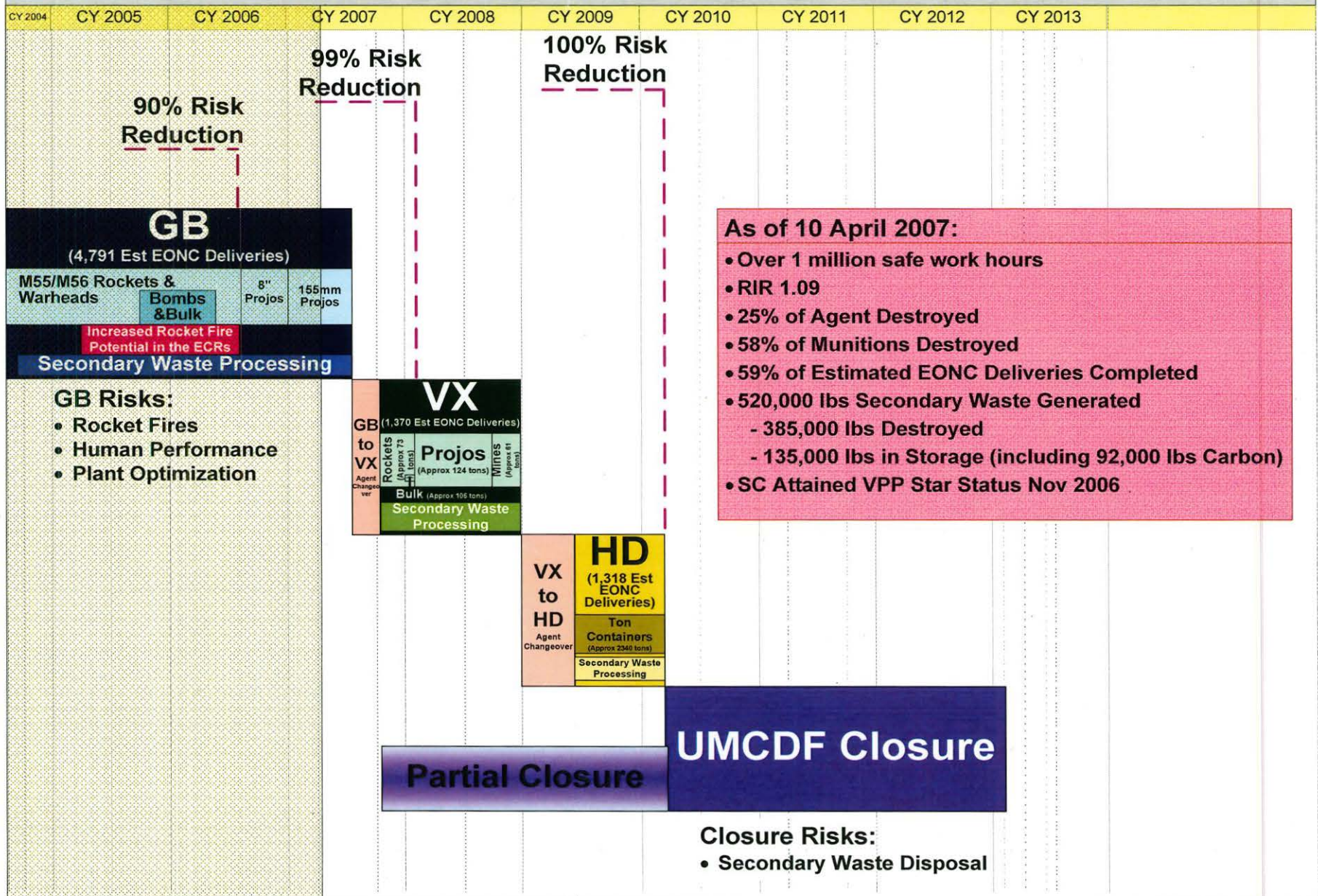
Commissioner Ken Williamson had to leave the meeting, and was not present for this discussion.

After a Commission discussion of the issue, Vice Chair Bill Blosser moved to deny the petition for rulemaking; Commissioner Judy Uherbelau seconded the motion, which then carried unanimously. Chair Hampton urged DEQ staff to work collaboratively with others to increase the recycling rate and to tackle other problems; all other Commissioners agreed.

The Environmental Quality Commission meeting adjourned at approximately 12:00 noon. There was no Executive Session.

Safely, Compliantly and Expediently Eliminate Worker and Public Risk

SPM's Planning Guide for UMCDP "Early Start"





State of Oregon
Department of
Environmental
Quality

**Umatilla Chemical Demilitarization Program
Status Update
Environmental Quality Commission
April 19-20, 2007
(Agenda Item B)**

Agent Processing at UMCDF

UMCDF has treated 40% of the 155 mm projectiles stored at the Umatilla Chemical Depot (18,957 of 47,406). The GB munition campaign should be completed by mid-summer. GB secondary waste (and GB/VX wastes) processing will continue through the VX munition campaign (expected to begin late in 2007).

As of April 9, 2007 UMCDF has destroyed over 127,000 munitions and bulk containers filled with about 1.8 million pounds of GB nerve agent. This represents approximately:

- ❖ 82 % of the GB munitions (127,090 out of the original 155,539)
- ❖ 90 % of the GB agent (918 tons out of the original 1,015 tons of GB)
- ❖ 58 % of all Umatilla munitions and bulk containers
- ❖ 25 % of the original Umatilla stockpile (by agent weight)

Approximately 44% of the nation's original chemical agent stockpile (by weight) has been destroyed, putting the country on track to meet the requirements of the Chemical Weapons Convention (CWC) treaty to destroy at least 45% of the stockpile by December, 2007.

Other Chemical Demilitarization Program News

Joni Hammond, Eastern Region Administrator, and Rich Duval, CDP Administrator, traveled to Edgewood Maryland in late March to discuss chemical demilitarization issues with senior Army staff in the Chemical Materials Agency. The final disposition of the "legacy waste" stored at the Umatilla Chemical Depot was a major discussion topic.

A former Morrow County Commissioner, Mr. Ray Grace, was recently appointed by the Governor to the Chemical Demilitarization Citizens Advisory Commission (CAC). In addition, the Governor re-appointed Robert Flournoy (Irrigon), Robert Severson (Hermiston), and Jeff Wenholz (Irrigon) to the CAC. The CAC meets monthly in Hermiston.

Permit Modification Requests (PMRs) for the Umatilla Chemical Depot (UMCD)

- On March 10, 2007 the Department received a Class 2 Permit Modification Request (PMR) from the Umatilla Chemical Depot (UMCD) to "*Incorporate the I-Block Storage Facility Closure Plan*" into the UMCD Hazardous Waste (HW) Storage Permit [PMR UMCD-07-002-IBLK(2)]. I-Block is the designation given to the group of storage igloos that formerly held ton containers of mustard (HD) chemical agent. The mustard ton containers have since

been moved into the storage area known as "K-Block" into igloos that formerly held GB-filled munitions. The Closure Plan submitted to the Department describes how residues from the I-Block igloos will be removed, the igloos decontaminated, and the sampling and analysis procedures that will be used to meet closure requirements for hazardous waste management units. The public comment period is open until May 21, 2007.

Permit Modification Requests for the Umatilla Chemical Agent Disposal Facility (UMCDF)

Submitted:

- On February 14, 2007 UMCDF submitted PMR UMCDF-07-009-HVC(2), "*Munitions Demilitarization Building Carbon Filter System Agent Changeover Conditions.*" This Class 2 PMR proposes to eliminate the requirement to replace the carbon in the first two filter banks, in each of the nine filter units for the Munitions Demilitarization Building (MDB), before the start of the VX agent processing campaign. The PMR also proposes a new chemical agent monitoring scheme for the filter units to address the need to simultaneously monitor for both GB and VX chemical agents. The public comment period ends on April 16, 2007.
- On February 20, 2007 UMCDF submitted PMR UMCDF-07-014-MPF(2), "*Metal Parts Furnace Discharge Airlock Low Temperature Monitoring Changes.*" This Class 2 PMR proposes to eliminate the requirement to conduct "low-temperature" agent monitoring of the Metal Parts Furnace (MPF) Discharge Airlock (DAL) when processing secondary waste. The DAL was originally intended to provide a holding area for treated waste coming from the MPF. Monitoring of the DAL for the presence of chemical agent was conducted to ensure the material was "clean" before discharge (if agent was detected, the conveyors could be reversed and the material returned to the furnace). However, an incident at the Johnston Atoll facility demonstrated that because of the extremely high temperature of the material when it is first removed from the furnace, chemical agent might not be detected in the air from the DAL even though it was still present in the waste. Consequently, a requirement was added to the permit that when processing secondary waste the DAL must be cooled to 600°F prior to conducting the agent monitoring. The public comment period for this PMR is open until April 23, 2007.
- On March 27, 2007 UMCDF submitted PMR UMCDF-07-019-PFS(2), "*PFS Carbon Change-Out Conditions.*" This Class 2 PMR proposes to remove the requirement that the carbon in the Pollution Abatement Systems Carbon Filter Systems (PFS) be changed out prior to the start of a new agent campaign (similar to the proposal discussed above in PMR UMCDF-07-009-HVC(2) related to the MDB carbon filter systems). The public comment period is open until May 28, 2007.
- Between February 14 and April 11, 2007 UMCDF submitted eight Class 1 PMRs, five of which require Department approval prior to implementation of the proposed changes.

Approved:

- On March 7, 2007 the Department approved the Class 2 PMR UMCDF-06-014-MON(2), "*Air Monitoring Level Terminology Correction – VSL.*" This PMR clarified the criteria for activating the facility contingency plan and off-site notification and reporting requirements by differentiating the terms "Vapor Screening Level" (VSL) and "Short Term Exposure Limit" (STEL).
- UMCDF-07-013-MPF(1R), "*Metal Parts Furnace Operational Parameter Changes,*" was approved on February 23, 2007.
- UMCDF-07-010-CHB(1R), "*VX/HD Leaker and VX Ton Container Processing,*" was approved on April 11, 2007.

In process:

- The public comment period for PMR UMCDF-07-005-MISC(2), "*Condition II.M-Liability Insurance Requirement Changes*" closed on April 2, 2007. The Department received three public comments (from the Confederated Tribes of the Umatilla Indian Reservation, Morrow County, and Ms. Karyn Jones of GASP), all of which opposed the request to eliminate the permit condition imposed by the EQC in 1998 requiring Ratheon (now Washington Demilitarization Company) to maintain more than the minimum amount of insurance coverage specified by regulation.
- The public comment period for PMR UMCDF-06-049-MON(2), "*Multiagent Monitoring for GB/VX Operations*" closed on February 26, 2007. The Department received one public comment from the Confederated Tribes of the Umatilla Indian Reservation (CTUIR). This Class 2 PMR proposes the changes necessary to support air monitoring for both GB and VX chemical agents during the upcoming GB to VX changeover process and during processing of secondary waste that is contaminated with both chemical agents.
- The public comment period for PMR UMCDF-07-006-DFS(3TA), "*Minimum Temperature Limit Change on the Deactivation Furnace System*" closed on March 19, 2007. The Department received one public comment from the CTUIR. This Class 3 PMR proposes to change the minimum automatic waste feed cut-off temperature setpoint on the Deactivation Furnace System (DFS) from 1,000°F to 950°F during the treatment of projectile bursters.
- There are two additional Class 3 PMRs under review: UMCDF-06-010-CMP(3), "*Comprehensive Monitoring Program Sampling and Analysis Changes*" and UMCDF-05-034-WAST(3), "*Deletion of Dunnage Incinerator and Addition of Carbon Micronization System.*" The review of both these PMRs has been put on temporary hold due to higher priority PMRs in process.
- There are three Class 1 PMRs under review:
 - UMCDF-07-015-WAST(1R), "*Conversion of Toxic Maintenance Area Room 12-177 for Carbon Change Out*";
 - UMCDF-07-017-WAST(1R), "*VX/HD Scrap Metal Recycling*"; and
 - UMCDF-07-023-LIC(1R), "*LIC2 Operational Parameter Changes.*"

Significant Events at Other Demilitarization Facilities

Anniston Chemical Agent Disposal Facility (ANCDF), Alabama

ANCDF destroyed the last of its 35,662 VX M-55 rockets on March 8, 2007 and is now reconfiguring the facility to process 139,581 VX 155 mm artillery projectiles. Westinghouse Anniston (a subsidiary of Washington Group International) employees recently surpassed 10 million work hours without a lost-time injury.

Newport Chemical Agent Disposal Facility (NECDF), Indiana

As of March 20, 2007, NECDF has neutralized 1,175,691 pounds (139,304 gallons) of VX (approximately 46% of the original Newport stockpile). The 720,000 gallons of VX hydrolysate is being stored on site in containers. The U.S. Army Chemical Materials Agency (CMA) originally planned to construct an on-site treatment plant, but ultimately decided it would be more cost effective to ship the waste to a commercial facility for final treatment. Both attempts so far to ship the hydrolysate off-site were defeated by intense opposition from the communities along the proposed transportation routes and near the receiving facilities (Ohio and New Jersey).

On April 10, 2007 CMA awarded a \$49 million contract to Veolia Environmental Services in Port Arthur, Texas, to incinerate the hydrolysate. CMA stated that shipments could begin as early as April 20. (The Port Arthur facility, formerly known as Onyx Environmental Services, is the same incineration facility that treated secondary wastes from the Aberdeen, Maryland chemical demilitarization facility.) However, the Chemical Weapons Working Group, an international watchdog group that opposes incineration, is rallying opposition to the shipments and stated in a press release that there are "...numerous organizations currently considering legal actions to stop the Army's planned shipments."

Pine Bluff Chemical Agent Disposal Facility (PBCDF), Arkansas

As of April 9, 2007, PBCDF has processed 86,606 GB M55 rockets (approximately 96% of its original GB rocket inventory) and destroyed a total of 914,804 pounds of GB agent.

Tooele Chemical Agent Disposal Facility (TOCDF), Utah

As of March 15, 2007, TOCDF has processed 765 ton containers containing HD mustard (blister) agent, 11% of the HD ton containers stored at the Deseret Chemical Depot. Processing continues to be limited to only those ton containers that show a concentration of 1 ppm or less of mercury contamination.

Pueblo Chemical Agent Destruction Pilot Plant (PCAPP), Colorado

Blue Grass Chemical Agent Destruction Pilot Plant (BGCAPP), Kentucky

Site preparation and utility installation continues at both the Pueblo and Blue Grass stockpile sites. The Department of Defense (DOD) Assembled Chemical Weapons Alternatives (ACWA) Program oversees the site contractors. Bechtel National, Inc. leads the contractor project teams at both of the sites, including Parsons, General Atomics, General Physics, Batelle, and Washington Demilitarization Company. ACWA is indicating that a decision will be made some time this summer about whether the hydrolysate from Blue Grass and Pueblo will be treated on-site as originally planned, or shipped off-site for final treatment.

Chemical Weapons Destruction Program Glossary of Acronyms and Terms of Art

ABCDF – Aberdeen Chemical Agent Disposal Facility, located at the Aberdeen Proving Grounds in Maryland

ACAMS – Automatic Continuous Air Monitoring System – the chemical agent monitoring instruments used by the Army to provide low-level, near real time analysis of chemical agent levels in the air

ANCDF – Anniston Chemical Agent Disposal Facility, located at Anniston Army Depot in Alabama

ATB – agent trial burn – test burns on incinerators to demonstrate compliance with emission limits and other permit conditions

AWFCO instrument – Automatic Waste Feed Cutoff – an instrument that monitors key operating parameters of a high temperature incinerator and automatically shuts off waste feed to the incinerator if prescribed operating limits are exceeded

BGCA – Blue Grass Chemical Activity, located at the Blue Grass Army Depot in Kentucky

BRA – Brine Reduction Area – the hazardous waste treatment unit that uses steam evaporators and drum dryers to convert the salt solution (brine) generated from pollution abatement systems on the incinerators into a dry salt that is shipped off-site to a hazardous waste landfill for disposal

CAC – Chemical Demilitarization Citizens Advisory Commission – the nine member group appointed by the Governor to receive information and briefings and provide input and express concerns to the U.S. Army regarding the Army's ongoing program for disposal of chemical agents and munitions – each state with a chemical weapons storage facility has its own CAC – in Oregon the DEQ's Chemical Demilitarization Program Administrator and the Oregon CSEPP Manager serve on the CAC as non-voting members

CAMDS – Chemical Agent Munitions Disposal System – the former research and development facility for chemical weapons processing, located at the Deseret Chemical Depot in Utah

CDC – Centers for Disease Control and Prevention – a federal agency that provides oversight and technical assistance to the U.S. Army related to chemical agent monitoring, laboratory operations, and safety issues at chemical agent disposal facilities (Website: <http://www.cdc.gov/nceh/demil/>)

CMA – U.S. Army’s Chemical Materials Agency, the agency responsible for chemical weapons destruction (website: <http://www.cma.army.mil/>)

CMS – carbon micronization system – a new treatment system that is proposed to be used in conjunction with the deactivation furnace system to process spent carbon generated at UMCDF during facility operations – the CMS would pulverize the spent carbon and then inject the powder into the deactivation furnace system for thermal treatment to destroy residual chemical agent adsorbed onto the carbon

CSEPP – Chemical Stockpile Emergency Preparedness Program – the national program that provides resources for local officials (including emergency first responders) to provide protection to people living and working in proximity to chemical weapons storage facilities and to respond to emergencies in the event of an off-post release of chemical warfare agents (Website: <http://csepp.net/>)

CWWG – Chemical Weapons Working Group, an international organization opposed to incineration as a technology for chemical weapons destruction and a proponent of alternative technologies, such as chemical neutralization (Website: <http://www.cwwg.org/>)

DAAMS – Depot Area Air Monitoring System – the system that is utilized for perimeter air monitoring at chemical weapons depots and to confirm or refute ACAMS readings at chemical agent disposal facilities – samples are collected in tubes of sorbent materials and taken to a laboratory for analysis by gas chromatography

DCD – Deseret Chemical Depot – the chemical weapons depot located in Utah

DFS – deactivation furnace system – a high temperature incinerator (rotary kiln with afterburner) used to destroy rockets and conventional explosives (e.g., fuses and bursters) from chemical weapons

DPE – demilitarization protective ensemble – the fully-encapsulated personal protective suits with supplied air that are worn by workers in areas with high levels of agent contamination

DUN – dunnage incinerator – high temperature incinerator included in the original UMCDF design and intended to treat secondary process wastes generated from munitions destruction activities – this incinerator was never constructed at UMCDF

ECR – Explosive Containment Room – UMCDF has two ECRs used to process explosively configured munitions. ECRs are designed with reinforced walls, fire suppression systems, pressure sensors, and automatic fire dampers to detect and contain explosions and/or fire that might occur during munitions processing

G.A.S.P. – a Hermiston-based anti-incineration environmental group that has filed multiple lawsuits in opposition to the use of incineration technology for the destruction of

chemical weapons at the Umatilla Chemical Depot – G.A.S.P. is a member of the Chemical Weapons Working Group

GB – the nerve agent sarin

HD – the blister agent mustard

HVAC – heating, ventilation, and air conditioning

HW – hazardous waste

I-Block – the area of storage igloos where ton containers of mustard agent are stored at UMCD

IOD – integrated operations demonstration – part of the Operational Readiness Review process when UMCD demonstrates the full functionality of equipment and operators prior to the start of a new agent or munition campaign.

JACADS – Johnston Atoll Chemical Agent Disposal System, the prototype chemical agent disposal facility located on the Johnston Atoll in the Pacific Ocean (now closed and dismantled)

J-Block – the area of storage igloos where secondary wastes generated from chemical weapons destruction are stored at UMCD

K-Block – the area of storage igloos where chemical weapons are stored at UMCD

LIC1 & LIC2 – liquid incinerators #1 & #2 – high temperature incinerators (liquid injection with afterburner) used to destroy liquid chemical agents

MDB – munitions demilitarization building – the building that houses all of the incinerators and chemical agent processing systems. The MDB has a cascaded air filtration system that keeps the building under a constant negative pressure to prevent the escape of agent vapor. All air from inside the MDB travels through a series of carbon filters to ensure it is clean before it is released to the atmosphere.

MPF – metal parts furnace – high temperature incinerator (roller hearth with afterburner) used to destroy secondary wastes and for final decontamination of metal parts and drained munitions bodies

NECDF – Newport Chemical Agent Disposal Facility, located at the Newport Chemical Depot in Indiana

NRC – National Research Council

ORR – operational readiness review – a formal documented review process by internal and external agencies to assess the overall readiness of UMCDF to begin a new agent or munitions processing campaign.

PBCDF – Pine Bluff Chemical Agent Disposal Facility, located at the Pine Bluff Arsenal in Arkansas

PFS – the carbon filter system installed on the pollution abatement systems of the incinerators used for chemical agent destruction

PICs – products of incomplete combustion – by-product emissions generated from processing waste materials in an incinerator

PMR – permit modification request

PUCDF – Pueblo Chemical Agent Disposal Facility, located at the Pueblo Chemical Depot in Colorado

SETH – simulated equipment test hardware – “dummy” munitions used by UMCDF to test processing systems and train operators before the processing of a new munitions type. SETH munitions are often filled with ethylene glycol to simulate the liquid chemical agent so that all components of the system, including the agent draining process, can be tested.

TAR – Temporary Authorization Request

TOCDF – the Tooele Chemical Agent Disposal Facility, located at the Deseret Chemical Depot in Utah


UMCD – Umatilla Chemical Depot

UMCDF – Umatilla Chemical Agent Disposal Facility

WDC – Washington Demilitarization Company, LLC – the Systems Contractor for the U.S. Army at UMCDF.

VX – a nerve agent

Date: April 19, 2007

To: Environmental Quality Commission 

From: Stephanie Hallock, Director

Subject: Agenda Item C, Action Item: Windmaster Corners Sewage Conveyances:
EQC Review and Approval of Proposed Facilities and Schedule.
April 19, 2007 EQC Meeting

Why this is Important

Windmaster Corners, an area outside the Urban Growth Boundary (UGB) of the City of Hood River has an ongoing public health threat due to failing onsite waste systems. Hood River County has filed a resolution seeking the creation of a sanitary district that would serve an area near the Hood River Airport. EQC has no authority to create a sanitary district, but is required to approve plans for sewage treatment and conveyance facilities. The EQC needs to approve plans and schedules for facility construction (as described in Attachment 1) finding that the proposed facilities and the time schedule for installation of such facilities will be adequate to remove or alleviate the dangerous conditions.

Background

Windmaster Corners

Hood River County has filed a resolution seeking the creation of a sanitary district that would serve an area near the Hood River Airport. This area has a longstanding history of failing on-site sewage disposal systems and surfacing sewage. The County proposes to have the district install a sewage collection system. That system would transport waste to the sewage system and treatment works operated by the City of Hood River.

Threats to Human Health and Treatment Constraints

In the early 1990s, Hood River County, the Oregon Health Division and DEQ demonstrated threats to public health in the Windmaster Corners area through a septic survey and environmental sampling. The county determined in 1992 that 40% of homes in the area were served by failing septic systems (Attachment 2). The report following the survey showed evidence of an "ongoing significant chronic problem with drain field failures in the area." Samples of standing water in roadside ditches commonly exceeded standards for protection of human health from contact exposure, with some samples having bacterial colony densities more than 1,000 times

greater than the standards. The study recommended “the county, city and concerned citizens coordinate their efforts to provide sewer service as soon as possible” to the area.

Soils in the area are not suited for waste disposal drain fields due to a shallow hard pan. This hard pan restricts downward movement and causes lateral movement of the shallow groundwater in the area. Several small tributaries to Hood River run through this area as well.

In 1993 the Windmaster Corners Area was again studied and the area of concern was expanded. It is most likely that more systems have failed in the ensuing 15 years since the original survey.

In 2001, DEQ supported the extension of sewers to this area and recommended boundaries for the area to be served (Attachment 3).

In 2004, Hood River County Public Works and Environmental Health departments re-designated the area of concern that needs to be served by sewers in the area. This re-designated area takes into account many failing systems and properties that will be prone to failure in the future.

County Proposal

Facility plans and a time table have been filed with the Department on behalf of the County Commission. The Commissioners have adopted an ordinance establishing a Health Hazard Overlay for a prescribed area to provide the development of safeguards required by State-Wide Planning Goal 11. The boundaries of this overlay area are roughly consistent with recommendations from DEQ. The County has also provided a Land Use Compatibility Statement certifying that the activity complies with all applicable land use requirements.

The proposed sewer project includes an area of approximately 471 acres that was designated as a health hazard area by Hood River County in March 2002. There is a total area of about 195 acres and 99 connections, including residences and commercial/industrial properties, to address the health hazard concerns. Within this area, a Phase I boundary was created for a sewer district which includes about 88 occupied residences and some commercial/light industrial zoned properties (see Attachment 4).

Initial Plan Review

The Department reviewed and responded to initial proposed

Windmaster Area Sanitary Sewer collection system plans in a letter dated December 6, 2006 (Attachment 5). The proposed plans complied with the Department's minimum requirements for a sewer extension as outlined in Appendix A of OAR 340-52, Review of Plans and Specification, but the Department required additional information prior to approval. A brief description of the proposed system is attached (Attachment 6a. Attachments 6b and 6c are sample forms). Subsequent to this initial review, consultants to the County submitted an Environmental Report (Attachment 7) and a Facilities Plan (Attachment 8) for review and approval.

Plan Approval

Further review and final approval of these plans must be consistent with OAR Division 52 establishing rules for review of plans and specifications (Attachments 9a and 9b).

Key Issues

Key issues were:

- A public health hazard currently exists in the Windmaster Corners area outside the UGB of the City of Hood River;
- Failing onsite waste treatment systems are an ongoing threat in this area, and poor soils make repairs unreliable;
- Department of Human Services has the authority to force establishment of a sewer district to alleviate health hazards;
- Plans for facilities and schedules must be approved by the Commission;
- DEQ staff have made initial review of plans for a system extension to Windmaster Corners to the City of Hood River.

Department Recommendation

DEQ staff recommend that the Commission find that the proposed facilities and schedule adequately remove or alleviate the dangerous conditions at Windmaster Corners under ORS 431.720.

The Department believes that there is an ongoing threat to public health due to failing onsite septic systems in the Windmaster Corners area. Due to poor soils for onsite waste treatment, the most appropriate solution is connection of the area defined in a new sanitary district to convey this sewage to the Hood River sewage treatment plant. Review of plans for a proposed system must follow procedures in OAR 52 for review of plans and specifications, and the review must conclude that the proposed facilities and the time schedule for installation of such facilities will be adequate to remove or alleviate the dangerous conditions.

EQC Action

The Commission may review and approve the proposed facilities and

Agenda Item C, Action Item: Windmaster Corners Sewage Conveyances: EQC Review and Approval of Proposed Facilities and Schedule.

April 19 – 20, 2007 EQC Meeting

Page 4 of 4

Alternatives schedule.

If the Commissioners feel that additional technical review of the plans is required, it may instruct the Department of Environmental Quality to conduct such a review.

The Commission may delegate the pending and any future review and approval or denial of plans and schedules under ORS 431.705 to 431.760 to the Department.

Attachments

1. Staff Report: EQC Meeting of January 15, 2007;
2. 1992 Sanitary Survey Report;
3. Letter from Dick Nichols, 3-29-2001;
4. Map of Proposed Windmaster Corners Sewer District area including results of 1992 sanitary survey;
5. Letter from Walt West P.E. (DEQ) to Tom Wilcox of BERGER/ABAM, Engineering Inc. regarding initial review of plans for sewage conveyance facilities;
6. Engineering Description (6a); Sample Manhole Test Record Form (6b); and Sample Certification Form (6c).
7. Environmental Report: Hood River County, Windmaster Area Sanitary Sewer;
8. Facilities Plan: Hood River County, Windmaster Area Sanitary Sewer;
9. Appendix A and B of OAR Division 52 – Review of Plans and Specifications;
Appendix A – Sewer Pipelines (9a)
Appendix B – Raw Sewage Lift Stations (9b)

Available Upon Request

Resolution of the County Commissioners for Hood River County, Oregon 21 August 2006, including Exhibits A through F describing establishment of sewer district and draft plans for construction of sewerage facilities serving Windmaster Corners.

Approved:

Section: Eric Nigg

Division: Joni Hammond

Report Prepared By: Eric Nigg

Phone: (541) 388-6146/251

**Agenda Item C, Action Item: Windmaster Corners Sewage Conveyances:
EQC Review and Approval of Proposed Facilities and Schedule.**

April 19, 2007 EQC Meeting

Attachment 1. Staff Report from EQC Meeting of January 15, 2007

Date: January 15, 2007

To: Environmental Quality Commission

From: Stephanie Hallock, Director

Subject: Agenda Item C, Action Item: Recommendation that the EQC Delegate Review of Proposed Facilities and Schedule February 22, 2007 EQC Meeting

Why this is Important Windmaster Corners, an area outside the Urban Growth Boundary (UGB) of the City of Hood River has an ongoing public health concern due to failing onsite waste systems. Hood River County has filed a resolution seeking the creation of a sanitary district that would serve this area near the Hood River Airport. The EQC or its delegate will need to approve plans and schedules for facility construction.

Department Recommendation The Department believes that it would be most efficient for the Commission to delegate the review and certification of approval or disapproval, and also to delegate the review of alternative proposals, if any, under health hazard annexation provisions (ORS 431.705 to 431.750) to the Director or Regional Administrator. This type of review is largely of a technical nature and legal counsel has advised that the Commission has legal authority to delegate this function to the Department.

Background In 1973, the Legislature enacted a number of statutes designed to bring areas into a city or the service area of a special district when this is necessary to address a public health hazard created by inadequate public water or sewer facilities. One set of statutes, ORS 222.840 to 222.915, authorizes local government to petition the Department of Human Services (DHS) to allow the annexation into a city of property within an urban services boundary without an election or consent of the landowners. In such proceedings, the Public Health Division within DHS generally reviews the adequacy of proposed plans. A majority of electors may propose an alternative plan, however, and if the plan involves sewage collection or treatment facilities the alternative plan must be reviewed and approved by the Commission.

For health hazard areas that are not subject to annexation under ORS 222.840 to 222.915, the statutes allow the affected county or local

board of health to file a petition asking DHS to force either the creation of special district or the annexation of the area into the service territory of an existing district. ORS 431.705 to 431.760. Under these statutes, the county or local health board must adopt a resolution that describes the problem and proposed solution, and then must submit the resolution to the Public Health Division within DHS. The Public Health Division must determine whether there is a health hazard that is properly addressed through the formation of, or annexation into, a special district and, if so, the facilities that should be constructed and the schedule for construction.

If the resolution calls for the district to provide sewage treatment or collection facilities, the documents describing the system also must be filed with the Environmental Quality Commission. ORS 431.715(4). Further, the Public Health Division may not order the creation of, annexation to, a special district unless the Commission determines that the “proposed facilities and the time schedule for installation of such facilities [is] adequate to remove or alleviate the dangerous conditions.” ORS 431.720.

Fifty-one percent of the electors within the affected territory may propose an alternative plan to address the health hazard. ORS 431.745. If that happens, the Commission would be required to review the alternative facility plans and timetable. ORS 431.750. And in such a situation, the Commission also is required to determine which of the competing plans is preferable.

The health hazard statutes at issue merely provide for the creation of a service district or the annexation to the district with the legal authority to finance and construct the needed facilities. These statutes don’t specifically provide for a mechanism to force the district to follow through with the construction of the needed facilities. Instead, DEQ and DHS are directed to “use their applicable powers of enforcement to ensure that service facilities are constructed and installed in conformance with the approved plans and schedules.” ORS 431.740

Windmaster Corners

Hood River County has filed a resolution seeking the creation of a sanitary district that would serve an area near the Hood River Airport. This area has a longstanding history of failing on-site sewage disposal systems and surfacing sewage. The County proposes to have the district install a sewage collection system. That system would transport waste to the sewage system and treatment works operated by the City of Hood River. Facility plans and a time table have been

filed with the Department of Environmental Quality.

Key Issues

- A public health hazard currently exists in the Windmaster Corners area outside the UGB of the City of Hood River;
- Department of Human Services has the authority to force establishment of a sewer district to alleviate health hazards;
- Plans for facilities and schedules must be approved by the Commission;
- The Commission has the option of retaining approval authority for plans of facilities and schedules, or may delegate this authority to the Director;
- The Commission may choose to delegate this authority for this particular case or for all such cases as they arise.

EQC Action Alternatives

The Commission may review and approve the proposed facilities and schedule. If that is the Commission's preference, staff will prepare a report and presentation for the next regularly scheduled Commission meeting.

The Commission may delegate the review and approval or denial of the proposed plans and schedule for the Windmaster Corners to the Director or some other designated staff person.

The Commission may delegate the pending and any future review and approval or denial of plans and schedules under ORS 431.705 to 431.760 to the Director or some other designated staff person.

Available Upon Request

Resolution of the County Commissioners for Hood River County, Oregon. Including:
Exhibits A through F describing establishment of sewer district and draft plans for construction of sewerage facilities serving Windmaster Corners.

Approved:

Section: _____

Division: _____

Report Prepared By: Eric Nigg
Phone: (541) 388-6146/251

**Agenda Item C, Action Item: Windmaster Corners Sewage Conveyances:
EQC Review and Approval of Proposed Facilities and Schedule.**

April 19, 2007 EQC Meeting

Attachment 2. 1992 Sanitary Survey Report

MAIL:
Bob Bygott
DEQ
Pendleton

SANITARY SURVEY REPORT
WINDMASTER AREA
HOOD RIVER COUNTY
MAY 15, 1992

RECEIVED

JUN - 3 1996

State of Oregon
Dept. of Environmental Quality
Eastern Region - Pendleton

BACKGROUND

The Windmaster corner area has a long history of problems and concerns associated with sewage. Residents of the area have asked the Hood River County Health Department to investigate the conditions and found the solutions.

The County Health Department requested the assistance of the Oregon Health Division's Health Hazard Studies program to undertake a sanitary survey of the area in order to gather the facts and present an overall picture of the sewage disposal practices of homes and businesses in the area. The survey was conducted on April 6th and 7th, 1992

SURVEY AREA

The area of the survey is located south of the city of the city of Hood River, entirely outside the city limits and the urban growth boundary of Hood River. This area extends south from the intersection of Barrett Road and Tucker Road. This intersection is known as Windmaster corner. From this point, the study area covers both sides of the road to the Hayes Dr. Intersection. The survey encompasses 26 parcels. One parcel is vacant, another parcel contains 3 houses and another duplex. One of the parcels contains a double wide mobil home and a single family dwelling. In addition, the movie center complex, grocery store, restaurant and beauty shop make up the commercial facilities within the survey area.

The Soil Conservation Service soils survey for the Hood River County Area classifies the soils in the study as Rockford Stony Loam. This soil is described as having a depth to bed rock from 40 to 60 inches beneath the ground surface. Soils are wet due to irrigation and influence of storm events. It is rated "severe" for septic system sewage.

The Farmers Irrigation District has an irrigation ditch that flows from west to east through the south portion of the study area. Further detail is illustrated on the map found in the appendix.

SURVEY METHODS

The Hood River County Health Department mailed each property owner in the area a notice, advising them of the survey and asking them to provide whatever information they had available. County records regarding drainfield installation were reviewed. Sanitarians from the County and the Oregon Health Division and the DEQ, visited each dwelling during business hours on Tuesday, April 6th and Wednesday, April 7th 1992. Several people scheduled after hour discussions due to workday demands. Individual septic tank and drainfield systems were located and evaluated.

SURVEY METHODS (cont.)

Samples were collected for bacterial evaluation at the Public Health Laboratory in Portland. Those systems indicating characteristics associated with drainfield failure were tested by placing florescine dye into the household plumbing system and observing if it surfaced downgradient from the septic tank.

When septic outfall was observed, samples of the Effluent was analysed by the Office of Public Health Laboratories for the presence of Fecal Coliform and Enterococci.

Fecal Coliform - Coliform(total coliform) is a large group of bacteria defined as "gram-negative, aerobic or facultative anaerobic, non-spore-forming rods that ferment lactose within 48 hours at 35 degrees C with gas production." These bacteria are widely distributed in nature and are also associated with fecal matter from man, animals and birds. Most coliform bacteria are not considered pathogenic (disease causing), however their presence in water can indicate the possible presence of other pathogenic organisms. Subsequent positive test samples for fecal coliform is definitive proof of fecal contamination. State standards for a for stream quality is 200 per 100ml. Contamination in excess of this threshold is considered unsafe.

Enterococci - Federal studies indicate that enterococci, a subset of fecal streptococci bacteria--have proven to have a far better correlation with occurrence of illness in both marine and fresh waters than fecal coliform. For this reason enterococci is used to supplement the traditional fecal coliform. The recommended standard for enterococci is 33 per 100 ml.

SUMMARY

The survey indicated that 11 of 27 systems are failing (40%) and another 3 systems are considered inadequate and subject to periodic failures. This disposal of raw sewage onto the ground surface and into roadside ditches draining the area constitutes a public health hazard to the community. Due to adverse soil characteristics, repair of failing systems would be costly with a high probability of early failure. Also a number of parcels in the area do not have sufficient size in which a replacement septic system could be installed. Repair of the failing systems would only temporarily delay the ultimate community solution.

The State Highway Department has a plan to install a drainage culvert on the west side of Tucker Road from the movie exit to Windmaster corner. This drainage system is intended to take only storm water. When the septic tank effluent is excluded from the drainage system the health risks will increase due to ponding of septic tank effluent on the ground surface.

SUMMARY (cont.)

The rainfall during March and the first week of April was below normal. A greater rainfall would add stress to septic systems and result in locating more direct failures.

During a wetter period of the winter a greater number of failing systems could be found. It is possible that systems were failing at the time of the survey but were not detected. The survey does represent a minimum definition of the problem in the area. Water samples collected on 15th of April indicate that the irrigation ditch is being used for disposal of septic tank effluent.

Ten systems in section 2N-10-10A and one system within 2N-10-11B were determined to be direct failures based on direct observations and laboratory examinations. At the northeast corner of tax lot 4900, 2N-10-10A is from nutrient waste load without fecal influence.

DISCUSSION

A possible solution is installation of a pressure sewage system, with each individual connection equipped with a sewage grinder pump to pressurize the system. This pump system is able to utilize a two inch main. This mainline could be installed when the culvert for the storm water is installed in the shoulder of the state highway. The 2 inch pressure line would connect to the city sewer at the High School. This would cost an estimated \$2,000 per household.

However, if there is a possibility of the city installing a conventional gravity flow sewer system, in the future, consultation should be given to its installation now to avoid double cost to area homeowners.

The Health Department is interesting in correcting the existing sewage problem. Concern exists about increased building density and general build up of the area if sewer were to become available.

The installation of a trench or curtain drain to intercept surface run off water has been proposed by residents of the neighborhood. This would involve a trench excavated into the hardpan. A utility easement would allow the 4 to 5 foot trench to drain on to the north side of Barrett Road. Water flow would then enter the roadside drainage system. The trench to cut off or intercept the water would contain a gravel envelope above a perforated pipe. The pipe would be installed at a minimum slope on a constant grade to carry silt with the water to terminate in the roadside ditch.

This would be effective in reducing run off problems such as water accumulating in crawl spaces under houses. The limited space or additional drainfield requirements would not be addressed. The interceptor drain does not appear to be a long term answer to solving the health hazard.

pg. 4 of survey

Another possible solution a special district with a community drainfield. Due to the cost of limited available land, this doesn't appear to be a viable option.

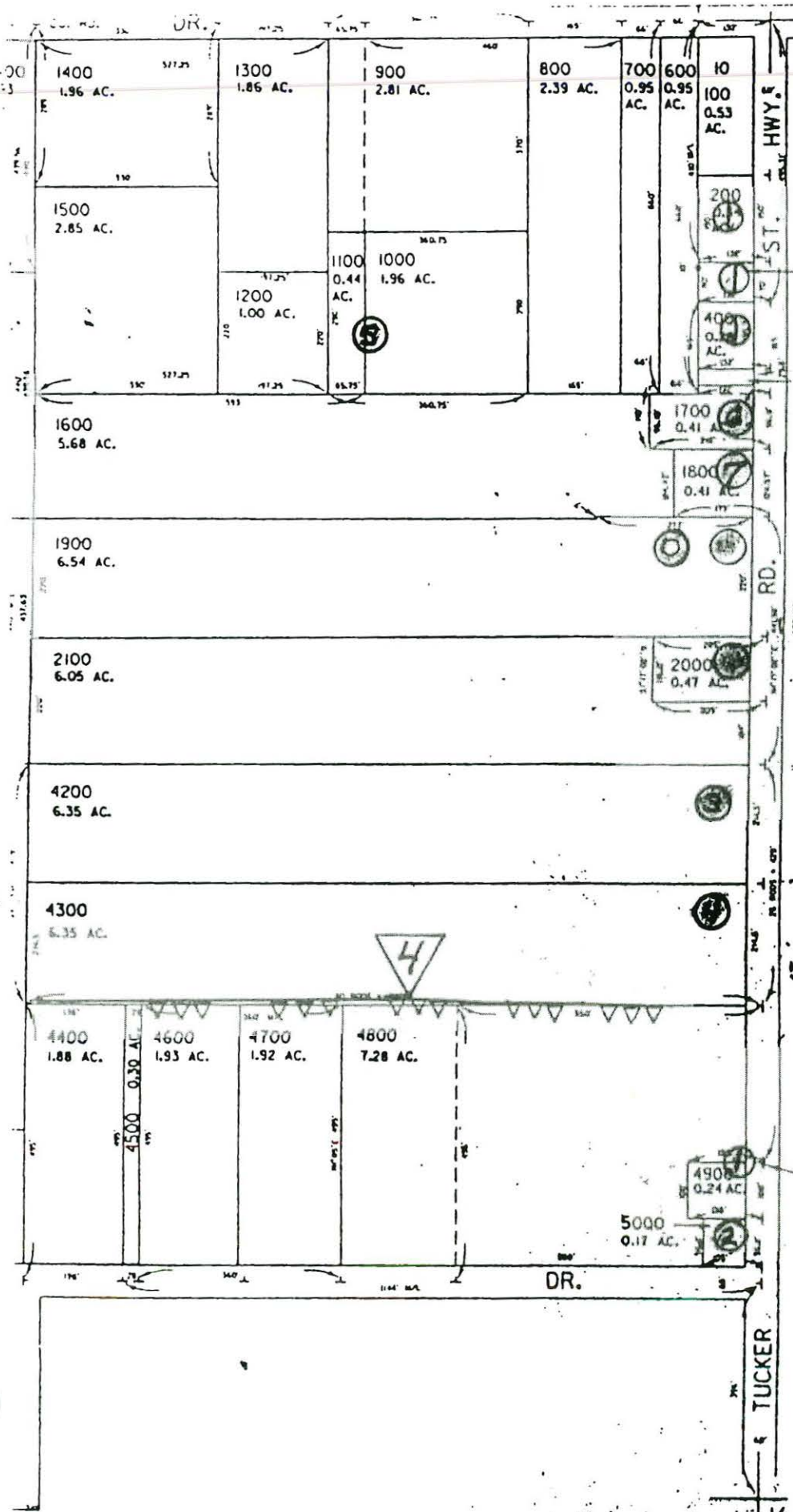
RECOMMENDATIONS

The evidence shows an ongoing significant chronic problem with drainfield failure in the area described as Windmaster corner.

The survey shows that the problem is community wide and would indicate the need for a community solution. The area of study is outside of the current urban growth boundary of Hood River.

The City has expressed its willingness to provide sewer service to this area.

The Health Department recommends that the county, city and concerned citizens coordinate their efforts to provide sewer service as soon as possible.

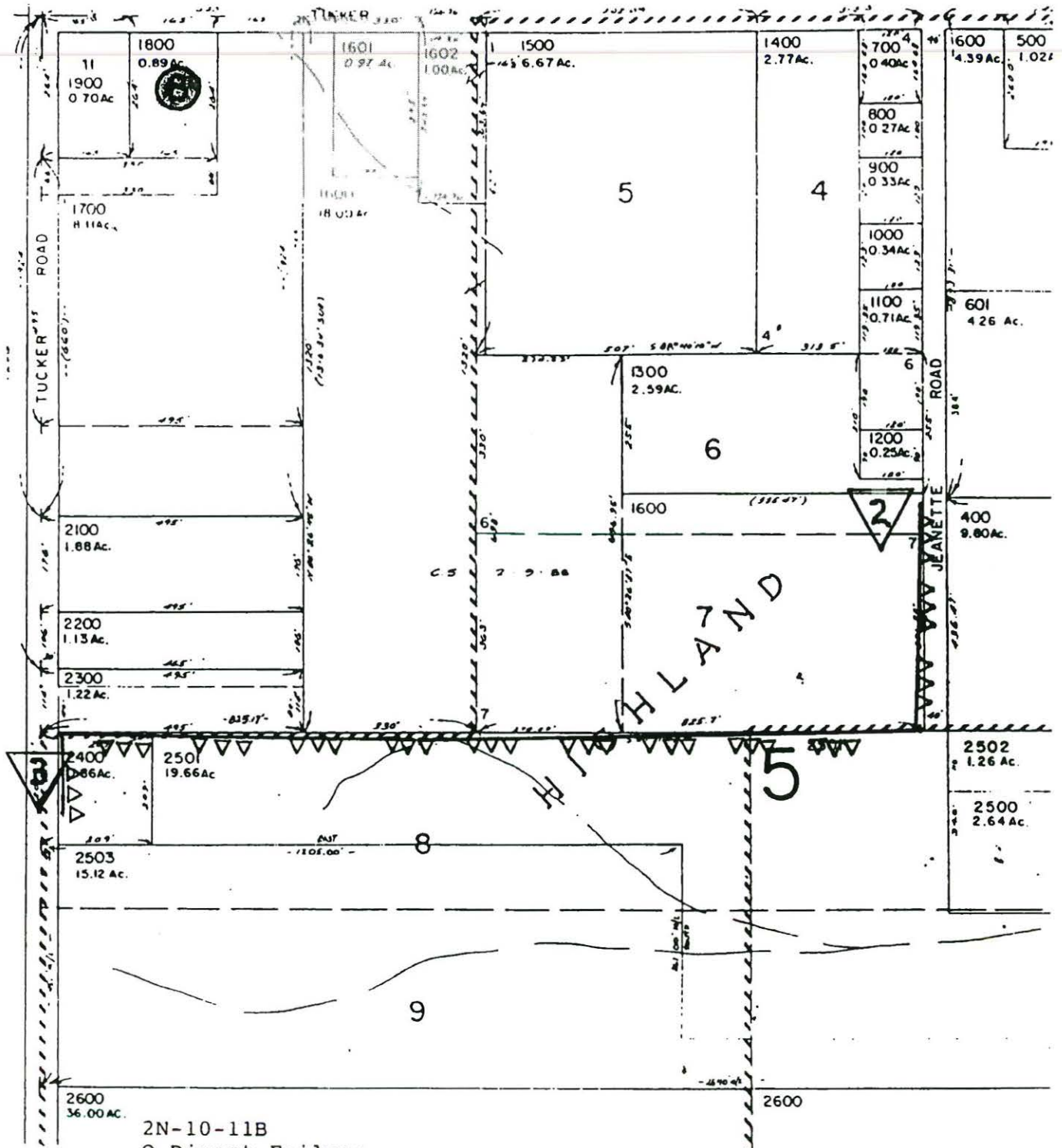


2N-10-10A

- ⊙ Direct Failure
- ⊙ Grey Waste Failure
- ⊙ Caution
- Sample Point

- WW Farmer's Irrigation Ditch
- △ Sample Point

△△△



WINDMASTER SURVEY

SAMPLE #	LOCATION	FECAL COLIFORM per/100ml	ENTEROCOCCI per/100ml	FINDINGS
1.	4 ft. no. end culvert Twin Peaks Drive-Inn	2	<5	-
2.	End culvert Pats Beauty Bar	>1600	>400	+
3.	Tax Lot 4200	>1600	>400	+
4.	" " 4300	>1600	>400	+
5.	" " 1000	>1600	>500	+
6.	" " 1700	>1600	300	+
7.	" " 1800	>1600	35	+
8.	" " 1800 (2N-10-11B)	>1600	<10,000	+

**SEWAGE IMPACT ON IRRIGATION DITCH SAMPLES COLLECTED ON
22 OF APRIL 1992**

SAMPLE #	LOCATION	FECAL COLIFORM per/100ml	ENTEROCOCCI per/100ml	RESULTS
2	1300 (2n-10-11B) End open ditch 1650 Janette Rd.	>1600	>400	+
3	2300 (2N-10-11B) of S. 1705 Tucker	1600	>400 TNTC	+
4	Above dwelling tax lot:4300	49	<5	-
	TNTC too numerous to count			

WINDMASTER EXPANDED SURVEY 1993

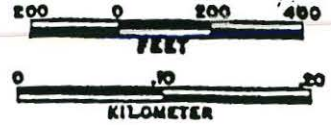
LOCATION		RESULTS		FINDINGS
2N-10-10A		Fecal	Entero	
Tax Lot: Number # & Street Address		Coliform	cocci	
# 4400	5560 Hayes	21,600	28,000	
# 2900				
2N-10-10D				
# 102	1740 Tucker	216,000	28,000	+
# 1200	3910 Dexter	216,000	28,000	+ system corrected
# 1300	1920 Carter	216,000	23,500	+
# 2400	3856 Portland	21,600	200	+
2N-10-11C				
# 500	1841 Tucker	21,600	120	+

Addition to Windmaster Survey

The original Health Hazard Survey of April 1992 contained failing systems adjacent to the south boundary - Hayes Avenue - of the study area. It was decided to expand the area to insure that all of the malfunction systems within the vicinity were included.

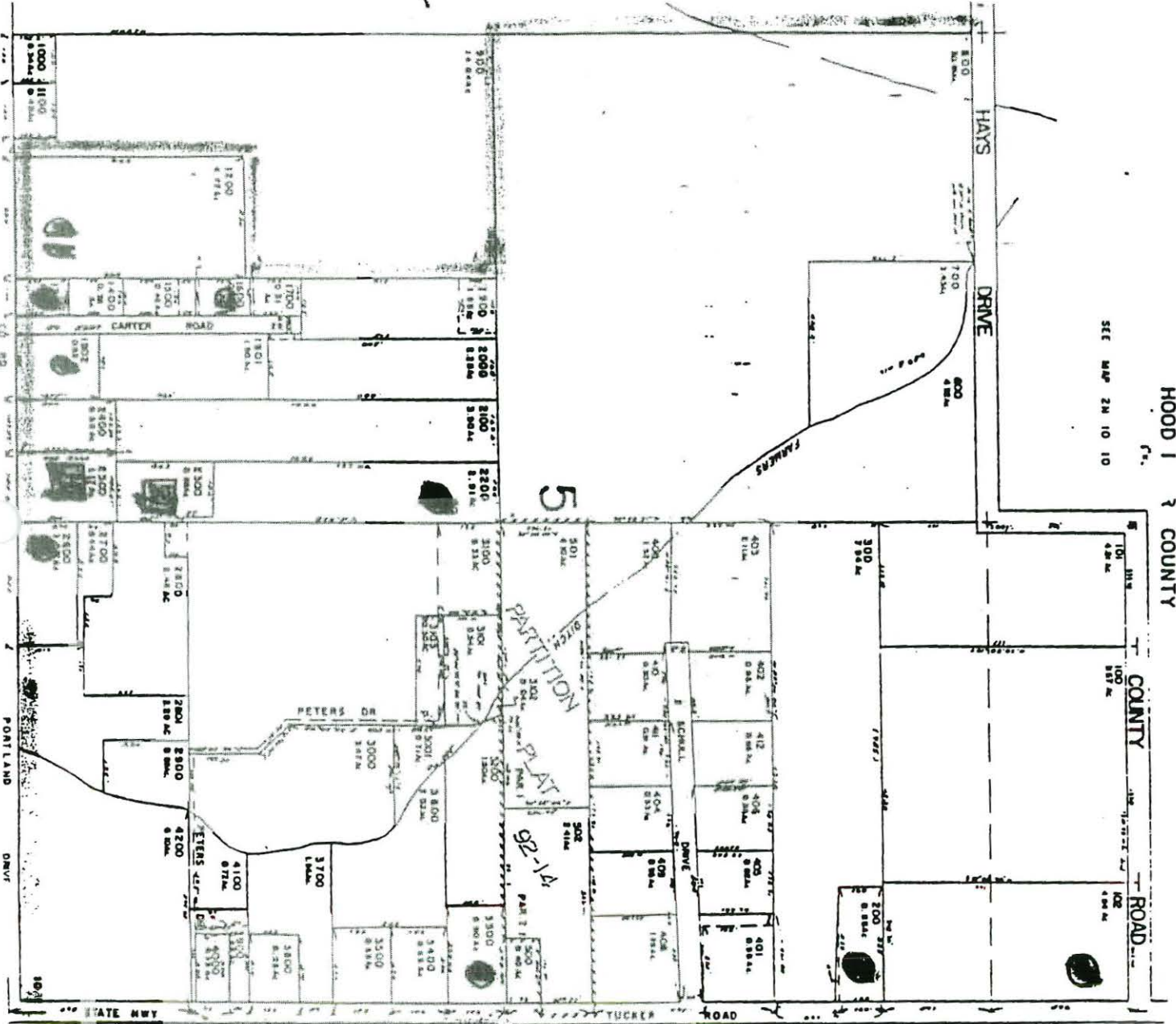
The survey of April 93 greatly expanded the area under consideration and identified thirteen drainfield systems discharging to the surface of the ground.

SCALE 1:4800



RECEIVED
NOV 21 1952
STATE OF HOOD RIVER
COUNTY

SEE MAP 2N 10 10



SEE MAP 2N 10 10

HOOD RIVER COUNTY

COUNTY ROAD

CANCELLED NO. 3
1501
1502
1503
1504
1505
1506
1507
1508
1509
1510

2N 10 10

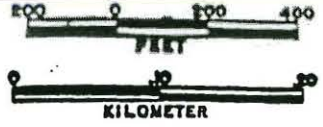
810

SEE MAP 2N 10 10

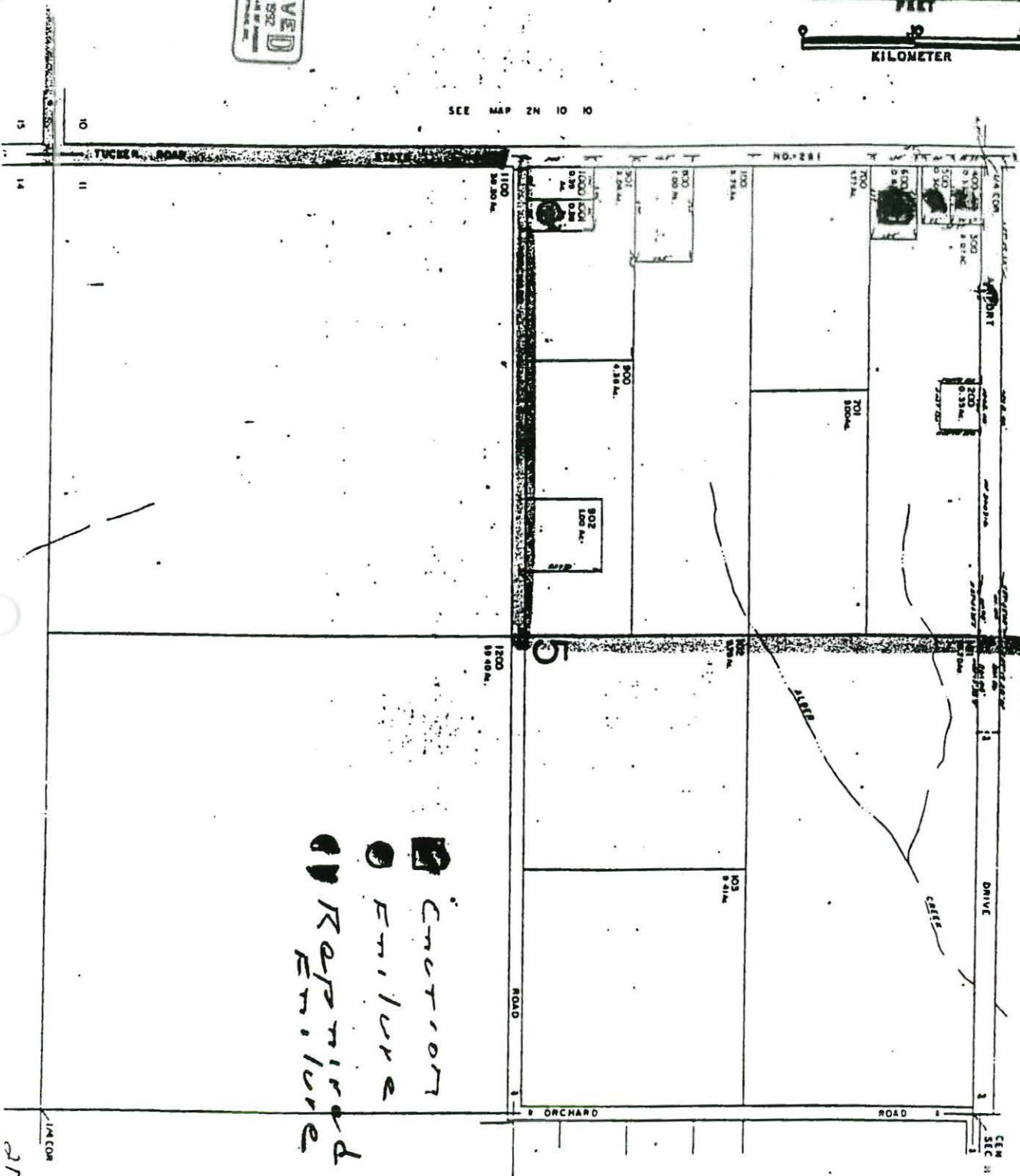
2N 10 10

RECEIVED
JUL 07 1992
MISSOURI STATE DEPARTMENT OF REVENUE

SCALE 1:4000



SEE MAP 2N 10 10



HW RIVER COUNTY

SEE MAP 10 118

10

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CAUTION
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Fertilizer
Fertilizer

SEE MAP 2N 10 10

DRIVE

20 112

**Agenda Item C, Action Item: Windmaster Corners Sewage Conveyances:
EQC Review and Approval of Proposed Facilities and Schedule.**

April 19, 2007 EQC Meeting

Attachment 3. Letter from Dick Nichols, 3-29-2001



Oregon

John A. Kitzhaber, M.D., Governor

Department of Environmental Quality
Eastern Region Bend Office
2146 NE 4th, Suite 111
Bend, OR 97701
(541) 388-6144
FAX (541) 388-8211

March 29, 2001

Honorable John Arens, Chair
Hood River Board of Commissioners
County Courthouse
309 State Street
Hood River, OR 97031-2093

RECEIVED APR 02 2001

Dear Mr. Arens:

The purpose of this letter is to fulfill the requirements of Oregon Administrative Rule (OAR) 660-011-0060, Sewer Service to Rural Lands, necessary for Hood River County to move forward in providing a sewer system to the Windmaster Corner area. OAR 660-011-0060(5) states that:

Where the Department of Environmental Quality (DEQ) determines that there is no practicable alternative to a sewer system, the local government, based on recommendations from DEQ, shall determine the most practical sewer system to abate the health hazard considering the following: (a) the system must be sufficient to abate the public health hazard pursuant to DEQ requirements applicable to such systems; and (b) New or expanded sewer systems serving only the health hazard area shall be generally preferred over the extension of a sewer system from an urban growth boundary. However, if the health hazard area is within the service area of a sanitary authority or district, the sewer system operated by the authority or district, if available and sufficient, shall be preferred over other sewer system options.

In response to OAR 660-011-0060(5)(a) above, the DEQ recommends and supports, at a minimum, a sewer system for the area along Tucker Road as identified in the 1996 engineering study conducted on behalf of the county by Gorge Engineering, Inc.

In response to OAR 660-011-0060(5)(b) above, since it appears unlikely that the Windmaster Corner area would be able to construct and operate a new wastewater collection, treatment, and disposal system in a cost-effective and affordable manner, the DEQ continues to recommend and support connection of the area to the City of Hood River wastewater system, an extension outside of their Urban Growth Boundary (UGB).

There have been ongoing discussions with the county regarding expansion of the proposed service area beyond that area established in the 1996 engineering report. Since the time of that 1996 study, more information has surfaced including additional failures of onsite systems in the general area surrounding the Tucker Road area and from a 2000 geotechnical report done by Geotechnical Resources, Inc., on behalf of the county. OAR 660-011-0060(6) allows the local government, based on recommendations by DEQ, to expand the area to be served by the sewer system.

OAR 660-011-0060(6) states:

The local government, based on recommendations from DEQ and, where appropriate, the Oregon Health Division, shall determine the area to be served by a sewer system necessary to abate a health hazard. The area shall include only the following: (a) Lots and parcels that

EXHIBIT
Page 30

021

contain the identified sources of the sewage contributing to the health hazard; (b) Lots and parcels that are surrounded by or abut the parcels described in subsection (a) of this section, provided the local government demonstrates that, due to soils, insufficient lot size, or other conditions, there is a reasonably clear probability that onsite systems installed to serve uses on such lots or parcels will fail and further contribute to the health hazard.

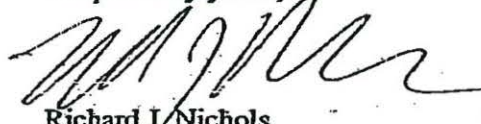
Based upon the pattern of new failures, technical information included in the 2000 geotechnical study, and DEQ staff and Hood River County Sanitarian experience in the Windmaster Corner area, the DEQ recommends and supports expansion of the area to be served by the sewer system beyond the 1996 Tucker Road area to include:

- Areas as far south as Portland Drive.
- Areas to the north including the north side of Barrett Dr./Tucker Rd.
- Areas to the east to approximately Dillon Rd.
- Areas to the west to approximately Alameda Way.

As more information comes to light, the proposed service area will likely require modification. For example, a failing system just outside the proposed service area could become known as public discussions move forward. The DEQ would support inclusion of this property into the service area. Conversely, the county could decide, upon further consideration, that the proposed service area is too large and, therefore, adversely affects the viability of the project. In this case, the DEQ would also support the county.

Thank you for your consideration. If you have any questions or comments, please contact Alan Bogner at 503-229-5449 or toll free at 1-800-452-4011 or email at bogner.alan@deq.state.or.us

Respectfully yours,



Richard J. Nichols
Water Quality Manager
Eastern Region Bend

Cc Mike Benedict, Hood River County
Scott Fitch, Hood River County
Rob Hallyburton, DLCD
Pat Allen, OECDD
Janet Hillock, OECDD
Windmaster Corner file
David Kim, OECDD
Joan Rutledge, OECDD
Dick Nichols, DEQ
Bob Baggett, DEQ
Windmaster Corner file

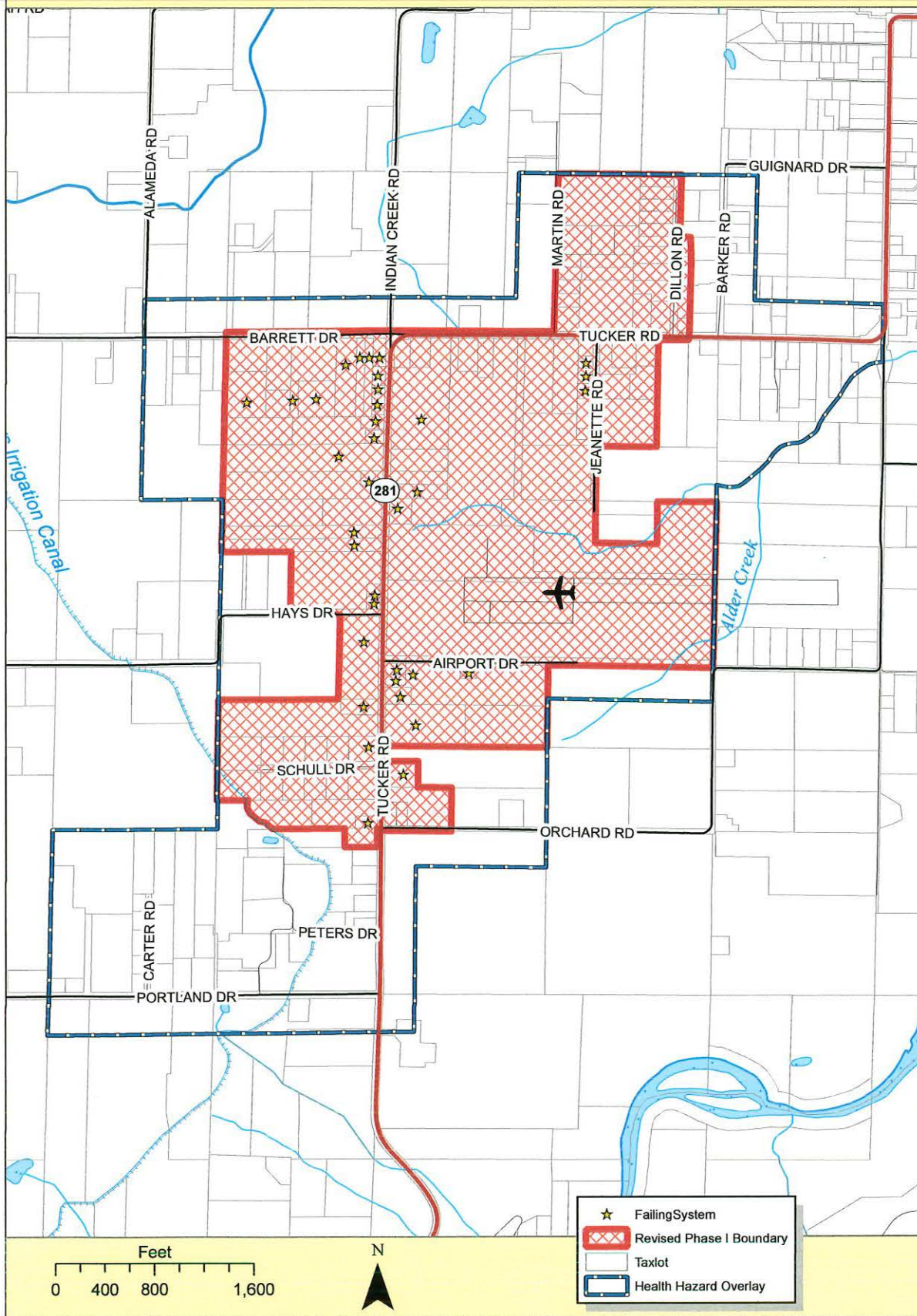
**Agenda Item C, Action Item: Windmaster Corners Sewage Conveyances:
EQC Review and Approval of Proposed Facilities and Schedule.**

April 19, 2007 EQC Meeting

**Attachment 4. Map of Proposed Windmaster Corners Sewer District
area including results of 1992 sanitary survey**

PROPOSED WINDMASTER SEWER DISTRICT

REVISED: JUNE 27, 2006



**Agenda Item C, Action Item: Windmaster Corners Sewage Conveyances:
EQC Review and Approval of Proposed Facilities and Schedule.**

April 19, 2007 EQC Meeting

**Attachment 5. Letter from Walt West P.E. (DEQ) to Tom Wilcox of
BERGER/ABAM, Engineering Inc. regarding initial review
of plans for sewage conveyance facilities**



Oregon

Theodore Kulongoski Governor

Department of Environmental Quality

Eastern Region Bend Office

2146 NE 4th, Suite 104

Bend, OR 97701

(541) 388-6146

FAX (541) 388-8283

December 6, 2006

Mr. Tom Wilcox
BERGER/ABAM, Engineering Inc.
700 NE Multnomah St., Suite 900
Portland, OR 97232

Re: Windmaster Area Sanitary Sewer
WQ – Hood River County

Dear Mr. Wilcox:

The Department has reviewed the sewer plans for this project, received on August 30, 2006, David C. Brown P.E., from of BERGER/ABAM Engineering Inc., for review per OAR 340-52.

DESCRIPTION

The project includes approximately 10,000 linear feet of 8 inch ASTM D-3034 PVC gravity sanitary sewer line, 2,970 linear feet of 2 inch, and 3,414 linear feet of 2.5 inch HDPE force mains. The project will also include 25 new manholes.

The design appears to be an excellent start to getting sanitary sewer service in the Windmaster area. I have the following comments and requests in order for the Department to complete to our review of the proposed plans:

The last paragraph on Page 8 of 10 in the Plan refers to grinder pumps and a force main. The Plan does not provide calculations on how the minimum velocities of 3 feet/second are to be maintained in the force mains. In order to further evaluate the pressure sewer collection system the Department will need the calculations for the velocities in the force main showing how the grinder pumps will maintain minimum velocities and technical specification on how the force mains are to be connected to the gravity system. All manholes on easements outside traveled rights-of-way such as sidewalks, side-lot, and back-lot areas are fitted with tamper-proof locking lids.

The Plan mentioned that easements need to be obtained and a conditional land use may be needed. We will want these issues to be resolved prior to final approval of the designed system.

In the last paragraph of Page 9 of 10, the Plan refers to DEQ as the Oregon Department of Ecology. This misprint will need to be corrected. In the same paragraph the Plan refers to a NPDES storm water permit. The erosion and sediment control plans (ESCP) will be required to be submitted with



026

the storm water permit application. If the disturbed area of the project is five or more acres, the ESCP will need to go out on public notice prior to issuing the storm water permit.

Please call me in Bend at (541) 388-6146 ext. 232 if you have any questions regarding this letter.

Sincerely,



Walter I. West, P.E.
Senior Environmental Engineer
Eastern Region - Bend Office

cc: Mr. Don Wiley, Hood River County, 918 18th Street, Hood River OR 97031
Mark Lago, City of Hood River, P.O. Box 27, Hood River, OR 97031
Gary Fisher, DLCD, 635 Capitol St., N.E. Suite 150, Salem, OR 97301



027

**Agenda Item C, Action Item: Windmaster Corners Sewage Conveyances:
EQC Review and Approval of Proposed Facilities and Schedule.**

April 19, 2007 EQC Meeting

**Attachment 6. Engineering Description (6a)
Sample Manhole Test Record Form (6b)
Sample Certification Form (6c)**

Windmaster Area Sanitary Sewer
Engineering Description
WQ – Hood River County
Walt West, P.E. (DEQ)

The Department reviewed and responded to the proposed the Windmaster Area Sanitary Sewer collection system plans in a letter dated December 6, 2006. A copy of this letter is attached. The proposed plans complied with the Department's minimum requirements for a sewer extension.

The planned system would carry sewage from the area defined in the district designation to treatment facilities in the City of Hood River. The system would include a combination of pressurized force mains and gravity lines to carry the waste. The City has adequate conveyance and treatment capacity and has agreed to accept the effluent from the district into its existing Indian Creek sewer transmission main. After construction is completed, the City will take over and maintain the district's facilities.

The proposal includes approximately 10,000 linear feet of 8-inch ASTM D-3034 PVC gravity sanitary sewer line, 2,970 linear feet of 2-inch, and 3,414 linear feet of 2-1/2 inch HDPE force mains. The project will also include 25 new manholes.

The gravity sewer main lines are composed of 8-inch diameter, bell and spigot, PVC pipe. The 8-inch diameter PVC pipe size is the minimum diameter required by the Department for a gravity sewer system. A section of the collection system will be comprised of individual grinder pumps and a small diameter pressure sewer. The force mains are design to achieve cleaning velocity of 3 ft/sec and would eventually connect into the larger gravity system.

The gravity sewer, manholes, force mains, and grinder pumps were designed to comply with the DEQ requirements as outlined in Appendix A of OAR 340-52, Review of Plans and Specification (copy attached).

The following are standard conditions for construction of sanitary sewer collection systems:

- All material, construction, and testing shall conform to the most recent standards and drawings of the Oregon Chapter of APWA, Part 00400 – Drainage and Sewers. A copy of Part 00400 shall be kept at the project site during construction to resolve any conflicts concerning materials, construction methods, and testing.
- Construction shall be inspected and certified to the Department in writing by the design engineer. This is a requirement of OAR 340-52. A certification form is enclosed.
- The design engineer shall provide the District and City of Hood River with copies of as-built plans.
- The engineer's written certification shall be accompanied with copies of manhole test field logs. Please use the enclosed manhole test form.
- Note that the standards require manholes to be tested for final acceptance only after completion of all surface restoration, including paving and final adjustment to grade.

Manholes shall be filled to the rim at the start of the test. Manhole testing shall not be waived.

- The 95% mandrel deflection test shall be performed on the installed sewer lines. The color TV warranty test specified in the current Oregon APWA standards may be waived by the District and the City of Hood River for this project at their discretion.

A NPDES 1200-C general storm water permit are required for land disturbances of more than one acre. This permit will require an erosion and sediment control plans (ESCP) be submitted with the storm water permit application. If the disturbed area of the project is five or more acres, the ESCP will need to go out on public notice prior to issuing the storm water permit.

Date: _____

To: DEQ - EASTERN REGION
300 SE Reed Market Road
BEND, OR 97702

FROM: _____

SUBJECT: INSPECTION AND CERTIFICATION OF PROPER CONSTRUCTION

PROJECT NAME: _____

PROJECT LOCATION: _____

I was the design engineer of the above-referenced project and I or my authorized representative did supervise and inspect the construction.

I certify that such construction was inspected and found to be in accordance with the plans and specifications, including any changes therein approved by the Department of Environmental Quality.

Supplemental inspections were made by:

Design Engineer's Signature

Send copy to appropriate sewer system owner.

340-052-0040

Responsibility of Treatment Works Owners, Design Engineers and Developers After Approval of Plans for (Domestic) Sewage Projects

- (1) Construction of all projects must be in accordance with the project plans and specifications approved by the Department. No substantial change in or deviation from such plans and specifications shall be made without the prior written approval of the Department, which shall make the final determination whether or not a change or deviation is in fact substantial.
- (2) The owner of the sewerage system (generally a municipality) as recipient of any construction work on its system has a vested responsibility to review and approve project plans prior to the start of construction. Department approval of plans under these rules does not preclude the right and responsibility of review and approval by the owner. The owner may adopt more stringent construction standards and impose special conditions for sewer use, service connection, and related activities. Department approval of plans in such cases is contingent upon similar approval by the owner. Submittal of plans to the Department through the owner and prior approval of plans by the owner is encouraged.
- (3) Inspection and certification of proper construction shall be governed by the following provisions:
 - (a) The construction of all sewerage projects shall be under the supervision of and shall be thoroughly inspected by the design engineer or his authorized representative, unless relieved under subsection (b) of this section. At the completion of the project, he shall certify in writing to the owner and the Department that such construction was inspected by him and found to be in accordance with the plans and specifications, including any changes therein approved by the Department. Nothing in the foregoing exempts an owner from monitoring the project for conformance to requirements and performing supplementary inspections or prevents an owner's qualified staff from assuming responsibility for inspection and certification;
 - (b) If the design engineer is to have no further involvement or have limited involvement with the project after obtaining Department approval of plans, he must so notify the Department, the owner, and the developer upon submittal of plans or immediately upon being disassociated or limited in control over materials or workmanship within the project. (Nothing precludes either the owner or the developer from giving such notice if this is more appropriate). Thereupon, if the project is to continue on to construction, the owner shall assume necessary responsibility for satisfactory construction of the project in accordance with the approved plans. He shall employ or apply such construction engineering/inspection services as appropriate for the project. The owner shall thereupon certify in accordance with subsection (a) of this section. No project shall proceed to construction without adequate and capable construction engineering/inspection services. (This assumption of construction engineering/inspection services responsibility by the owner does not necessarily relieve the design engineer of design responsibility);
 - (c) Sewerage system integrity and watertightness is the system owner's ultimate responsibility. He shall monitor all private sewer construction and control all common sewer construction in the sewerage system to the extent necessary to this end.
- (4) An appropriate final operation and maintenance manual, approved by the Department shall be prepared and submitted to the owner by the design engineer for all treatment works, disposal systems, and list stations prior to start up of such facilities.

Stat. Auth : ORS 454.626, ORS 454.780 & ORS 468.020

Stats. Implemented: ORS 468B.055

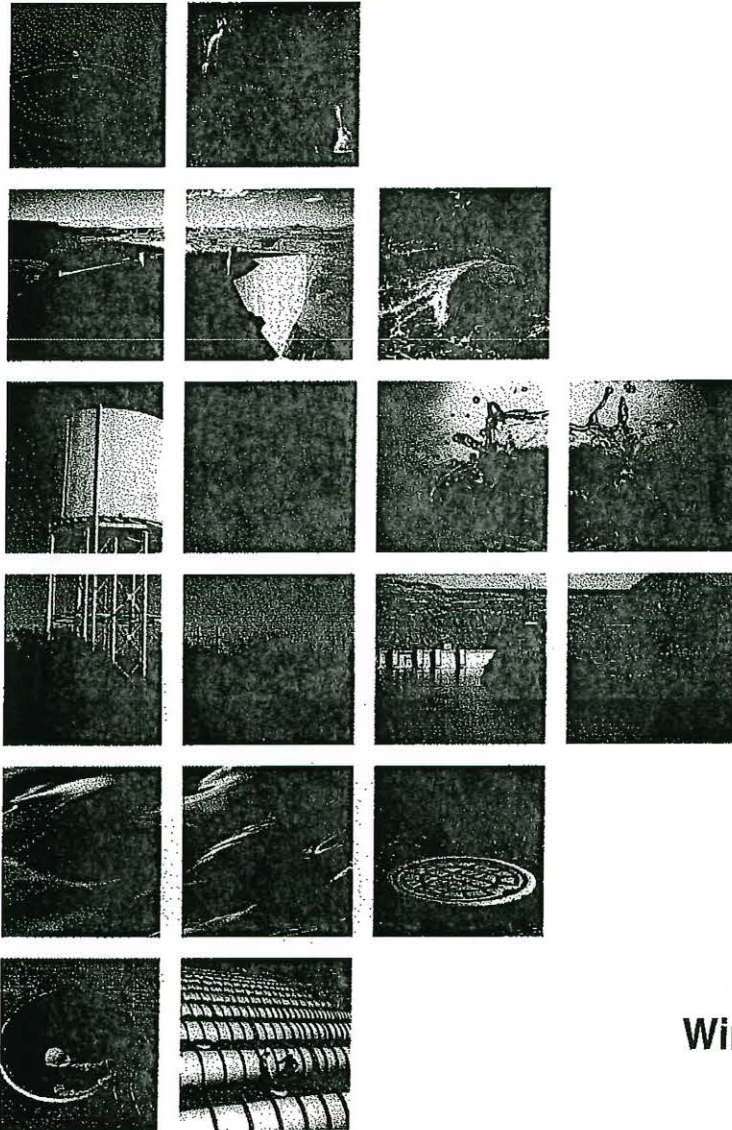
Hist.: DEQ 3-1981, f. & ef. 2-6-81; DEQ 27-1994, f. & cert. ef. 11-15-94

**Agenda Item C, Action Item: Windmaster Corners Sewage Conveyances:
EQC Review and Approval of Proposed Facilities and Schedule.**

April 19, 2007 EQC Meeting

**Attachment 7. Environmental Report: Hood River County,
Windmaster Area Sanitary Sewer**

Consultant Services



**Environmental Report
Hood River County
Windmaster Area Sanitary Sewer**

Submitted to
Hood River County
Hood River, Oregon

Submitted by
BERGER/ABAM Engineers Inc.

RECEIVED

JAN 23 2007

Eastern Region - Bend

PAPOR-03-508

January 2007

Environmental Report

Hood River County Windmaster Area Sanitary Sewer

Submitted to

Hood River County
Hood River, Oregon

January 2007

Submitted by

BERGER/ABAM Engineers Inc.
700 NE Multnomah Street, Suite 900
Portland, Oregon 97232-4189



Thomas R. Wilcox, PE
BERGER/ABAM Engineers Inc.

Job No. PAPOR-03-508

ENVIRONMENTAL REPORT

Hood River County Windmaster Area Sanitary Sewer

TABLE OF CONTENTS

SECTION	PAGE
1.0 Purpose and Need for Project	1
1.1 Project Description	1
1.2 Purpose and Need for Project	1
2.0 Alternatives to the Proposed Action	2
2.1 Engineering Design Alternatives.....	2
2.2 Proposed Facilities	4
3.0 Affected Environment, Environmental Consequences, and Mitigation	4
3.1 Land Use	4
3.1.1 Affected Environment.....	4
3.1.2 Environmental Consequences.....	5
3.1.3 Mitigation	6
3.2 Floodplains.....	6
3.2.1 Affected Environment.....	6
3.2.2 Environmental Consequences.....	6
3.2.3 Mitigation	6
3.3 Wetland	6
3.3.1 Affected Environment.....	6
3.3.2 Environmental Consequences.....	6
3.3.3 Mitigation	7
3.4 Cultural Resources	7
3.4.1 Affected Environment.....	7
3.4.2 Environmental Consequences.....	8
3.4.3 Mitigation	9
3.5 Biological Resources.....	9
3.5.1 Affected Environment.....	9
3.5.2 Environmental Consequences.....	10
3.5.3 Mitigation	10
3.6 Water Quality Issues	10
3.6.1 Affected Environment.....	10
3.6.2 Environmental Consequences.....	11
3.6.3 Mitigation	11
3.7 Coastal Resources.....	11
3.8 Socio-Economic/Environmental Justice	11
3.8.1 Affected Environment.....	11
3.8.2 Environmental Consequences.....	12
3.8.3 Mitigation	12
3.9 Miscellaneous Items	12
3.9.1 Air Quality.....	12
3.9.2 Transportation.....	13
3.9.3 Noise.....	13
4.0 Summary of Mitigation.....	14
4.1 Land Use/Important Farmland/Formally Classified Lands.....	14
4.2 Floodplain	14

4.3	Wetlands	14
4.4	Cultural Resources	14
4.5	Biological Resources	14
4.6	Water Quality Issues	14
4.7	Coastal Resources	14
4.8	Socio-Economic/Environmental Justice	14
4.9	Miscellaneous Items	15
	4.9.1 Air Quality	15
	4.9.2 Transportation	15
	4.9.3 Noise	15

APPENDICES

- APPENDIX A – FLOOD INSURANCE RATE MAP**
- APPENDIX B – GEOTECHNICAL ASSESSMENT**

WINDMASTER AREA SANITARY SEWER ENVIRONMENTAL REPORT

1.0 PURPOSE AND NEED FOR PROJECT

1.1 Project Description

The Windmaster Sanitary Sewer Project (the project) is a proposed wastewater collection system serving an unincorporated rural area in Hood River County (County) that has been designated a health hazard area. The area encompasses 471 acres, includes 230 residential lots, and is located five miles southwest of the City of Hood River (City). The Vicinity Map of the project area is located on G01 of the attached plan sheets.

The Windmaster Area is primarily rural, with a mix of land uses including residential, exclusive farm use, commercial, light industrial, and airport development. The County Health Department identified approximately 195 acres and includes approximately 88 currently occupied residential properties and some commercial/light industrial zoned areas. This 195 acre area has been identified as the project area for Phase I and will include an estimated 99 residential and commercial/industrial service connections

The facility improvements will include 1.9 miles of 8-inch sewer pipe, 1.2 mile of 2-inch to 2-½-inch pipe, and 37 grinder pump stations. The sewer mainline pipes will be constructed in existing public right-of-way.

The City has adequate capacity and has agreed to accept the effluent from the district into its existing Indian Creek sewer transmission main. After construction is completed, the City will take over and maintain the district's facilities. All facilities within personal property will be the owner's responsibility.

The County has funded the planning and design phases of this project through a State and Tribal Assistance Grant administered by the Environmental Protection Agency (EPA). To complete construction of the project, the County is attempting to fund the project with approximately half of the costs coming from grant money, and the other half from low interest state or federal loans.

1.2 Purpose and Need for Project

The Windmaster area of the County has a long history of failed residential and commercial septic systems. With poor soil conditions prevalent throughout the region, septic leach fields cannot drain properly causing leachate to outflow, concentrate on the surface, and appear in low areas and roadside ditches. In the late 1980's, the County Health Department identified the Windmaster area as a potential health hazard area when fecal coliform was detected in roadside ditches. In March 2001, the Oregon Department of Environmental Quality (DEQ) recommended the development of a new wastewater collection system for the Windmaster area.

By March 2002, the County had declared the area a health hazard and formed the district to construct a wastewater collection system. If the County did not pursue the completion of this project, continued exposure to this health hazard would result. Ultimately, the County Health Official would be required to impose a no-flush policy, forcing residents to either vacate their homes or correct the septic problems individually.

2.0 ALTERNATIVES TO THE PROPOSED ACTION

2.1 Engineering Design Alternatives

Three alternatives to providing sewer service were identified and evaluated: a “do-nothing” alternative in which individuals would assume responsibility for correcting their failed septic systems; a sewer system with a separate, local treatment plant; and a sewer collection system discharging into the City’s wastewater system.

The “do-nothing” option will not correct the health hazard problem. With most Windmaster area residents qualifying as low income families, placing the responsibility to correct failing septic systems on the individual homeowner is not economically feasible. Unfixed septic systems will continue to fail and cause effluent to surface. Septic systems that are repaired do not address the regional problem of poorly draining soils, which will continue to contribute to the regional system failure.

The separate wastewater treatment system would involve a package treatment plant that would treat the effluent to tertiary conditions and distribute it to a drainfield for infiltration. Generated sludge would be collected and delivered to the City’s treatment plant for eventual disposal. The alternative is not feasible because of the poorly draining soils, initial capital expense to construct, the ongoing operation and maintenance costs, and a lack of property within the Windmaster area large enough to accommodate this type of facility. In addition, the Windmaster area is not incorporated and does not have a local tax base or staff to operate and maintain such a facility.

Constructing a sewer collection system that discharges into the City’s existing wastewater system is feasible and the least amount of operation and maintenance. Within this option, three alternatives were explored: an all grinder pump system, a septic tank effluent pumping (STEP) system, and a gravity sewer system, which uses some grinder pumps. The three options are similar in location and environmental impact. The differences are the pipe diameter of the conveyance system, and the initial collection technology at each of the service connections.

The estimated total capital costs for the three sewer collection system alternatives are \$2,190,000 for the gravity system, \$1,870,000 for the grinder pump system, and \$1,960,000 for the STEP system. Each of the three alternatives for the sewer collection system refers to an inter-tie between the district and the City’s system, which will occur at an existing manhole located on the northwest corner of the high school property along Indian Creek.

Grinder Pump

The all grinder pump system is a small diameter pressure sewer system. Each of the service connections would require a grinder pump unit, consisting of a vault with a submersible grinder pump. Gravity pipes would be used to transport effluent from the building to the vault; the pump would liquefy waste, and discharge it into a collector pressure pipe. The collector pipes would deliver the effluent at a manhole located at Windmaster Corner and transport the effluent via an 8-inch gravity line to the City's existing system.

As compared to the gravity system, the grinder pump system would require a smaller diameter pipe and shallower pipe. The capital construction costs would be lower; although the grinder pump system would require maintenance. Disadvantages of the grinder pump system would be that the system requires electricity. Power costs would increase for the owners and the system could fail during outages. The life of the grinder pump system is shorter than that of the gravity system and grinder pumps would need to be replaced within 10 to 20 years depending on their maintenance.

Septic Tank Effluent Pump System

The STEP system would also use a small diameter pressurized collection system that would deliver the effluent to a manhole at Windmaster Corner, but the waste from the buildings would discharge into a septic tank. Liquefied waste would be pumped out of the tank into the collector system, while solid waste would settle in the septic tank. Most property owners would have to replace their current septic tanks.

Advantages of the STEP system are similar to the grinder pump system although the STEP system would have a decreased risk of blockage and less power consumption. The STEP would also have to be pumped every two to three years.

Gravity System

The gravity system incorporates 8-inch, bell and spigot, ASTM D-3034 polyvinyl chloride (PVC) pipe, which would deliver the effluent from the building to a manhole at Windmaster Corner via a collector pipe system. Site elevations in the Windmaster area are suitable for a gravity system. This system would also require some grinder pumps and force mains within portions of the district's service area.

The gravity system would require the least amount of maintenance over time of the three alternatives, with greater reliability and lower maintenance costs. The gravity system has the highest initial capital cost, due to larger diameter pipe and greater pipe depths and would require grinder pumps for owners whose properties are unsuitable for a gravity service.

Costs

The estimated total capital costs for the three sewer collection system alternatives are \$1,870,000 for the grinder pump system, \$1,960,000 for the STEP system, and \$2,190,000 for the gravity system. Each alternative requires an inter-tie between the district and the City's system, likely at an existing manhole located on the northwest corner of the high school property. The residents of the Windmaster area selected the gravity system as the preferred alternative.

2.2 Proposed Facilities

The gravity system includes the construction of approximately 10,050 LF of 8-inch gravity sewer pipe, 6,390 LF of 2-inch to 2-1/2-inch force main, and 37 grinder pump stations. Along the sewer mains, laterals would be stubbed out to lots within the district while the mains will be constructed within existing roads or other public rights-of-way.

At a location 650 feet north of the intersection of Indian Creek Road and Tucker Road, Windmaster Corner, the sewer alignment would veer west and then follow a route north through the high school property to connect to an existing manhole at the northwest corner of the property. It would allow gravity flow from Windmaster Corner to the inter-tie, eliminating the need for a lift station and additional force main pipe.

The specific alignment of the sewer pipe was determined based on the most economical placement within each branch of the system. Potential conflicts with other utilities, the condition of the roadside shoulder and ditch, and the ability of equipment to operate in a given space were considered. The proposed alignment reduces cost by reducing pavement replacement where possible. Manhole covers are not located in wheel paths, or at unstable locations within the roadside ditches.

The depth of the gravity mains is primarily 6 feet of cover or greater so that most owners can connect via a 4-inch gravity service line and allows for clearance beneath roadside ditch and utilities. The grinder pumps will be located within 5 to 15 feet of the building exterior; connected via the existing 4-inch discharge pipe, and pumping the effluent to the main in the public right-of-way through a 1-1/4-inch PVC pipe. All owners, whether they have a gravity or grinder pump connection, will be required to decommission their existing septic systems.

3.0 AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION

3.1 Land Use

3.1.1 Affected Environment

The County Department of Public Works, in cooperation with the County Health Department determined the extent of the health hazard area and established the boundaries of the district (A foldout map depicting the district boundaries, existing

zoning ordinances, and associated acreages is contained in the Appendices.) A summary of the land uses within the project are as follows.

Inside the District

- Airport Development – 15 acres
- Mixed Use (M-2) – 24 acres
- Commercial (C-1) – 2 acres
- Rural Residential (RR 2.3) – 114 acres
- Rural Residential (RR 5.0) – 38 acres
- Rural Residential (RR 1.0) – 81 acres
- Exclusive Farm Use (EFU) – 124 acres

Affected by the Construction

- Hood River Valley High School

The design for this project has determined the location of the sewer pipe collection network to be located within the rights-of-way of the existing County and state road systems as well as high school property. This will limit construction activities to the traveled ways and developed lands, thus eliminating the possible disturbance of potentially sensitive areas.

3.1.1.1 Important Farmland, Prime Forest Land, and Prime Rangeland

Review of the district map shows that the project contains areas zoned EFU but not areas of forest or rangeland. Construction will be from existing buildings to public rights-of-way. All efforts will be made to avoid any EFU areas as a part of this project.

From a telephone conversation with Ron Raney, Soil Scientist with Natural Resources Conservation Service (NRCS), Form AD-1006 is not required because there will be no land use changes or cropland converted as a result of this project.

3.1.1.2 Formally Classified Lands

The proposed project is located outside the City limits and is located in a rural area of the County. In review of the USGS and USFS maps, there are no formally classified lands listed within the project area. Additionally, there are no national natural landmarks, national parks, national historic sites, national forest lands, prime forest land, wild and scenic rivers, or wilderness areas that will be impacted by the project.

3.1.2 Environmental Consequences

The project will be constructed within existing rights-of-way of County and state roads along with property of the high school. Construction of this project will not impact any known farmland, forest land, rangeland or any formally classified lands.

3.1.3 Mitigation

By constructing the sewer pipe system below grade and within the existing County and state road sections and high school property, this project would not impact important farmland, prime forest land, prime rangeland or any formally classified lands. Therefore, no mitigation is required.

3.2 Floodplains

3.2.1 Affected Environment

The entire project is classified as Zone C based on the Flood Insurance Rate Map (FIRM) Hood River County, Oregon (Unincorporated Areas), Community Panel Number 410086 0050 8 (See Appendix A – Flood Insurance Rate Map). This corresponds to areas outside the 1-percent annual chance floodplain, areas of 1-percent annual chance sheet flow flooding where average depths are less than 1 foot. No base flood elevations or depths are shown within this zone. No floodplains will be impacted from this project.

3.2.2 Environmental Consequences

All portions of the project are outside the 100-year floodplain. Completion of this project will neither adversely impact the 100-year floodplain, nor alter the current character of the drainage system.

3.2.3 Mitigation

No mitigation is required, since there is no impact to the 100-year floodplain. According to the Hood River Comprehensive Land Use Plan (1984), there are no restrictions to impede the development of a sanitary sewer collection system.

3.3 Wetlands

3.3.1 Affected Environment

According to the National Wetlands Inventory (NWI) map for the project site, Hood River S.W. (1979), no wetland areas are identified within the proposed project alignment. Although wetlands are associated with such local waterways as Hood River, Indian Creek, and Cedar Creek, these areas are located outside the project boundary and will not be adversely impacted as a result of this project.

3.3.2 Environmental Consequences

Construction of this project will not directly impact any wetlands or cross any delineated waterways within the project boundaries. However, soil erosion associated with construction activity could contribute to the buildup of sediment within drainage tributaries and indirectly impact wetlands and water quality.

A National Pollution Discharge Elimination System (NPDES) permit with an Erosion and Sediment Control (ESC) Plan will be required (Walt West, Manager of the Bend Water Quality Section, Eastern Region DEQ). The contractor will be required to follow and maintain the ESC Plan throughout the duration of the project.

3.3.3 Mitigation

An NPDES permit with an ESC Plan will be submitted and approved by the DEQ before the start of construction. Best Management Practices (BMPs) associated with erosion control measures will be implemented as part of this project. The contractor will be required to follow and maintain the requirements set forth in the ESC Plan throughout the duration of the project.

3.4 Cultural Resources

3.4.1 Affected Environment

Findings indicate that the project site is characterized by rural residential lands that include orchards, residential dwellings, small auxiliary buildings, commercial businesses, golf course, and the high school. Most of these buildings were constructed after the historic era, post-1954, and date from the late 1950s to the late 1990s. Of the few pre-1950s structures in the area, most have been altered (Sally Donovan, Donovan and Associates).

The project's new sewer pipe collection system will be constructed within the developed high school property and the existing right-of-way sections of Indian Creek Road, Tucker Road, Jeanette Road, Martin Road, Dillon Road, Orchard Road, Airport Road, Barrett Drive, and Schull Drive. These roadways and school are not designated as historic roads and the proposed project will not affect their cultural significance.

The field investigation performed by Donovan and Associates revealed that only four properties within the project area contain structures of significance; two may be eligible for listing in the National Register of Historic Places, and two have distinctive architectural styling. Excerpts from the Donovan and Associates field investigation follow.

Resource No. 1: First Congregational Church (3875 Barrett Road)

Constructed in 1887 by the First Congregational Church, the building was sold in 1894 to the Valley Christian Church and has been occupied by other fellowships. The building was listed Oregon Historic Site and Building Inventory in 1976, and in the County Comprehensive Plan as a historic property. The 1-story building has drop siding, a high pitch gable roof, Gothic arch stained glass windows, and boxed eaves. Alterations include a small addition on the west side, some window modifications, and historic additions on the rear and east elevations. The First Congregational Church is potentially eligible for National Register listing for its architectural and historic significance.

Resource No. 2: American Foursquare (1565 Tucker Road)

The 2-story American Foursquare residence, constructed circa 1905, has a truncated hip roof, drop siding, overhanging eaves, one-over-one double-hung wood sash windows, and wrap-around porch supported by turned porch posts. The residence has a small

barn associated with the property. It is a good example of an American Foursquare style residence that maintains its architectural integrity. This property is potentially eligible for listing in the National Register.

Resource No. 3: Ernst Hinrichs Residence (1620 Tucker Road)

The Hinrichs Residence, constructed around 1930 with elements of the French Renaissance style. The residence has a gable roof, a 2-story round tower, rough stucco surface, multi-pane wooden windows, rock chimney, and an arched doorway. Some of the windows have been modified and a dormer was added. A historic small shed and non-historic garage are associated with the residence.

Resource No. 4: Log Structure (3801 Schull Drive)

This small building is associated with a residential property and is located on the west side of the property's driveway. The log structure has a gable roof, horizontal square log walls with chinking, and small windows. Vines cover a majority of the exterior. Although no historic information is known at this time, the building is architecturally distinctive for its building type.

3.4.2 Environmental Consequences

According to the field investigation prepared by Donovan and Associates, the four properties identified as historic significant will not be impacted visually or structurally by the project.

Project documentation was submitted in compliance with the National Historic Preservation Act of 1996 (16 U.S.C. 470f), Section 106, and reviewed under criteria and procedures outlined in 36 CFR Part 800. Further consultation and comments were also solicited from appropriate State Historic Preservation Office (SHPO) staff. The review resulted in a determination of "No Historic Properties Adversely Affected."

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR), and the Confederated Tribes of Warm Springs Indian Reservation of Oregon (CTWSRO) were initially contacted via a project information letter, which solicited concerns regarding cultural resources in the project area. The CTUIR revealed that the Umatilla Reservation did not have an issue with the project and that they would defer the cultural requirements to the CTWSRO (Catherine Dickson, CTUIR, telephone conversation).

The CTWSRO recommended that a literature search review by a qualified archaeologist (Sally Bird, CTWSRO, letter). The search review was performed by Dr. Dennis Griffin of SHPO, and his conclusions revealed that there are no reported archaeological sites in the project area, and that there have been no previous cultural surveys. Dr. Griffin indicated that future ground-disturbing activities may reveal the presence of buried cultural resources and that, if this were to occur, all activities should cease and a professional archaeologist be contacted to evaluate the discovery.

3.4.3 Mitigation

If any cultural resources are found during construction, construction activities in the immediate vicinity of the find will stop until these resources are identified and an appropriate course of action is determined. By constructing the sewer pipe system below grade and within the existing County road rights-of-way, the cultural resources of the area will not be impacted by the proposed project.

3.5 Biological Resources

3.5.1 Affected Environment

The project is a new wastewater collection system serving a rural area in the County. The facility improvements will include approximately 1.9 miles of 8-inch sewer pipe and approximately 1.2 miles of 2-inch to 2-1/2-inch force main pipe. The sewer mainline pipes will be constructed in sections of the existing roadway, with laterals stubbed-out to each tax lot in the district. The City has agreed to accept the effluent into its existing Indian Creek sewer transmission main. The City plans to take over and maintain the district's facilities once they are completed.

The National Oceanic and Atmospheric Administration (NOAA), the U.S. Fish and Wildlife Service (USFWS), and the Oregon Department of Fish and Wildlife (ODFW) offices were initially contacted via a project information letter, which solicited concerns regarding biological resources in the project area. These agencies provided the following list of habitat and species that may be affected by the project.

3.5.1.1 Listed Species

Birds

- Bald eagle (*Haliaeetus leucocephalus*)

Fish

- Lower Columbia River steelhead (*Oncorhynchus mykiss*)
- Columbia River Chinook salmon (*Oncorhynchus tshawytscha*)
- Columbia River bull trout (*Salvelinus confluentus*)

3.5.1.2 Proposed Species

None

3.5.1.3 Candidate Species

Birds

- Yellow-billed cuckoo (*Coccyzus americanus*)

Amphibians and Reptiles

- Oregon spotted frog (*Rana pretiosa*)

Fish

- Lower Columbia River Coho salmon (*Oncorhynchus kisutch*)

3.5.2 Environmental Consequences

Potential impacts to the habitat listed above are limited or non-existent because construction activities will be confined to the existing right-of-way sections of the roadway system. Preliminary design alternatives have the pipe alignment near Cedar Creek and tributaries of Indian Creek, but not physically crossing any water ways within these drainage basins. The possibility of impacts to fish and wildlife resources resulting from the indirect discharge of construction-generated sediment into Indian Creek and/or Cedar Creek, which could be transported into Hood River. Potential negative impacts to Hood River, Indian Creek and Cedar Creek from the project can successfully be mitigated by aggressive application of appropriate BMPs to control project generated erosion.

No vegetation associated with critical habitat would be impacted as a result of the project. Vegetation adjacent to the proposed sewer collection system is located in roadside ditches and actively maintained by County maintenance practices, which include BMPs.

3.5.3 Mitigation

All BMPs would be employed to protect biological interests in the project area. An NPDES permit with an ESC Plan will be acquired to address potential impacts to public waters. The contractor will be required to follow and maintain the ESC Plan throughout the project.

3.6 Water Quality Issues

3.6.1 Affected Environment

Surface Water

Five surface water bodies are found within the boundaries of the project site: Hood River, Cedar Creek, Indian Creek, and two minor tributaries to Indian Creek. Hood River begins as melt-off from the snow pack and glaciers on Mt. Hood, and is fed by many springs along the course of the river.

Groundwater

The City lies in the north central part of the state of Oregon. The DEQ and the Oregon Water Resources Department (WRD) have designated the Hood River area as a

management area; thus, groundwater use has been restricted due to overdraft issues. In addition, DEQ and WRD have both designated the Hood River aquifer as "sensitive." Groundwater contamination in this region is caused by both non-point and point source contaminations. Non-point sources, such as agriculture and leaching from densely located septic systems, are primarily responsible for elevated levels of nitrogen in Hood River and the project site.

3.6.2 Environmental Consequences

An NPDES Construction Stormwater Permit and ESC Plan would be required for the proposed project (Walt West, DEQ). Overall, the effects on water quality as a result of constructing this project should be negligible. Preliminary alignments of the sewer collection system would confine construction activities to the existing traveled ways and public lands, with no stream crossings or other in-water work. Using BMPs during construction activities would control sediment and limit the potential for erosion.

In addition, the project and the associated construction activities will not adversely impact the groundwater quality. The completion of this project will provide a direct improvement to surface and ground water quality by eliminating the surface concentration of leachate from regionally failing septic systems.

3.6.3 Mitigation

An NPDES Construction Stormwater Permit will be acquired, and an ESC Plan will be submitted to DEQ. All BMPs will be employed to protect the waterways within the project area. The contractor will be required to follow and maintain the ESC Plan throughout the project.

3.7 Coastal Resources

The proposed project is located entirely within the County and is not within a coastal zone region. Therefore, the environmental regulations associated with coastal resources do not apply for the project.

3.8 Socio-Economic/Environmental Justice

3.8.1 Affected Environment

The average income in this area is \$25,237 as reported by the Bureau of Economic Analysis, 2004. The Missouri State Census Data Center and the U.S. Census Bureau provided the following racial characterization of the City (1997 data).

■ White	78.9 percent
■ Black	0.6 percent
■ Asian	1.5 percent
■ American Indian and Alaska Native	1.1 percent
■ Pacific Islander	0.1 percent
■ Multi-racial	2.5 percent
■ Other	15.4 percent

Note: the total is greater than 100 percent because the 2000 Census allowed identification by two or more races, while the 1990 Census limited respondents to one racial category.

The land use zones within the project area are well established. The new sewer system is intended to correct an existing health hazard to the residents in the region. This project is not anticipated to change the area's zoning or socio-economic make-up.

3.8.2 Environmental Consequences

Completion of the project would not cause disproportionately high and adverse human health or environmental effects to minority and/or low income populations. The project is not anticipated to accelerate expected growth in the project area. Currently, the health hazard is limiting growth in the area and completion of the project would benefit all residents and businesses within the area by eliminating the existing health hazard.

3.8.3 Mitigation

This project will positively impact all residents and businesses within the area by eliminating the existing health hazard. No mitigation measures are required for this issue.

3.9 Miscellaneous Items

3.9.1 Air Quality

3.9.1.1 Affected Environment

The City is adjacent to the Columbia River and the Columbia Gorge, which routinely experiences high winds. These high winds, coupled with the fact that the area has little to no manufacturing or industrial industries, result in very little air pollution within the region. The City is not located in a non-attainment area. Air quality is good according to both DEQ and the Environmental Protection Agency (EPA).

3.9.1.2 Environmental Consequences

Construction activities will likely generate dust. It is anticipated that the construction activities will cover a period of 12 to 15 weeks.

The normal odors associated with a sewer system will be minimized by employing proper design and construction practices approved by DEQ.

3.9.1.3 Mitigation

Dust generated by the project will be controlled using County-approved dust suppression methods. Additionally, there are no current air quality restrictions or known topographic conditions that would limit the release of equipment emissions.

3.9.2 Transportation

3.9.2.1 Affected Environment

The alignment for the Windmaster sewer collection system has been designed to be constructed within the right-of-way for Indian Creek Road, Tucker Road, Barret Road, and several other smaller roads. During construction, transportation activities on these roadways would be impacted. Because the pipe alignments are located within the right-of-way, traffic will be controlled. In some cases, one-lane, one-way operations during construction activities will be required. During hours of no construction, both lanes will be open to traffic.

3.9.2.2 Environmental Consequences

The modifications to traffic patterns during construction would primarily impact the residents located in and around the District. For those traveling on State Highway 281, alternate routes are available to bypass the construction work area. Safety for drivers, passengers, and construction workers is the highest priority during construction of this project. Construction activity taking place in the vicinity of the airport will not have an impact on the air traffic in and out of the airport.

3.9.2.3 Mitigation

To mitigate potential traffic control issues, a traffic management plan will be developed and approved by the Oregon Department of Transportation (ODOT). The contractor will be required to maintain traffic control devices (signs, cones, flaggers, etc.) during construction operation hours and provide a safe environment to traffic during non-construction hours.

3.9.3 Noise

3.9.3.1 Affected Environment

The project would be constructed in a residential area of rural Hood River County, 5 miles southwest of the City. Construction equipment required to complete this project would likely include a backhoe, excavator, dump truck, compactor and other such equipment needed to trench and place over 4 miles of sewer and force main pipe. Noise levels resulting from construction activities will temporarily impact the residents within the project area.

3.9.3.2 Environmental Consequences

Upon the completion of the project and during normal operation of the sewer collection system, there will be no long-term noise impacts to the environment or the occupants in the surrounding area.

3.9.3.3 Mitigation

To control noise levels during the construction, the operation of equipment will be limited to a County-specified period during day-time hours.

4.0 SUMMARY OF MITIGATION

4.1 Land Use/Important Farmland/Formally Classified Lands

By constructing the sewer pipe system below grade and within the existing road right-of-way and public property, this project would not impact important farmland, prime forest land, rangeland or any formally classified lands. No mitigation is required.

4.2 Floodplain

Development of a sanitary sewer collection system would not be restricted by the Hood River Comprehensive Land Use Plan (1984). No mitigation is required.

4.3 Wetlands

An NPDES permit with an ESC Plan would be acquired from DEQ prior to starting construction. BMPs associated with erosion control measures will be implemented as part of this project. The contractor will be required to follow and maintain the ESC Plan throughout the project.

4.4 Cultural Resources

By constructing the sewer pipe system below grade and within the existing road right-of-way and public property, the visual aesthetics of the area will not be impacted by the proposed project. If any cultural resources are found during construction, construction activities in the immediate vicinity would stop until these resources are identified and an appropriate course of action is determined.

4.5 Biological Resources

All applicable BMPs would be employed to protect biological interests in the project area. An NPDES Permit with an ESC Plan will be acquired to address potential impacts to public waters, and the contractor will be required to follow and maintain the ESC Plan throughout the project.

4.6 Water Quality Issues

As required by DEQ, an NPDES Construction Stormwater Permit will be acquired, and an ESC Plan will be submitted to DEQ. The contractor will be required to follow and maintain the ESC Plan throughout the project.

4.7 Coastal Resources

The project would be located entirely within the County, and is not classified to be within a coastal zone region. Therefore, the environmental regulations associated with coastal resources are not applicable to this project.

4.8 Socio-Economic/Environmental Justice

Completion of the project would not cause disproportionately high nor adverse human health or environmental effects to minority and/or low income populations. The project would not accelerate expected growth in the project area. Completion of the proposed improvements would benefit all residents and businesses within the project area by

eliminating the existing health hazard. No mitigation measures specific to this issue are required.

4.9 Miscellaneous Items

4.9.1 Air Quality

Construction-generated dust will be controlled using County-approved dust suppression methods. Additionally, there are no current air quality restrictions or topographic conditions that would limit the release of equipment emissions.

4.9.2 Transportation

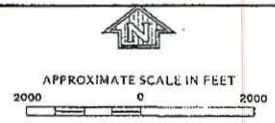
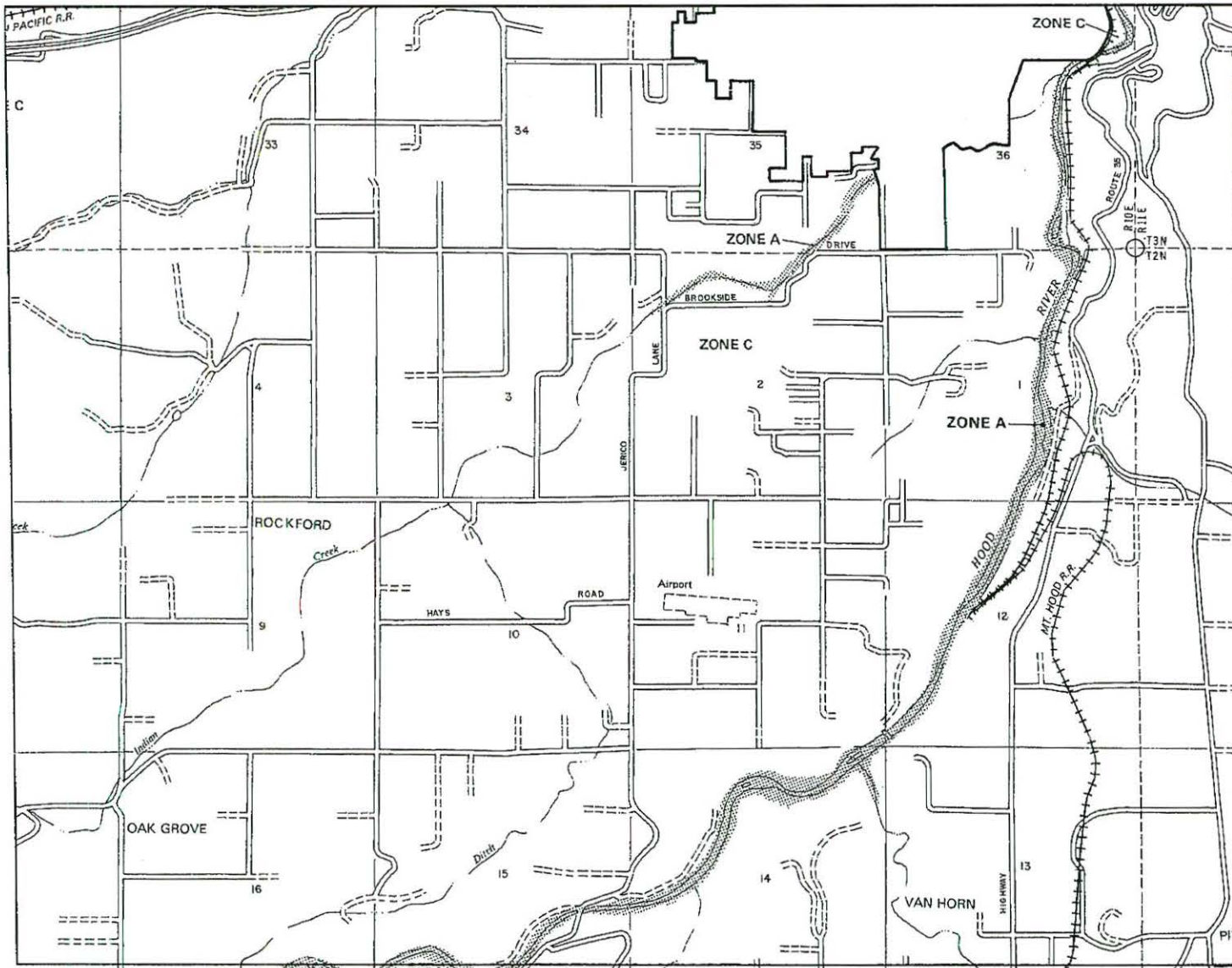
To mitigate potential traffic control issues, a traffic management plan will be developed and approved by ODOT. The contractor will be required to maintain traffic control devices (signs, cones, flaggers, etc.) during construction operation hours and provide a safe environment for traffic during non-construction hours.

4.9.3 Noise

To control noise levels during the construction, the contractor will only be allowed to run and operate equipment only within specified day-time hours.

**Environmental Report
Windmaster Area Sanitary Sewer
Hood River County, Hood River, Oregon**

**Appendix A
Flood Insurance Rate Map**



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
 FLOOD INSURANCE RATE MAP

HOOD RIVER COUNTY,
 OREGON
 (UNINCORPORATED AREAS)

PANEL 50 OF 200
 (SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
 410086 0050 B

EFFECTIVE DATE:
 SEPTEMBER 24, 1984



Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.fema.fome.gov

054

**Environmental Report
Windmaster Area Sanitary Sewer
Hood River County, Hood River, Oregon**

**Appendix B
Geotechnical Assessment**



January 14, 2000

3154 GEOTECHNICAL ASSESSMENT RPT

Hood River County Health Department
1109 June Street
Hood River, OR 97031

Attention: Scott Fitch, County Sanitarian

**SUBJECT: Geotechnical Assessment for Sewage Facility Plan,
Windmaster Corner Community
Hood River County, Oregon**

At your request, Geotechnical Resources, Inc. (GRI) has completed a geotechnical assessment for the Windmaster Corner sewage facility project in Hood River, Oregon. The Vicinity Map, Figure 1, shows the general location of the project. The primary purpose of the geotechnical assessment is to evaluate the soil, rock, and groundwater conditions in the project area and evaluate the impact of these conditions on sewer pipe, manhole, and pump station design and construction. This information will be used by Alpha Engineering, Inc. (AEI), as a subconsultant to GRI, to review and update the 1996 Sewage Facility Plan study by Gorge Engineering, Inc. Our geotechnical assessment included subsurface explorations, limited laboratory testing, engineering studies, and preparation of this report.

PROJECT DESCRIPTION

Septic tank systems in the project area are failing due to the presence of shallow groundwater that is perched above a hardpan/ cemented outwash. As an alternative to a septic tank system, a piping system can be installed to collect and transport sewage to existing City of Hood River (City) sewer lines for treatment by the City.

The proposed project will include the construction of about 6,000 ft of 8-in.-diameter gravity line aligned along the east side of Tucker Road and terminating at a pump station located on the east side of Indian Creek Road near Hood River High School. From the pump station, the line will continue northward with about 3,300 ft of 4-in.-diameter force main. The proposed alignment of the 4-in.-diameter force main continues along the east side of Indian Creek Road to the City sewerline at Indian Creek. The alignments are shown on Figure 1 and the Site Plan, Figure 2

SITE DESCRIPTION

Topography

As shown by the topographic information on Figure 2, the majority of the ground surface along the alignment slopes gently downward to the north, and two small drainages are located along the northern portion of the alignment. The ground surface along the main alignment slopes from about elevation 670 ft along the east side of Tucker Road just south of Orchard Road to about elevation 500 ft adjacent to the east side of Indian Creek Road at Indian Creek. The ground surface along a secondary spur on the south side of

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Barrett Road is relatively flat, ranging from about elevation 620 ft at the intersection at Windmaster Corner to about elevation 630 ft about 800 ft to the west. The area along the alignment is developed with a business, agriculture, and rural residential properties.

Geology

Our experience and review of the available geologic literature indicate the project area is mantled with Pleistocene interbedded lacustrine deposits of the Missoula floods. In general, the lacustrine deposit occupies about 12 square miles of the lower Hood River Valley and is composed of brown, unconsolidated silt soils. Older (Quaternary) alluvium of the Hood River Valley underlies the lacustrine deposits and consists of a thick deposit of glacial outwash containing meandering channels of fluvial sand typically associated with chaotic deposition of glacial outwash (Beaulieu, 1977). The glacial outwash typically consists of a poorly sorted conglomerate with clasts ranging from fine gravel to boulders in a matrix of soil ranging from clay to sand. The outwash occasionally contains, or consists of, silt and sand soils. Cemented outwash, known as hardpan, develops as a result of cementation of soil particles by precipitation of relatively insoluble materials. Our review of available water well logs in the project vicinity, obtained from the Oregon Department of Water Resources, indicates the outwash is estimated to be on the order of 100 to 200 ft thick. The glacial outwash is underlain by volcanics of the Cascades Formation, typically consisting of flows of andesite, basaltic andesite, and olivine basalt interlayered with agglomerates, tuff breccias, and debris flows. The nearby well logs indicate the Columbia River Basalt Formation occurs at a depth of about 400 ft.

SUBSURFACE CONDITIONS

General

Subsurface materials and conditions along the alignment were investigated by GRI between December 16 and 23, 1999. The subsurface explorations consisted of two hand-auger borings, designated HA-1 and HA-2, and 15 test pits, designated TP-1 through TP-15. The locations of the explorations are shown on the Site Plan, Figure 2. The field exploration and laboratory testing programs completed for this study are discussed in detail in Appendix A. Logs of hand-auger borings and test pits are provided on Figures 1A through 4A. The terms used to describe the soils disclosed by the explorations are defined in Tables 1A and 2A. A description of the soil and groundwater conditions disclosed by the explorations is provided below.

Soils

For the purpose of discussion, the materials disclosed by the subsurface explorations have been grouped into the following units based on their physical characteristics and engineering properties. Listed as they were encountered from the ground surface downward, the units are:

1. **FILL**
2. **SILT**
3. **SAND and SILT (Non-cemented Outwash)**
4. **GRAVEL and COBBLES (Non-cemented Outwash)**
5. **HARDPAN (Cemented Outwash)**

1. **FILL.** Granular fill consisting of crushed rock was encountered in test pits TP-1, TP-3 through TP-6, and TP-11. The majority of the fill is associated with the adjacent road. However, the crushed rock fill in test pit TP-1 is underlain by 4 ft of silt fill above a 6-in -diameter PVC drain pipe. The majority of the

granular fill consists of crushed rock ranging from $\frac{3}{4}$ -in.-minus to a maximum nominal size of about 10 in. (pit-run) in a matrix of silt and sand. Scattered metal debris was encountered in the fill in test pits TP-3 and TP-6. The granular fill appears to be generally dense, based on observation during excavation of the test pits. The relative consistency of the silt fill in test pit TP-1 is generally considered medium stiff based on Torvane shear strength values of 0.3 tsf. The natural moisture content of the silt fill ranges from about 17 to 18%.

2. **SILT.** With the exception of TP-1, TP-2, and TP-5, the test pits encountered lacustrine silt beneath the fill or at the ground surface where the fill is absent. The silt is generally brown, but occasionally varies to reddish-brown or gray mottled rust. The silt contains varying percentages of clay and fine- to coarse-grained sand, ranging from a trace of clay or sand to clayey or sandy. Scattered clasts ranging in size from fine gravel to boulders were encountered in test pits TP-8 and TP-10. Based on Torvane shear strength values of 0.1 to 0.3 tsf and the conditions observed during test pit excavation, the relative consistency of the soil ranges from soft to hard and is generally medium stiff to stiff. The natural moisture content of the silt ranges from about 7 to 48%.

3. **SAND and SILT (Non-cemented Outwash).** Test pits TP-1 through TP-3 encountered 7- to 13-ft-thick zones of non-cemented outwash consisting of silt and fine- to coarse-grained sand. The natural moisture content of the sands and silts typically ranges from about 7 to 48%. Based on visual observation, the sand is typically loose to medium dense.

4. **GRAVEL and COBBLES (Non-cemented Outwash).** All of the explorations, except test pits TP-1, TP-2, TP-4, and TP-6, encountered non-cemented outwash consisting of fine to coarse, angular to rounded gravel and cobbles in a matrix of brown, silty, fine- to coarse-grained sand. Locally, outwash containing varying percentage of clay, ranging from a trace of clay to clayey, were observed. However, in test pits TP-6, TP-9, and TP-13, the gravel and cobbles are present in scattered amounts. Generally scattered, but locally numerous, boulders up to about 3 ft in diameter were observed in several of the test pits. The cobbles and boulders are typically andesitic or basaltic and have a rock hardness designation of RH-3 to RH-4 (hard to very hard). In general, this unit is the thin upper unconsolidated portion of a thick sequence of cemented outwash classified as a conglomerate. The contact between the upper, unconsolidated material and the underlying cemented conglomerate, known as hardpan, is abrupt. The relative density of this unit appears to be loose to medium dense.

5. **HARDPAN (Cemented Outwash).** Practical refusal was encountered by the extend-a-hoe on medium soft to very hard (RH-1 to RH-4) hardpan at depths of 3.5 to 13.5 ft in the test pits, with the exception of test pit TP-3, which was terminated in non-cemented outwash at a depth of 14 ft due to caving. The conglomerate consists of fine to coarse, angular to rounded gravel and cobbles with scattered boulders. The material is cemented in a matrix of brown, silty, fine- to coarse-grained sand. Although the rock hardness varies widely throughout the unit, the majority of the matrix is typically medium hard (RH-2).

Groundwater

Our experience and observations indicate the groundwater at this site is commonly perched above the hardpan/cemented outwash. Although the groundwater level in the area should be lowest at the end of the dry season, summer field irrigation results in elevated water levels, and the groundwater typically lies at shallow depths of only a few feet below the ground surface. Additionally, the groundwater level rises rapidly in response to precipitation with the onset of wet weather in the fall and remains at or near the

ground surface throughout the wet season. Extensive drainage problems have been previously noted throughout the southern portion of the project area.

Seepage of perched groundwater was observed in the majority of the test pit excavations. The depth of seepage ranged from about 1 8 to 13 ft below the ground surface and was typically encountered at a depth of about 3 ft. Water ponded rapidly in the majority of the test pit excavations. Seepage was not observed in test pits TP-2 or TP-4 and/or the two hand-auger borings.

CONCLUSIONS

The subsurface explorations performed for this investigation indicate that most of the alignment is mantled with silt that typically contains varying amounts of clay and fine- to coarse-grained sand. A gravel and cobble unit (non-cemented outwash) typically underlies the silt. With the exception of test pit TP-3, all of the test pits were terminated due to practical refusal on cemented outwash, locally known as hardpan. Perched groundwater occurs above the hardpan.

Geotechnical considerations for sewer trench excavation include numerous existing underground utilities, shallow groundwater, and hardpan/cemented outwash within the depth of sewer excavation.

Utility Trench Excavation

The majority of the proposed sewer alignment follows the existing roadways. Subsurface materials along the alignment consist of silt, sand, and gravel/cobbles (non-cemented outwash) underlain by hardpan (cemented outwash). Excavation of the hardpan will require a large, tracked hydraulic excavator using a bucket fitted with rock teeth. Locally, a hydraulic hammer may be needed to break boulders and strongly cemented zones. Excavation of the hardpan/cemented outwash will be difficult and will likely result in some overexcavation beyond the anticipated neat lines of the required trench excavation.

Based on our observations during excavation of the test pits, we anticipate that temporary trench slopes in the silt and gravel/cobbles can be excavated at about 1H:1V. However, since most of the alignment is located very near existing roads, trench support will be necessary for most of the project. We anticipate that conventional trench shoring methods, such as shields with plates, can be used. As noted on Figures 2A through 4A, the sidewalls of the test pit excavations often caved in the sand soils and the non-cemented gravel and cobbles. For this reason, the trenching work should be conducted so that the length of open trench is minimized and trench sidewalls are supported.

Groundwater Considerations

During this investigation, perched groundwater was typically encountered at depths of less than 4 ft over most of the alignment. Areas of deeper groundwater were encountered along the northern portion of the project in test pits TP-1 to TP-4. In addition, local areas of high groundwater may occur near cultivated fields during the irrigation season or adjacent to irrigation and drainage ditches. The perched groundwater level will usually be lowest at the end of the normally dry summer and fall months.

In our opinion, most dewatering for this project can probably be accomplished by pumping from sumps located within the trench excavation. If running soil conditions or severe caving occurs, it may be appropriate to install/operate dewatering wells in advance of the trench excavation.

Pipe Support

The base of the trench and/or bedding material should be firm prior to placement of the pipe bedding. Due to the typically shallow groundwater conditions, it should be anticipated that some overexcavation and installation of trench bottom stabilization material will be needed where the bottom of the trench consists of silt or sand soils. Open-graded fragmental rock, such as 3/4- to 1 1/2-in. crushed rock or 2- to 4-in. crushed rock, will serve to stabilize the trench bottom and facilitate dewatering. We anticipate that the depth of overexcavation and thickness of the trench bottom stabilization material will typically be 1 ft or less.

Pipe bedding material can consist of 3/4-in.-minus crushed rock having less than about 5% passing the No. 200 sieve (washed analysis). A 6-in. thickness of bedding material should be adequate. The bedding layer should be compacted with two to three passes with a hand-operated plate compactor prior to pipe installation. The pipe zone material can also consist of the 3/4-in.-minus crushed rock and should extend from the bottom of the pipe to 12 in. above the top of the pipe. The pipe zone material should be installed in lifts not exceeding 6 in. thick, and each lift should be compacted with hand-operated compaction equipment.

Utility Trench Backfill

To reduce the risk of post-construction settlement, trenches located under roads and streets should be backfilled with compacted granular fill consisting of sand, sandy gravel, or gravel of up to about 3-in. nominal maximum size and having less than 5% passing the No. 200 sieve (washed analysis). The backfill should be compacted to at least 95% of the maximum dry density as determined by ASTM D 698. Some of the gravel encountered in the trench excavation may be adequate for use as compacted backfill. Wetting of the backfill material may be required to achieve adequate compaction; however, flooding and jetting should not be permitted.

Pump Station

Excavation. We understand the proposed pump station will likely to be located about 1,500 ft north of Windmaster Corner on the east side of Indian Creek Road. The pump station excavation may extend to depths of about 20 ft. Soils at the site consist of silt and the non-cemented outwash underlain by cemented outwash hardpan. We anticipate the pump station will be constructed in an open "glory holed" excavation rather than with caisson methods.

Due to the presence of boulders and the weakly to moderately cemented nature of portions of the underlying hardpan unit, we anticipate that a large hydraulic excavator (trackhoe) equipped with a bucket fitted with rock teeth will be needed to make the excavation. A 1 1/2- to 2-ft-thick granular blanket can be placed over the excavation bottom to provide a firm working surface and facilitate drainage. Relatively clean crushed rock of 3/4- to 1 1/2-in. or 2- to 4-in. gradation would be suitable for this purpose. The granular working blanket should be compacted with vibratory compaction equipment until well keyed. We anticipate that temporary excavation slopes can be made at about 1H:1V or flatter, and groundwater inflow can be controlled by pumping from sumps in the granular working blanket.

Lateral Earth Pressures. Wet wells for pump stations are typically designed to resist hydrostatic and lateral earth pressures. In our opinion, it is appropriate to assume that groundwater could occur at the ground surface. In this regard, we recommend using a lateral earth pressure based on an equivalent fluid having a unit weight of 90 lb/ft³ to design the structure. Buoyant forces will be resisted by the weight of the structure.

and the buoyant weight of the backfill material within a cylinder that extends upward vertically from the extension of the wet well footing. A buoyant unit weight of 45 lb/ft³ can be used to evaluate the resistance to uplift provided by compacted backfill.

Backfill can consist of sand, gravel, or fragmental rock of up to about 4-in. maximum size. The backfill should be placed in horizontal lifts and compacted to about 93% of the maximum dry density as determined by ASTM D 698. Overcompaction of the backfill should be avoided, and heavy compactors and large pieces of construction equipment should not operate within 5 ft of the embedded walls. Compaction close to the walls should be accomplished using hand-operated compactors

Any additional lateral pressures due to surcharge loads such as adjacent footings and/or vehicle traffic may be estimated using the guidelines shown on Figure 3.

Design Review and Construction Observation

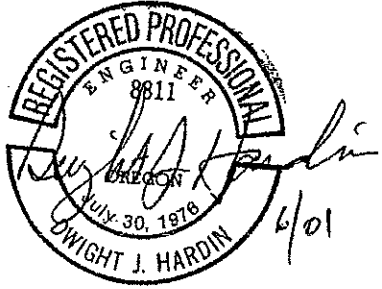
Since final design of the project is not yet complete, we recommend the geotechnical engineer review the construction plans and specifications after they are developed. Additionally, we are of the opinion that to observe compliance with the design concepts, specifications, and recommendations, all construction operations dealing with earthwork and foundations should be observed on an intermittent basis by a qualified geotechnical engineer. We would be pleased to provide these services for you.

LIMITATIONS

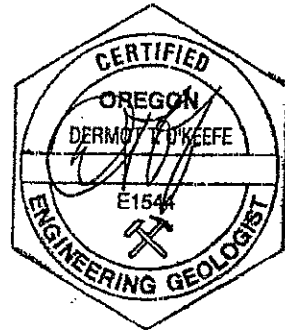
This report has been prepared to aid the County in the evaluation, design, and construction of this project. The scope is limited to the specific project and location described herein, and our description of the project represents our understanding of the significant aspects of the project relevant to the design and construction of the sewage facility.

The conclusions and recommendations submitted in this report are based on the data obtained from the test pits and hand-auger borings made at the locations indicated on Figure 2 and from other sources of information discussed in this report. In the performance of subsurface investigations, specific information is obtained at specific locations at specific times. However, it is acknowledged that variations in soil and rock conditions may exist between exploration locations. This report does not reflect any variations which may occur between these explorations. The nature and extent of variation may not become evident until construction. If, during construction, subsurface conditions different from those encountered in the explorations are observed or encountered, we should be advised at once so that we can observe and review these conditions and reconsider our findings where necessary. Please contact the undersigned at (503) 641-3478 if you have any questions regarding this report.

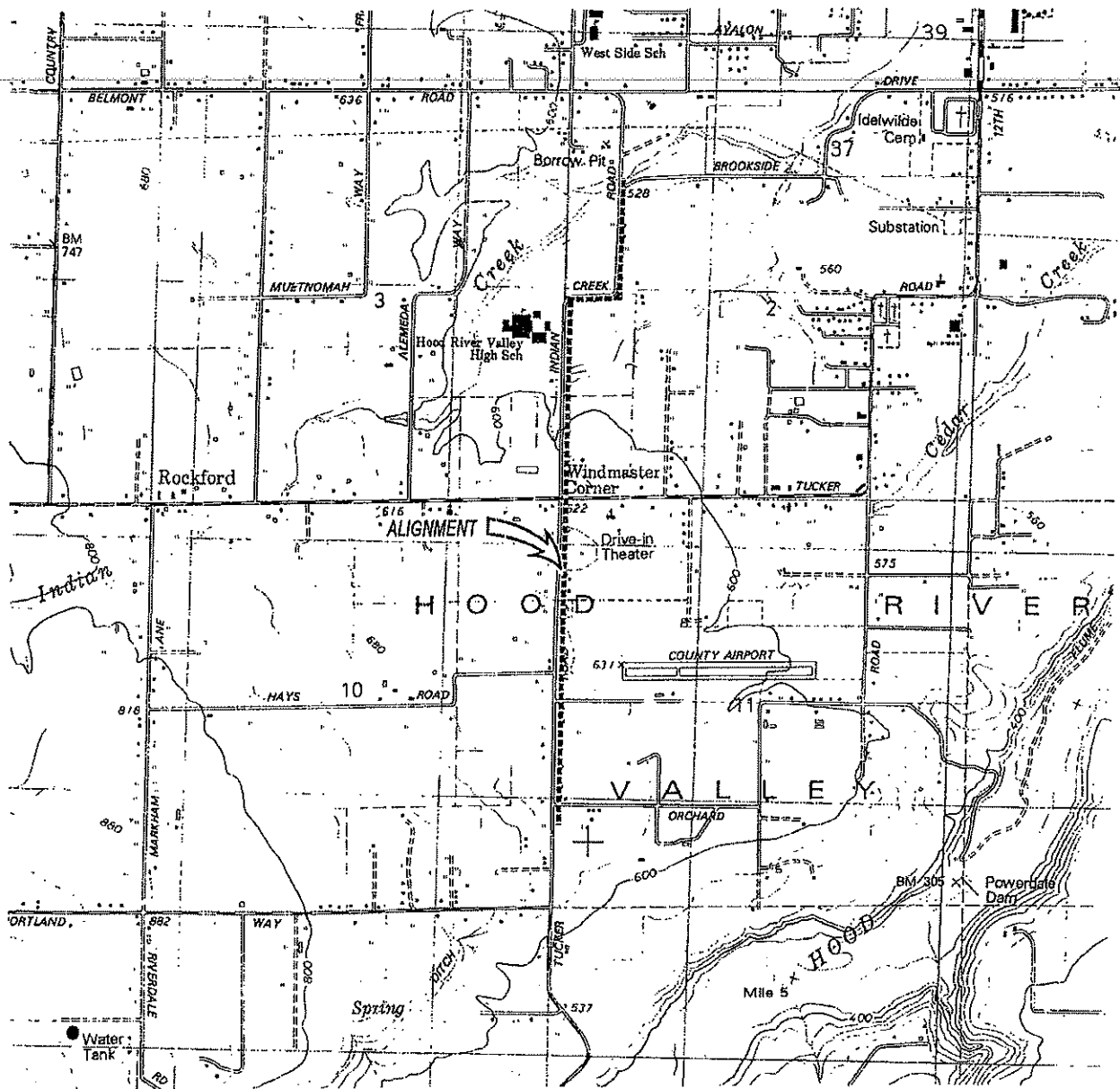
Sincerely,
GEOTECHNICAL RESOURCES, INC.



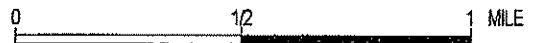
Dwight J. Hardin, PE
Principal



Dermot T. O'Keefe, CEG
Project Geologist

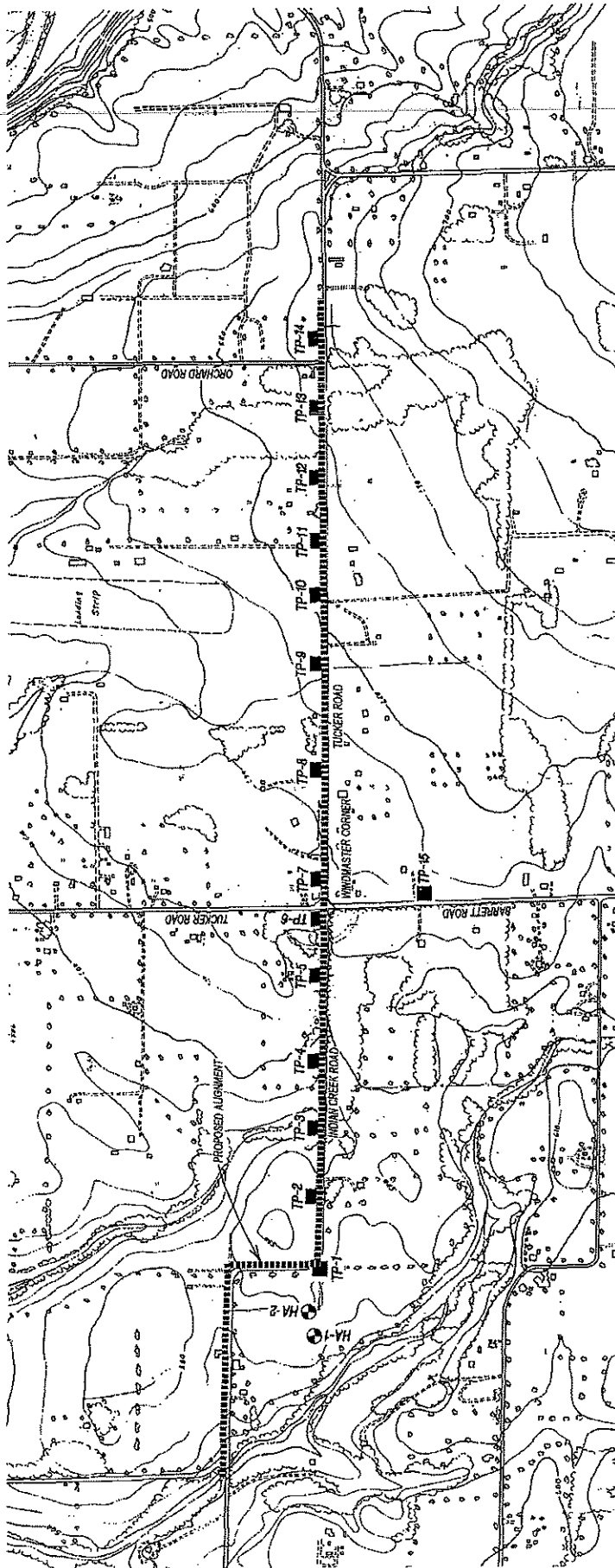


USGS TOPOGRAPHIC MAP
HOOD RIVER, OREG. (4ba) QUAD (1979)



HOOD RIVER COUNTY
HOOD RIVER SEWAGE FACILITY

VICINITY MAP



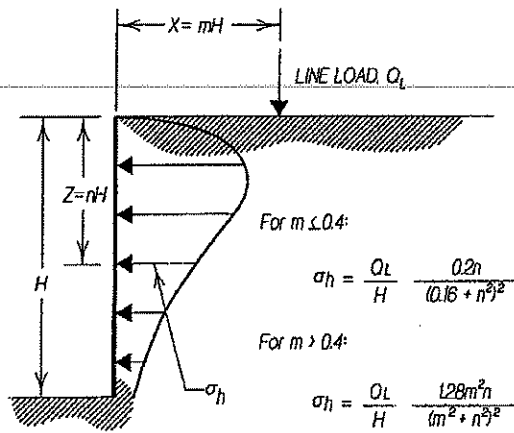
- HAND-AUGERED BORINGS MADE BY GEOTECHNICAL RESOURCES, INC. (DECEMBER 23, 1999)
 - TEST PIT MADE BY GEOTECHNICAL RESOURCES, INC. (DECEMBER 13, 1999)
- SITE PLAN FROM DRAWING PROVIDED BY HOOD RIVER COUNTY (UNDATED)



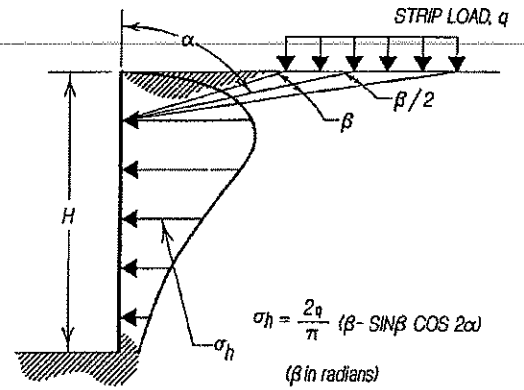
HOOD RIVER COUNTY
HOOD RIVER SEWAGE FACILITY

SITE PLAN

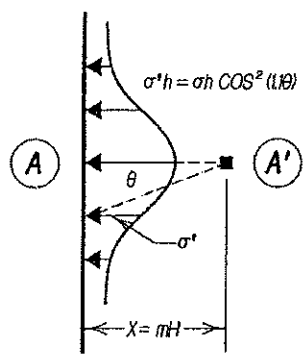
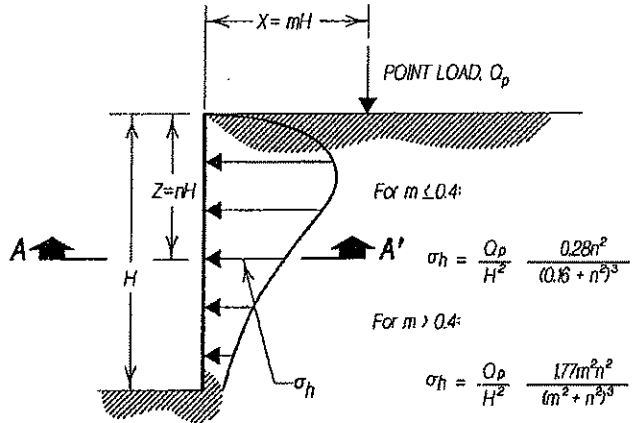
JAN. 2000 JOB NO. 3154 FIG. 2



LINE LOAD PARALLEL TO WALL



STRIP LOAD PARALLEL TO WALL



DISTRIBUTION OF HORIZONTAL PRESSURES

VERTICAL POINT LOAD

- NOTES:
1. THESE GUIDELINES APPLY TO RIGID WALLS WITH POISSON'S RATIO ASSUMED TO BE 0.5 FOR BACKFILL MATERIALS.
 2. LATERAL PRESSURES FROM ANY COMBINATION OF ABOVE LOADS MAY BE DETERMINED BY THE PRINCIPLE OF SUPERPOSITION.



HOOD RIVER COUNTY
HOOD RIVER SEWAGE FACILITY

SURCHARGE-INDUCED
LATERAL PRESSURE

APPENDIX A

FIELD EXPLORATIONS AND LABORATORY TESTING

FIELD EXPLORATIONS

General

Subsurface materials and conditions at the site were explored on December 16, 1999, with 15 test pits, designated TP-1 through TP-15, and on December 23, 1999, with two hand-augered borings, designated HA-1 and HA-2. The explorations were staked and flagged in the field by GRI and Hood River County personnel on private properties directly adjacent to the proposed alignments shown on Figure 2. Ground surface elevations noted on the boring and test pit logs are based on the topographic information shown on Figure 2.

The test pits were excavated with a JCB 215s extend-a-hoe equipped with a 2-ft-wide toothed bucket. The extend-a-hoe was provided and operated by Rick Zeller Excavating of Hood River, Oregon. The hand-auger borings were drilled by GRI and Hood River County personnel. The explorations were backfilled with the on-site soils or cuttings from the explorations, and test pits TP-5 and TP-8 were capped with about 8 in. of crushed rock. An experienced engineering geologist provided by our firm directed the field operations and maintained detailed logs of the materials and conditions disclosed during the course of the work.

Hand-Augered Borings

Two hand-augered borings were drilled on the north end of the project on the Indian Creek Golf Course property. Borings HA-1 and HA-2 were extended to a depth of 5.2 and 4.7 ft, respectively. Subsurface materials were evaluated by observing the auger cuttings. Representative samples were collected at about 3-ft intervals of depth and saved in airtight jars for further examination and physical testing in our laboratory. The logs of hand-augered borings HA-1 and HA-2 are provided on Figure 1A. The terms used to describe the soil and rock encountered in the borings are defined in Tables 1A and 2A.

Test Pits

The test pits ranged in depth from 3.5 to 14 ft. Representative disturbed soil samples were generally obtained from the sidewalls of the excavation to a depth of about 3 ft and from the bucket of the extend-a-hoe for depths below about 3 ft. The soil samples were carefully examined in the field, and representative portions were saved in airtight jars. The approximate undrained shear strength of the silt soils exposed in the excavation sidewalls was determined using a Torvane shear device. The Torvane is a hand-held apparatus with vanes which are inserted into the soil. The torque required to fail the soil in shear around the vanes is measured using a calibrated spring. The logs of the test pits TP-1 through TP-15 are provided on Figures 2A through 4A. The terms used to describe the soil and rock encountered in the explorations are defined in Tables 1A and 2A.

LABORATORY TESTING

General

All samples obtained from the borings and test pits were returned to our laboratory where the physical characteristics of the samples were noted, and the field classifications were modified where necessary. The laboratory testing program was limited to determinations of natural moisture content in conformance with ASTM D 2216. The test results are presented on Figures 1A through 4A.

Table 1A

GUIDELINES FOR CLASSIFICATION OF SOIL

Description of Relative Density for Granular Soil

<u>Relative Density</u>	<u>Standard Penetration Resistance (N-values) blows per foot</u>
very loose	0 - 4
loose	4 - 10
medium dense	10 - 30
dense	30 - 50
very dense	over 50

Description of Consistency for Fine-Grained (Cohesive) Soils

<u>Consistency</u>	<u>Standard Penetration Resistance (N-values) blows per foot</u>	<u>Torvane Undrained Shear Strength, tsf</u>
very soft	2	less than 0.125
soft	2 - 4	0.125 - 0.25
medium stiff	4 - 8	0.25 - 0.50
stiff	8 - 15	0.50 - 1.0
very stiff	15 - 30	1.0 - 2.0
hard	over 30	over 2.0

Sandy silt materials which exhibit general properties of granular soils are given relative density description.

<u>Grain-Size Classification</u>	<u>Modifier for Subclassification</u>	
	<u>Adjective</u>	<u>Percentage of Other Material In Total Sample</u>
<i>Boulders</i> 12 - 36 in.		
<i>Cobbles</i> 3 - 12 in.	clean	0 - 2
<i>Gravel</i> 1/4 - 3/4 in. (fine) 3/4 - 3 in. (coarse)	trace some	2 - 10 10 - 30
<i>Sand</i> No. 200 - No. 40 sieve (fine) No. 40 - No. 10 sieve (medium) No. 10 - No. 4 sieve (coarse)	sandy, silty, clayey, etc.	30 - 50
<i>Silt/Clay</i> - pass No. 200 sieve		

Table 2A

GUIDELINES FOR CLASSIFICATION OF ROCK

Relation of RQD and Rock Quality

<u>RQD (Rock Quality Designation), %</u>	<u>(Description of Rock Quality)</u>
0-25	Very poor
25-50	Poor
50-75	Fair
75-90	Good
90-100	Excellent

Descriptive Terminology for Joint Spacing

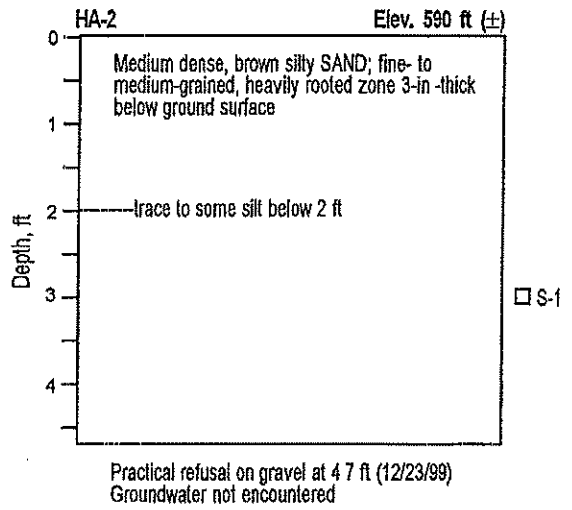
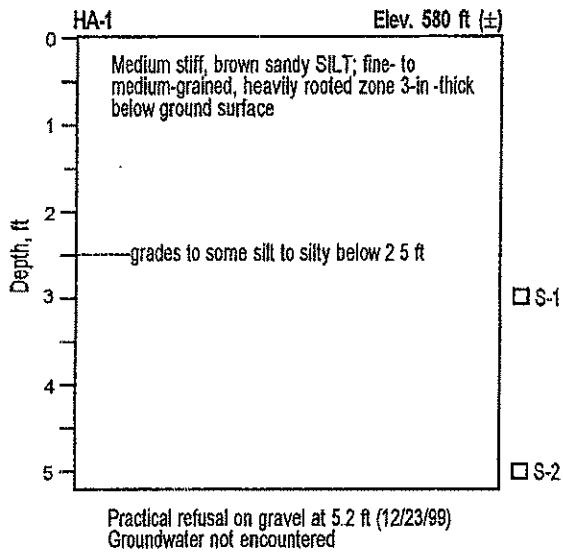
<u>Spacing of Joints</u>	<u>Descriptive Term</u>
< 2 in.	Very Close
2 in. - 1 ft	Close
1 ft - 3 ft	Moderately Close
3 ft - 10 ft	Wide
> 10 ft	Very Wide

Scale of Rock Hardness (After Panama Canal Company, 1959)

RH-1	Soft	Slightly harder than hard overburden soil, rock-like structure, but crumbles or breaks easily by hand
RH-1	Medium Soft	Cannot be crumbled between fingers, but can be easily picked with light blows of the geology hammer.
RH-2	Medium Hard	Can be picked with moderate blows of geology hammer. Can be cut with knife.
RH-3	Hard	Cannot be picked with geology hammer, but can be chipped with moderate blows of the hammer.
RH-4	Very Hard	Chips can be broken off only with heavy blows of the geology hammer

Terms Used to Describe the Degree of Weathering

<u>Descriptive Term</u>	<u>Defining Characteristics</u>
Fresh	Rock is unstained. May be fractured, but discontinuities are not stained.
Slight	Rock is unstained. Discontinuities show some staining on their surfaces, but discoloration does not penetrate rock mass.
Moderate	Discontinuity surfaces are stained. Discoloration may extend into rock along discontinuity surfaces.
High	Individual rock fragments are thoroughly stained and can be crushed with pressure hammer. Discontinuity surfaces are thoroughly stained and may be crumbly.
Severe	Rock appears to consist of gravel-sized fragments in a "soil" matrix. Individual fragments are thoroughly discolored and can be broken with fingers.



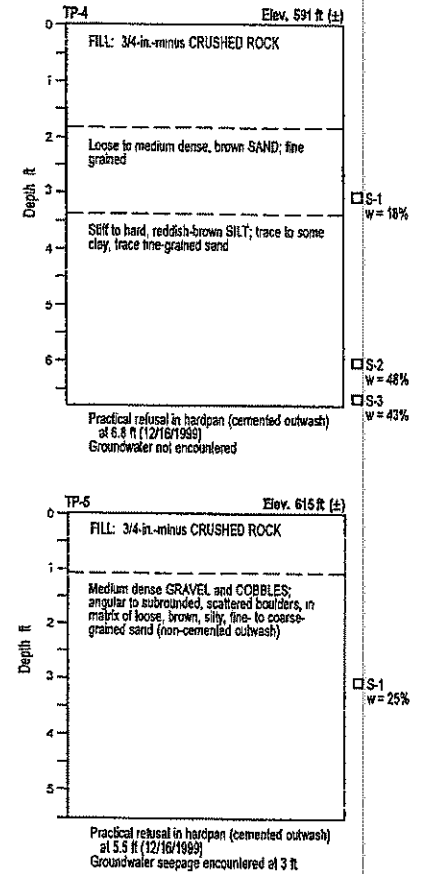
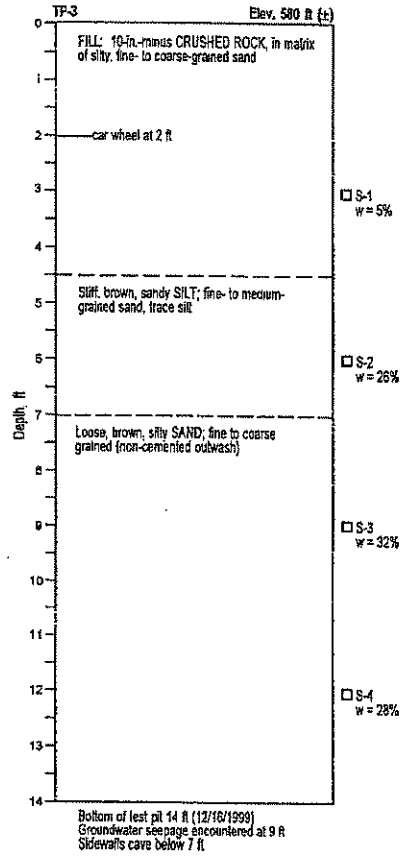
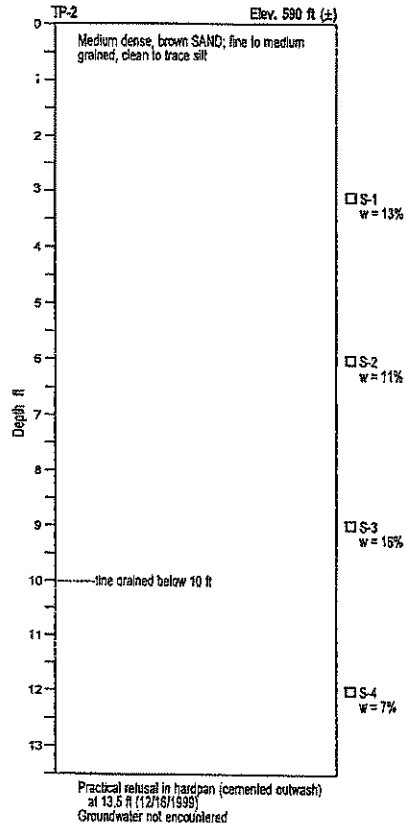
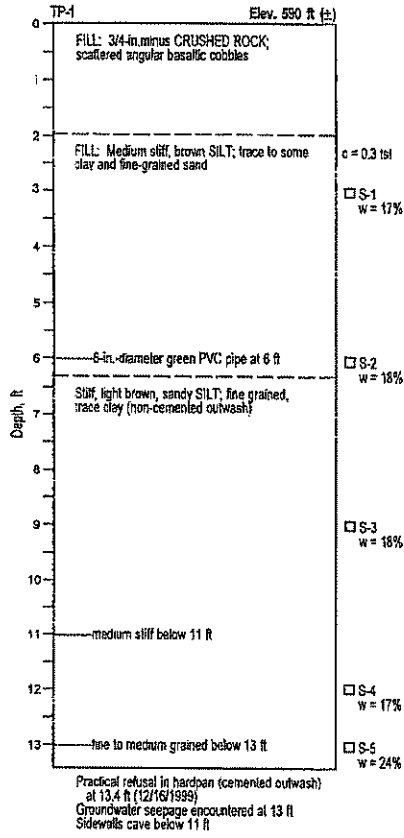
LEGEND

□ = GRAB SAMPLE

GROUND SURFACE ELEVATIONS FROM SITE PLAN, FIGURE 2



HAND AUGER LOGS



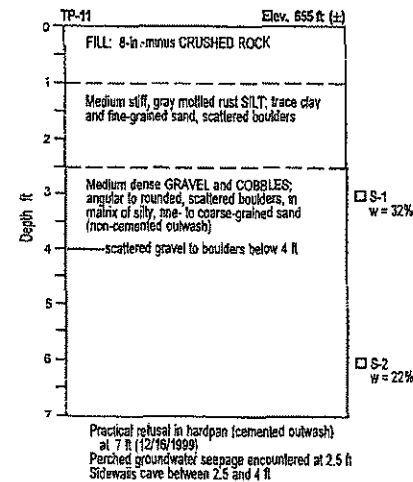
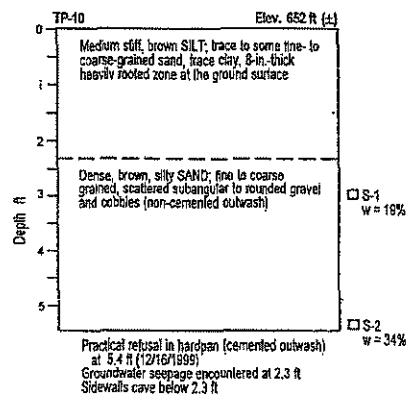
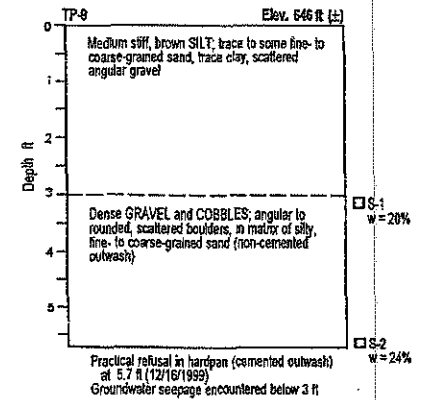
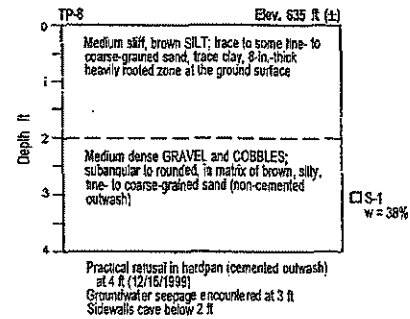
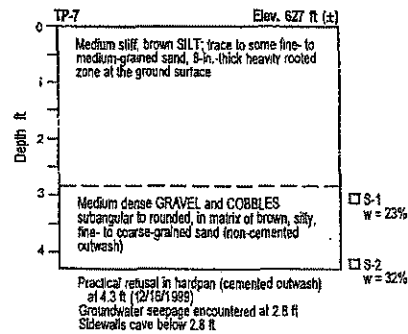
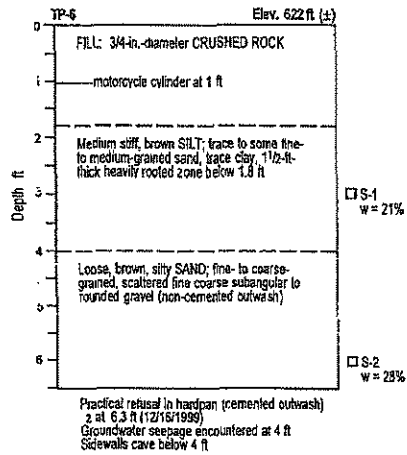
LEGEND

- = GRAB SAMPLE
- w = NATURAL MOISTURE CONTENT
- c = TORVANE SHEAR STRENGTH

GROUND SURFACE ELEVATIONS FROM TOPOGRAPHIC MAP PROVIDED BY HOOB RIVER COUNTY



TEST PIT LOGS



LEGEND

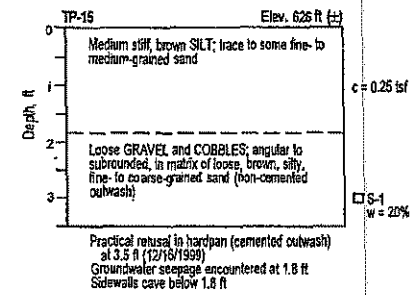
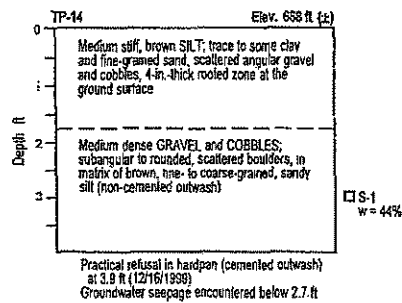
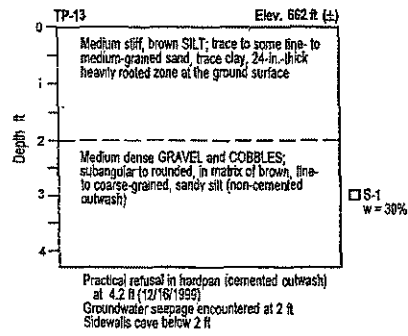
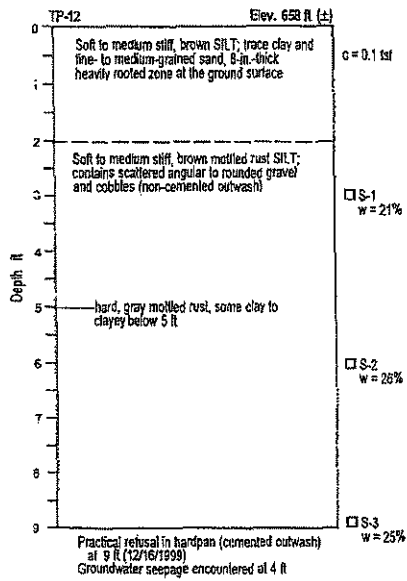
- = GRAB SAMPLE
- W = NATURAL MOISTURE CONTENT
- C = TORVANE SHEAR STRENGTH

GROUND SURFACE ELEVATIONS FROM TOPOGRAPHIC MAP PROVIDED BY HOOD RIVER COUNTY



TEST PIT LOGS

071



LEGEND

- = GRAB SAMPLE
- w = NATURAL MOISTURE CONTENT
- c = TORVANE SHEAR STRENGTH

GROUND SURFACE ELEVATIONS FROM TOPOGRAPHIC MAP PROVIDED BY HOOD RIVER COUNTY



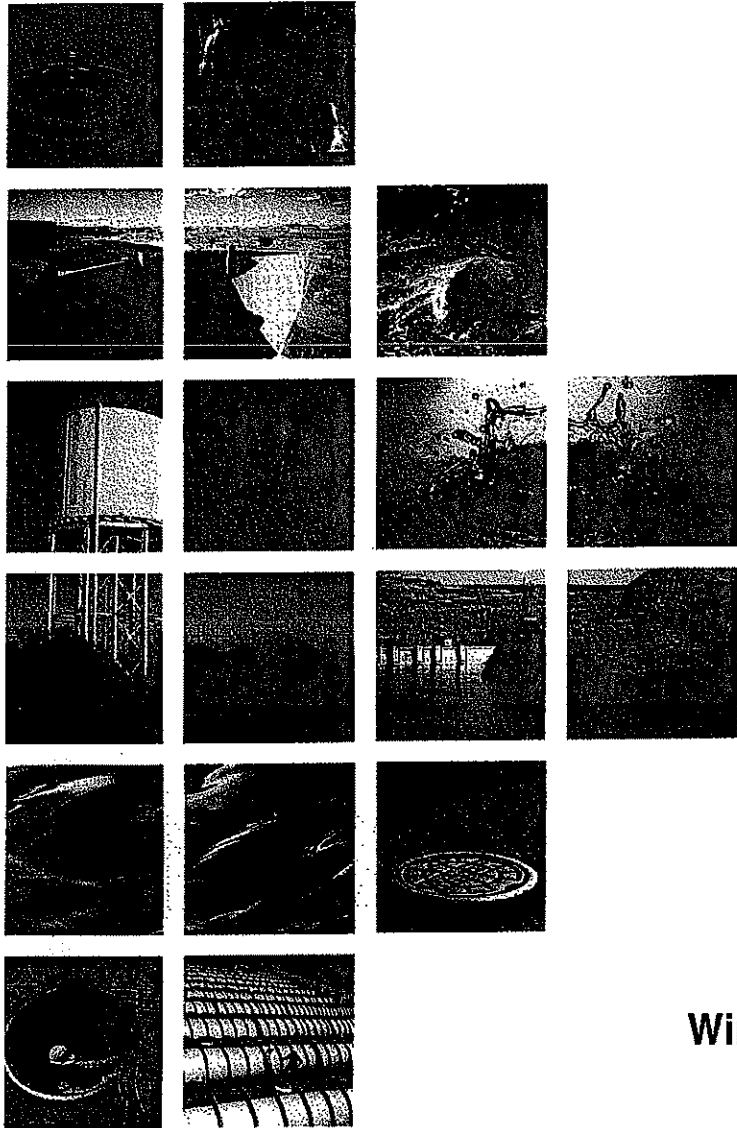
TEST PIT LOGS

**Agenda Item C, Action Item: Windmaster Corners Sewage Conveyances:
EQC Review and Approval of Proposed Facilities and Schedule.**

April 19, 2007 EQC Meeting

**Attachment 8. Facilities Plan: Hood River County, Windmaster Area
Sanitary Sewer**

Consultant Services



**Facilities Plan
Hood River County
Windmaster Area Sanitary Sewer**

Submitted to
Hood River County
Hood River, Oregon

Submitted by
BERGER/ABAM Engineers Inc.

RECEIVED

JAN 23 2007

Eastern Region - Bend

PAPOR-03-508

January 2007

Facilities Plan

Hood River County Windmaster Area Sanitary Sewer

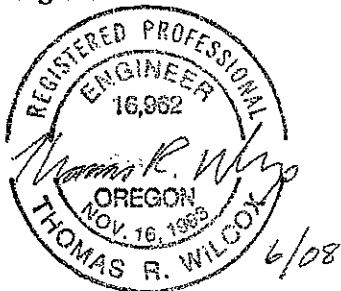
Submitted to

Hood River County
Hood River, Oregon

January 2007

Submitted by

BERGER/ABAM Engineers Inc.
700 NE Multnomah Street, Suite 900
Portland, Oregon 97232-4189



Thomas R. Wilcox, PE
BERGER/ABAM Engineers Inc.

Job No. PAPOR-03-508

FACILITIES PLAN

**Hood River County
Windmaster Area Sanitary Sewer**

TABLE OF CONTENTS

SECTION	PAGE
Executive Summary	1
introduction, Purpose and Need.....	2
Study Area Characteristics	3
Existing Wastewater Facilities	4
Wastewater Characteristics.....	4
Impact to Existing Sewer System.....	6
Basis of Planning	7
Development and Evaluation of Alternatives	7
Alternatives Comparison and Recommendation	9
Recommended Plan	10
Flow Design	11
Rate Study	11
Financial Status.....	12
Construction	12
Conclusion	12

LIST OF TABLES

Table 1	Average Flow	6
Table 2	Cost of Alternatives.....	9

APPENDICES

- APPENDIX A – CONSTRUCTION COST ESTIMATE**
- APPENDIX B – PRESENT WORTH TABLES**
- APPENDIX C – INDIVIDUAL SERVICES**
- APPENDIX D – ECONOMIC AND FINANCIAL ANALYSIS**
- APPENDIX E – LAND USE COMPATIBILITY STATEMENT**

**FACILITIES PLAN
WINDMASTER AREA SANITARY SEWER**

EXECUTIVE SUMMARY

This report contains a technical description of the proposed Windmaster Area sewer system, as well as information regarding its design and implementation. This report was developed to

- Identify the design alternatives that were evaluated and show that the selected design is environmentally sound and cost effective.
- Describe the proposed design in sufficient detail so that the approval of the principal regulatory and funding agencies can be obtained prior to the final design.
- Educate the public, community decision makers, state and federal funding agencies, and regulatory agencies.

The Windmaster Sewer Project includes an area of approximately 471 acres, designated as a health hazard area by Hood River County (County) in March 2002. There is a total area of approximately 195 acres and 99 connections, including residences and commercial/industrial properties, to address the health hazard. Within this area, a Phase I boundary was created for a sewer district, which includes approximately 88 occupied residential properties and some commercial/light industrial zoned properties.

The area was classified as a health hazard because of its failing septic systems, which cause leachate to percolate to the surface. The County Health Department tested water taken from roadside ditches, and fecal coliform was identified in them. This project solves the leachate problem by forming the Windmaster Area into a sewer district, and converting residences and commercial facilities from septic systems to a sewer that ties into the existing wastewater collection system for the City of Hood River (City)

The project area is approximately 5 miles southwest of downtown Hood River. The northern border of service is at Windmaster Corner, and southern border at the intersection of Tucker Road and Orchard Road. The inter-tie to the City's wastewater collection system occurs at a manhole along Indian Creek, to the northwest of Hood River Valley High School (high school) Service extends to the east from Windmaster Corner, along Tucker Road to the intersection with Dillon Road, encompassing parcels along Martin Road, Jearnette Road, and Dillon Road. Service also extends west from Windmaster Corner along Barrett Drive, approximately 1,250 feet All designated parcels along Tucker Road south of Windmaster Corner would connect, along with parcels along Airport Road, Schull Drive, and Orchard Road.

A flow analysis for the Windmaster system estimates 141,000 gallons/day (gpd) for present peak flow, and 348,000 gpd for future peak flow. Present flows were calculated based on the number of tax lots requiring service, while future flows were calculated based on the assumption of full land utilization and maximum subdivision allowed by existing zoning regulations. The City's

current wastewater collection system has adequate capacity to provide treatment for the District.

Selected from among several alternatives, the proposed design is composed primarily of gravity sewer mains and submains, with a grinder pump system along branch S2 of Tucker Road. Other alternatives considered include no action, a system composed exclusively of grinder pumps, and a septic tank effluent pumping (STEP) system. The possibility of constructing an on-site treatment system was also investigated. The proposed design represents the system chosen by the Windmaster Citizen Committee, which considered several factors, including environmental impact, capital costs, and maintenance. The total project cost is estimated at approximately \$2.2 million, which includes required public and private improvements.

Factors that influenced the design for the sewer system included customer proximity/density, site elevations, physical land features, and regulatory compliance. The overall layout, as shown on the attached plans, is such that customers within the health hazard boundary have access to the collection system. Grades in the study area are generally favorable to the use of a gravity system with the main line located in Tucker Road. The gravity main lines would be composed of 8-inch diameter, bell and spigot, PVC pipe. The 8-inch diameter pipe size represents the minimum diameter required by the Oregon Department of Environmental Quality (DEQ), and would provide adequate capacity for the projected use for full growth of the area. Pipe depth is primarily set at 6 feet of cover or greater, so that the majority of customers could connect with gravity services without having clearance issues from roadside ditches and utilities. Grinder pump systems use 1-1/4 inch service force lines to 2-1/2 inch PVC force mains.

Funding for planning and design was provided by a State and Tribal Assistance Grant administered by the Environmental Protection Agency (EPA). The County is seeking financial assistance in the form of grant money for approximately 50-percent of the cost, and the rest would be funded from low interest state or federal loans. The community voted against a general obligation bond in November 2004.

INTRODUCTION, PURPOSE AND NEED

Due to the presence of sewage in surface waters at various locations, the County declared the Windmaster Area as a health hazard in March 2002 in accordance with recommendations by a March 2001 Department of Environmental Quality study. The presence of sewage is attributable to the failing septic systems within the health hazard area. A shallow hardpan layer in the soil prevents proper distribution of the leachate, causing it to surface. The problem arises when leachate from several systems concentrates and percolates through the soil and daylight in low areas or roadside ditches. Existing septic systems would be demolished and the wastewater produced within the health hazard area would be routed to the City's wastewater treatment plant, substantially improving the ability of the land to properly absorb the remaining leachate in the soil.

Because of the shallow hardpan and financial circumstances of many residents, most of the existing septic systems are not operated and maintained properly. Raw sewage will continue to

surface within the health hazard area, posing a continuing threat to the residents and environment

At this time, the health hazard designation applied by the County Health Department limits the growth of the community. The failing septic systems show that the land cannot support the current residents and commercial properties. The proposed sewer system would eliminate the burden on the land and remove the growth constraint by collecting the sewage effluent and transporting it to the City's wastewater treatment system. As proposed, 88 occupied residences, 31 acres of commercial property, and 24.7 acres of light industrial property would be connected to the system. The capacity of the system is based on a 20-year range and accounts for full build-out of the area at 193 homes and an additional 11.1 acres of utilized commercial property.

STUDY AREA CHARACTERISTICS

The borders of the health hazard area encompass Sections 2, 3, 10, and 11; Township 2N; Range 10E. (See the preliminary plan set for a vicinity map and schematic of the Windmaster area.) The Windmaster area is primarily rural, with a mix of land uses including residential, exclusive farm use, commercial, light industrial, and airport development. There are approximately 238 residential and commercial lots, including a small craft airport. The average annual income for the City was listed as \$25,237 by the Bureau of Economic Analysis, 2004. Residents work primarily in the agriculture, food processing, forest products, and recreational industries. The population has increased at 1 to 2-percent per year in recent years.

The climate of this region is a modified marine climate, with mild, wet winters and warm, dry summers. Temperature ranges from an average low of 27 degrees in January, to an average high of 67 degrees in July. Precipitation averages 31.2 inches annually, with 23.6 inches of snow. The topography slopes gently toward the north and east in most areas. Soils primarily consist of a lacustrine deposit composed of brown, unconsolidated silty soils, with hardpan (cemented outwash) located at depths ranging from 3 to 14 feet

The floodplain classification is Zone C, which means that no base flood elevations or depths are shown within this zone. Flood insurance is not required. This determination is based on the Flood Insurance Rate Map (FIRM), for Hood River County, Oregon, Community Panel Number 4100860050B.

The Windmaster Corner Sanitary Sewer Flow Receiving Study (Bell Design Company, November 2003) assessed the project for impacts to land-use, floodplain, wetlands, cultural resources, biological resources, water quality, coastal resources, socio-economic, air quality, transportation, and noise.

Because the pipeline would be constructed in public right-of-way and developed high school property, there are no significant environmental impacts. None of the abundant farmland in the area—a considerable environmental resource—would be impacted. The pipeline would not cross any wetland areas; however, due to its proximity to Indian Creek, measures would be taken to prevent sediment transport into the waterway. An NPDES permit will be acquired and

an Erosion and Sediment Control (ESC) Plan would be submitted to DEQ. The contractor will be required to follow and maintain the ESC Plan throughout the duration of the project. Protected species such as the bald eagle and yellow-billed cuckoo were identified as potential inhabitants of this region; however, this project would not disturb critical habitat for these species.

Per approval from the County Planning office, this project is compatible with comprehensive plans for this area. See the signed Land Use Compatibility Statement in Appendix E.

Due to the partial obstruction of the roadway during construction, some traffic mitigation would be required. A traffic management plan would be developed for all roadway obstructions; the plan would be approved by the Oregon Department of Transportation (ODOT) for all obstructions on Tucker Road. To avoid additional delays, residents could choose to take alternate routes during construction.

EXISTING WASTEWATER FACILITIES

As described in the City's Sanitary Sewer Master Plan (Master Plan; May 2001), the existing system is composed of both new and antiquated lines. This master plan, which incorporates projected flows from the Windmaster Area, identifies capital improvements of \$6.8 million to replace major portions of pipe within the system. In addition, the plan identifies areas to expand the system to accommodate expected growth.

Existing wastewater collection in the Windmaster Area is composed of individual septic systems for each property. As previously discussed, the centralized sewer must be provided to eliminate the leachate from the soil within the health hazard area. The Windmaster District is close enough to the City's existing wastewater collection system that an inter-tie is a feasible alternative. The City has adequate capacity within its wastewater collection system to facilitate the collection of the District's calculated peak flows for full buildout conditions.

WASTEWATER CHARACTERISTICS

Present and future flows were calculated for the Windmaster Area sewer addition. Design factors used are based on values reported in the City's Master Plan.

- Per capita use – 100 gallons/day
- Light industrial use – 1,000 gallons/acre/day
- Commercial use – 1,700 gallons/acre/day
- Peaking factor – 2
- Infiltration/inflow – 200 gallons/acre/day

A per capita rate of 100 gallons per day was used for domestic flow, at the high end of the average in order to be conservative. A rate of 1,000 gallons per day per acre was used for light industrial zones, and 1,700 gallons per day per acre was used for commercial properties. A peaking factor of 2 was estimated for domestic flow. These flows and peaking factor are in accordance with the Master Plan. For this application, the 92-acre airport property was reduced

to 30 acres at industrial flow rates, based on subtracting non-waste producing areas such as runways, so that a more realistic flow could be achieved.

Infiltration and inflow are estimated at 200 gallons/acre/day. This factor may be low in relation to typical figures, but is justified by the circumstances of the study area. Due to the larger size lots, there is a low density of sewer pipe per acre. This means there are fewer pipes for groundwater to infiltrate. Joints and manholes will be tested after construction to ensure water tightness. Inflow is expected to be minimal, since the only connections to residences would be to domestic wastewater systems, not to roof or foundation drains.

For present domestic flow, 88 occupied residential lots were counted, composed of both Rural Residential (RR) lots and Exclusive Farm Use (EFU) lots. A design factor of 2.44 was used for total individuals per household. For commercial and light industrial areas, a total of 3.1 acres and 24.7 acres were accounted for, respectively. Although private sewer costs for the airport were not included in this project, flow projections include its contribution. Resulting average flows are 21,000 gpd for domestic use, and 30,000 gpd for commercial/industrial use. When added to 39,000 gpd of infiltration, total average flow comes to approximately 90,000 gpd (63 gpm). After applying peaking factors, the resulting flow is approximately 142,000 gpd (99 gpm).

Future flow was estimated based on a 20-year outlook. It was assumed that all lots within the health hazard boundary would be utilized and subdivided consistent with the maximum allowed by current zoning regulations according to the City's Comprehensive Land Use Plan. This analysis resulted in an additional 105 rural residential lots, and an additional 11.1 acres of utilized commercial or light industrial lots. Total domestic flow is approximately 58,000 gpd, and commercial/industrial flow is 69,000 gpd, for a total of 221,000 (154 gpm) with infiltration. Future peak flow, which is the primary design parameter, is estimated at 348,000 gpd (242 gpm).

Table 1 represents average present and future flows. Note that flows shown represent only those produced from the branch itself. The table does not account for infiltration or cumulative flow.

Table 1. Average Flow

Branch	Current Dom. Flow Phase I	Future Dom. Flow Entire Area	Current Com/Ind Flow - Phase I	Future Com/Ind Flow - Entire Area
	(gpd)	(gpd)	(gpd)	(gpd)
S1, Tucker Road N-S	6,588	12,444	8,774	47,561
S2, Tucker Road E-W	1,220	6,832	9,213	9,213
S2A, Martin Road	2,196	6,588	0	0
S2B, Jeanette Road	2,684	4,636	0	0
S2C, Dillon Road	2,928	4,880	0	0
S3, Barrett Drive	1,952	6,832	0	4,100
S4, Airport Drive	488	732	12,000	0
S5, Schull Drive	2,928	2,928	0	0
S6, Orchard Road	488	976	0	0
TOTAL AVERAGE FLOW	21,472	46,848	29,987	60,874

The full-flow capacity for the proposed 8-inch PVC submain is 489,600 gpd (340 gpm) at its minimum slope of 0.4-percent. Peak future flows of 348,000 gpd (242 gpm) are within this capacity. The mean full-flow velocity is 2.2 feet per second (ft/sec) at the minimum slope of 0.4-percent. This exceeds the minimum DEQ full-flow velocity requirement of 2 ft/sec.

In terms of wastewater characteristics, there is no indication that special design considerations will be necessary for unusual solids. If a large park or prison is constructed within the Windmaster Area, special treatment of unusual solids that may get into the system can be considered. Since this area is primarily residential, light commercial, and industrial, the design would be in accordance with DEQ guidance for a non-clog municipal system, able to pass 3-inch or smaller spheres. For residences with grinder pumps, solids would essentially be liquefied as they pass through the pump.

IMPACT TO EXISTING SEWER SYSTEM

The Engineer's Technical Report (Bell Design Company, November 8, 2003) assessed the impact of introducing flows from the Windmaster Area into the City's existing wastewater system and recommended measures to ensure the system is adequate for these flows. Preferred upgrades include a new pump station on the Indian Creek trunk line south of the substation located near Union and 10th Street. An 8-inch force main would run north to Union Avenue and then west along Union Avenue to a new sanitary sewer line in the intersection of Union Avenue and 12th Street. Other downstream improvements would also be considered. The City plans to use the \$1,700 connection charge collected from each owner to support the required improvements.

BASIS OF PLANNING

The design for the Windmaster Sewer Project must comply with requirements of both regulatory and funding agencies. These agencies include, but may not be limited to, DEQ and Rural Development/Rural Utilities Service (RD/RUS).

The cost estimate is broken down into public and private infrastructure. The public portion includes construction in the public right-of-way, while the private portion includes construction within the owner's property. A 15-percent contingency and 15-percent engineering and administrative support is added to the current working estimate (CWE) for the project. The CWE for the proposed project is approximately \$2.2 million. (See Appendix A for the construction cost estimate.)

DEVELOPMENT AND EVALUATION OF ALTERNATIVES

Alternatives considered for the design include a "do-nothing" alternative, providing a separate, local treatment system, and tying into the City's existing system with a centralized collection system.

The no action option is not a viable alternative, as it would not correct the health hazard. Because most families within the health hazard area qualify as low income families, placing the responsibility to correct failing septic systems on the individual owners is not feasible. Unfixed septic systems would continue to fail and cause effluent to surface. Repairing the septic systems would not address the regional problem of poorly draining soils, which directly contributes to septic system failure. The current health hazard designation is in place and must be addressed.

Providing a separate, local treatment system is the second option. A package treatment plant would treat the effluent to tertiary conditions and distribute it to a drainfield for infiltration. Generated sludge would be collected and delivered to the City's treatment plant for eventual disposal. This alternative was not considered feasible because of the poorly draining soils, tremendous initial capital expense to construct, and the ongoing operation and maintenance costs. In addition, no property large enough to accommodate this type of facility was found in the Windmaster Area. As well, the Windmaster Area is not incorporated and does not have a local tax base, or staff to operate and maintain such a facility.

Collecting the wastewater and tying into the City's existing wastewater system is the third option, which is the most feasible and would require the least amount of operation and maintenance. Within this option, three alternatives were explored by the Windmaster community: an all grinder pump system, a septic tank effluent pumping (STEP) system, and a gravity sewer system, which would use some grinder pumps. These three options are similar in location and environmental impact, and are very similar schematically and environmentally. Each option represents a centralized collection system that would serve the same properties within the boundary; each system would discharge to the City's wastewater collection system; each system would follow the same alignment. The physical differences are the diameter of the

pipe in the conveyance system, the initial collection technology at the service connections, and the operation and maintenance of the system

Table 2 below summarizes the costs for each option, which include public and private construction, contingency, administration fees, and operation and maintenance.

Grinder Pump System

An all grinder pump system is a small diameter pressure sewer system. The most important component of the system is the grinder pump unit. Each service connection would require a grinder pump. Each unit would consist of a vault with a submersible grinder pump. Effluent from the building would enter the vault via a gravity pipe. The pump would liquefy waste, which would be ejected into a small diameter pressure pipe. The pressure pipe would connect into a larger collector pressure pipe. (See detail sheet D03 in the preliminary plan set for a schematic of the service connection.)

Service lines would be 1-1/4 inch diameter, while collector lines would be 2 to 2-1/2 inch diameter. The pressure system would be connected to a manhole on Windmaster Corner. The wastewater would travel by gravity from the manhole at Windmaster Corner down Indian Creek Road and through the high school property, and tie into the City's existing system near Indian Creek. Design parameters for the system include criteria for force mains, primarily to ensure that the effluent moves quickly enough to reach a cleaning velocity of 3 ft/sec, yet not more than 5 ft/sec to reduce surge potential.

As previously stated, the environmental impacts of all of the systems that tie into the City's wastewater collection system are similar; land requirements for the public portion of the sewer are the same for each system since they follow similar alignments within public right-of-way. Depending on how the Sewer District regulations are formed, the individual property owner may need to grant an easement for maintenance of the grinder pump unit. Alternatively, the property owner could be made responsible for maintaining the grinder pump.

As compared to the gravity system, pipe depth of the grinder pump system would be shallower on average, meaning lower construction costs and less risk of running into obstructions.

The primary advantage of the grinder pump system is its lower capital cost due to the small diameter collection system, which saves money on piping and excavation. Overall, routine maintenance of the grinder pump system is minimal, and may include an occasional service call for a pump blockage.

The disadvantages of the grinder pump system include its higher operation and maintenance costs due to the mechanical components of the system. Additionally, since grinder pumps require electricity, power costs per household would be higher. They are also subject to shut downs. The lifecycle of a grinder pump is also limited to 10 to 20 years. Finally, additional connections to the system are more limited due to the hydraulic sensitivity of tapping into the force mains.

Septic Tank Effluent Pump System (STEP)

The STEP system, another pressure sewer option, was also considered. This system is similar to the grinder pump system in terms of the collection system: it would use a small diameter (2- to 3-inch) pressurized collection system that would deliver effluent to a manhole at Windmaster Corner. The wastewater would travel by gravity down Indian Creek Road and through the high school property, and tie into the City's existing system along Indian Creek. The waste from the building would discharge into a septic tank and then a pump installed near the tank would eject the liquid waste to the collector system. The solids would remain within the septic tank for eventual removal.

The existing septic tanks would need to be decommissioned because many are failing, not sized appropriately, may leak, or are falling into disrepair. The advantages and disadvantages of the STEP system are similar to those of the grinder pump system. An advantage of the STEP system is that it may have a decreased risk of pump blockages than the grinder pump system, and slightly less power consumption. A disadvantage of the STEP system is that the septic tank would require pumping out every 2 to 3 years, which may be a cost strain for lower-income residents. Design criteria, environmental impacts, land requirements, and construction considerations are similar to the grinder pump system.

Gravity System

See description under "Recommended Plan" on the following page for a detailed description of the Gravity system. In general, the advantages of the gravity system include much lower maintenance and no power costs for those with a gravity service connection. Additionally, those with gravity connections would not be affected by power failure. The primary disadvantage is higher capital cost.

Alternatives Comparison and Recommendation

The three alternatives would have similar environmental impacts. Table 2 summarizes costs, including public and private construction, contingency/ administration, and operations/ maintenance of each option. See Appendix B for the Present Worth Tables, calculated for a 20-year term. Although the gravity system would have higher initial capital costs, that system is recommended due to its lower long-term maintenance costs and greater reliability.

Table 2. Cost of Alternatives

Alternative	Description	Public Infra.	Private Infra.	Contingency and Admin	Total Capital Cost	Annual O/M Cost	Avg Annual Present Worth Cost
1	Gravity	\$1,330,000	\$460,000	\$400,000	\$2,190,000	\$15,760	\$131,400
2	Grinder Pump	\$890,000	\$710,000	\$270,000	\$1,870,000	\$42,170	\$131,750
3	STEP System	\$890,000	\$800,000	\$270,000	\$1,960,000	\$50,750	\$142,550

Recommended Plan

Design factors considered for the project included customer density, site elevations, physical land features, and regulatory compliance. The system, as shown on the attached plans, is laid out so that customers within the health hazard and district area have access to the collection system. Several residences within the Phase I boundary are within 100 feet of a collector line; however, more than 12 connections are over 300 feet from a collector line. Overall, site elevations are conducive to the use of a gravity system. To avoid the need for a lift station, grinder pumps are indicated for those residences that are unsuitable for gravity service because of their location or elevation relative to the sewer mains.

The primary main running south to north along Tucker Road, toward the City's inter-tie, has an average downward slope of 0.9-percent, with a range of 0.4-percent up to 2.3-percent. Branches tying in from the west of Tucker Road, including Barret Drive (S3) and Schull Drive (S5), slope towards Tucker Road at grades ranging from 0.4-percent up to 5-percent, allowing for gravity flow. Roads on the east side of Tucker Road, including Tucker Road itself (S2), Airport Road (S4), and Orchard Road (S6), slope east, away from Tucker Road. For the shorter branches on Airport Drive and Orchard Road, a gravity main was still possible. For connections along Tucker Road (S2), a grinder pump system is identified to avoid the need for costly construction of parallel gravity mains, lift station, and force mains.

The specific alignment of the sewer pipe was determined based on the most economical placement within the given parameters of each branch of the system. Tucker Road is a state highway, therefore, ODOI regulates how the roadway can be impacted by the installation. For both ODOI and County roads, potential conflicts with other utilities were considered, along with the condition of the roadside shoulder and ditch, and the ability of equipment to operate in a given space. The overall intent of the proposed alignment is to reduce cost by reducing pavement replacement where possible. In addition, the placement of manhole covers was considered so that they are not located in wheel paths or at unstable locations.

Branch S1, Tucker Road (north to south), is aligned at mid-lane on the east side, requiring full lane replacement per ODOT requirements. At a point just north of Schull Drive extending down to Portland Drive, the alignment moves to the paved shoulder (beyond the fog line) because of utility conflicts. Branch S3, Barrett Drive, is aligned at mid-lane on the south side due to utility conflicts and a steep ditch. Full lane replacement is required on Barrett Drive. Branch S5, Airport Road, is aligned in the paved shoulder on the south side and will require pavement restoration on the shoulder only. Branch S6, Orchard Road, is aligned down the center of the roadway and will require full roadway pavement restoration. Branches S5 and S6 are aligned to avoid utility conflicts.

Branch S2, Tucker Road (east to west), is also aligned in the paved shoulder beyond the fog line. Pavement replacement in this area is required for the shoulder only, since the travel lane is not disturbed. Branches S2A Martin Road, S2B Jeannette Road, and S2C Dillion Road, are all aligned 2 feet outside of the edge of pavement and will not require pavement restoration. Branch S4, Schull Drive, is located 5 feet from the edge of pavement, near the shallow roadside

ditch. Each of the S2 branches are small diameter force main piping, allowing for greater flexibility in placement due to reduced depth, smaller trenches, and the ability to bend the pipe horizontally. The S2 and S4 branches will not require pavement restoration as the trenches will be outside of the paved areas of the public right-of-way.

The depth of the gravity mains has 6 feet of cover or greater so that the majority of residences can connect via gravity through a 4-inch service line. In some cases, depths were increased to accommodate additional homes located farther from the main. The 6-foot minimum depth also allows for clearance beneath roadside ditches and existing utilities. Grinder pumps are used for residences that cannot connect via a gravity service. The grinder pumps will be located within 5 to 15 feet of the house exterior, connecting to the existing 4-inch pipe from the house, and discharging to 1-1/4 inch PVC pipe to the submain in the public right-of-way. For homes with difficult access issues, where feasible, the grinder pump could be moved to the public right-of-way.

Gravity sewer piping is composed of 8-inch, bell and spigot, ASTM D-3034 Polyvinyl Chloride (PVC) pipe for gravity lines, 2 to 2-1/2 inch PVC force mains, and 1-1/4 inch HDPE force mains for individual grinder pump systems. Since PVC is a plastic material, corrosion is not a factor. PVC is also the most economical piping as compared to ductile iron, steel, or HDPE. Trench design, road-cut repairs, and surface restoration will conform to APWA specifications. All disturbed areas will be restored to original condition. Erosion control measures will be in accordance with Best Management Practices (BMPs), as recommended by DEQ.

All residents, whether they have a gravity or grinder pump connection, will be required to decommission their septic tanks. This normally involves pumping the tank, breaking up the top and bottom slab, and filling it with drain rock. (See Appendix C for a list of the individual services required in the system.)

FLOW DESIGN

The proposed design is in accordance with OAR 52, which outlines minimum criteria for sewer pipelines and lift stations. This system is designed to be self-cleaning to the extent possible; however, due to the minimum pipe diameter of 8 inches and few dwellings in some areas, velocities will average under 2 ft/sec for most gravity branches. Periodic evaluations during operation are recommended to gauge future cleaning and flushing requirements. Force mains for the grinder pump system will be hydraulically sized to ensure that a minimum cleaning velocity of 3 ft/sec is maintained during operation. Consultation with a grinder pump manufacturer will be required for proper calibration and sizing of the system.

RATE STUDY

Total cost for this system for each resident per month is the sum of the city sewer rate, the debt service on loans, and the administrative fee charged by the sewer district. The total cost to construct the project will be approximately \$2.2 million, which would be funded by grants and low-interest loans. Approximately \$1.1 million (50-percent) of the project is expected to be funded by grants and the other 50-percent is expected from low-interest loans.

After construction of the sewer system is complete, some additional residents or commercial entities are expected to request connection to the system. These new connections will be required to pay the City's sewer connection fee, which is currently \$1,700 as well as a District connection fee, which is estimated around \$5,000. Some residents may not be required to connect initially due to financial hardship. The City will use the \$1,700 connection fee collected to improve the major sewer pump station and lines that will be affected by the district's sewage flowing through the City's system. The district will use the \$5,000 connection fee collected from the residents to defray future capital costs for repair and replacement.

Once connected, each resident will pay the City's monthly sewer charge for operational costs of the City's system. Each resident will also be required to pay the district's monthly sewer charge for operational costs. The district, or the individual customer, will be responsible for maintaining grinder pumps and sewer laterals. The residential sewer rate will vary based on several different factors such as final construction cost, interest rate, the costs of operations for the district, and its growth rate. (See Appendix D for the Economic and Financial Analysis, which includes the proposed rate schedule.)

Financial Status

The the District is a new organization, there are no pre-existing financial conditions. The debt repayment plan and required reserves for the loans required for construction of the Windmaster Area sewer are listed in Appendix D, Economic and Financial Analysis.

CONSTRUCTION

Water-tightness of the system will be ensured through use of specified materials, field inspection, and testing of pipes and manholes after construction is completed.

Because the pipe alignment will require some work within roadways and driveways, traffic control will be required during construction. A traffic management plan will be developed with a minimum of one lane open whenever possible. If one lane cannot remain open, a detour must be in place to ensure minimal impact to the traveling public and residents within the district. Construction of service lines to residences may temporarily obstruct driveways and disturb landscaped areas. Crews will be required to notify residents of disruption and will work expediently when a driveway is disrupted. Any disturbed landscaping areas will be repaired to their original condition.

At this time, there are many variables that can affect when construction will occur. There are remaining legalities for District formation that are occurring, and the financial application has yet to be submitted. The financial application process is expected to take approximately six months. During this period, the final design can be initiated, and submitted for approval by the USDA Rural Development and DEQ. Permit approvals from DEQ will also be required for stormwater pollution prevention (NPDES permit) and must include ESC Plans. ODOT must approve the traffic control plan for work within the Tucker Road right-of-way.

CONCLUSION

Construction of the proposed gravity sewer system for the Windmaster Area would be a great benefit, eliminating a serious health hazard and removing growth constraints. The greatest perceived risk to the project at this stage is cost. At this time, 99 connections are estimated for Phase I; however, some of these residents may not be required to connect due to hardship. Decreasing the number of connections would increase the financial burden on those customers who are required to connect.

Another variable is the cost of construction materials and the bidding environment. Construction costs have been rising at 7- to 8-percent per year, with some material costs rising at greater rates. It is also difficult to quantify how a bidder will perceive soil conditions in terms of excavating within the hardpan. An estimated contingency amount has been added to the cost estimate to account for some risk.

**Facilities Plan
Windmaster Area Sanitary Sewer
Hood River County, Hood River, Oregon**

**Appendix A
Construction Cost Estimate**

Gravity System

GENERAL REQUIREMENTS					
Description	Qty	Units	Unit Cost	Total Cost	Assumptions
Mobilization / Demobilization	1	LS	\$56,078	\$56,078	5% of base cost
Traffic Control	100	DAYS	\$575	\$57,500	2-person crew full time
Erosion Control	19986	LF	\$2	\$39,972	
QC/Testing/Commissioning	1	LS	\$60,000	\$60,000	
			Subtotal	\$213,550	

PUBLIC INFRASTRUCTURE					
Description	Qty	Units	Unit Cost	Total Cost	Assumptions
8" PVC Gravity Line - Hwy full lane	3319	LF	\$107	\$355,133	6' T-cut, 3" grind to ctr, AC overlay
8" PVC Gravity Line - Hwy fog line cut	688	LF	\$61	\$41,968	Demo/replace 4' AC, 6" depth
8" PVC Gravity Line - Cty full lane	1250	LF	\$92	\$115,000	6' T-cut, 2" grind and overlay
8" PVC Gravity Line - Cty half lane	389	LF	\$65	\$25,285	6' wide roadcut, 6" AC replaced
8" PVC Gravity Line - Offroad	4393	LF	\$45	\$197,685	8' deep, 4' wide trench, native fill
2.5" PVC - Paved shoulder	3414	LF	\$24	\$81,936	3' wide cut, 6" AC
2" PVC Force Main - Offroad	2970	LF	\$15	\$44,550	2' trench, 4' deep
48" Manholes, 6' depth	25	EA	\$2,100	\$52,500	48" wide, 6' depth
Stubouts to R/W	99	EA	\$1,500	\$148,500	Avg 30lf per svc, 4' w AC cut
Manhole Extensions	60	LF	\$150	\$9,000	\$150 per vertical foot
Miscellaneous Restoration	1	LS	\$50,000	\$50,000	signs, ditches, landscaping
Valves/cleanouts	1	LS	\$3,000	\$3,000	
Crossings	1	LS	\$30,000	\$30,000	
			Subtotal	\$1,121,557	

COST SUMMARY

Subtotal for Public Infrastructure	\$1,121,557
Subtotal for General Requirements	\$213,550
Construction Subtotal	\$1,335,107
Permitting (5%)	\$66,755
Technical Services and Admin (15%)	\$200,266
Contingency (10%)	\$133,511
PROJECT TOTAL	\$1,735,639

PRIVATE INFRASTRUCTURE					
Description	Qty	Units	Unit Cost	Total Cost	Assumptions
Grinder Pump Units and Lateral	37	EA	\$4,500	\$166,500	
4" Gravity Laterals	62	EA	\$1,000	\$62,000	75 Ft lateral to R/W
Decommission Septic Tanks	99	EA	\$600	\$59,400	
City Connection Fee	99	EA	\$1,700	\$168,300	
			Subtotal	\$456,200	

Grinder Pump System

GENERAL REQUIREMENTS					
Description	Qty	Units	Unit Cost	Total Cost	Assumptions
Mobilization / Demobilization	1	LS	\$34,922	\$34,922	5% of base cost
Traffic Control	100	DAYS	\$575	\$57,500	2-person crew full time
Erosion Control	19986	LF	\$2	\$39,972	
QC/Testing/Commissioning	1	LS	\$60,000	\$60,000	
			Subtotal	\$192,394	

PUBLIC INFRASTRUCTURE					
Description	Qty	Units	Unit Cost	Total Cost	Assumptions
8" PVC Gravity Line - Offroad	3319	LF	\$55	\$182,545	8' deep, 4' wide trench, native fill
48" Manholes	14	EA	\$2,100	\$29,400	
3" PVC - Paved shoulder	3270	LF	\$26	\$85,020	3' wide cut, 6" AC
3" PVC - offroad	835	LF	\$18	\$15,030	2' trench, 4' deep
2.5" PVC - Paved shoulder	2300	LF	\$25	\$57,500	3' wide cut, 6" AC
2" PVC Force Main - Paved shoulder	3344	LF	\$23	\$76,912	3' wide cut, 6" AC
2" PVC Force Main - Offroad	4335	LF	\$15	\$65,025	2' trench, 4' deep
1.5" PVC stubouts to R/W	99	EA	\$1,000	\$99,000	Avg 30lf per svc, 3' w AC cut
Miscellaneous Restoration	1	LS	\$50,000	\$50,000	signs, ditches, landscaping
Valves/Cleanouts	1	LS	\$8,000	\$8,000	
Crossings	1	LS	\$30,000	\$30,000	
			Subtotal	\$698,432	

COST SUMMARY

Subtotal for Public Infrastructure	\$698,432
Subtotal for General Requirements	\$192,394

Construction Subtotal	\$890,826
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Permitting (5%)	\$44,541
Technical Services and Admin (15%)	\$133,624
Contingency (10%)	\$89,083

PROJECT TOTAL	\$1,158,073
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PRIVATE INFRASTRUCTURE					
Description	Qty	Units	Unit Cost	Total Cost	Assumptions
Grinder Pump Units and Lateral	99	EA	\$4,900	\$485,100	75 Ft Lateral
Decommission Septic Tanks	99	EA	\$600	\$59,400	
City Connection Fee	99	EA	\$1,700	\$168,300	
			Subtotal	\$712,800	

STEP System

GENERAL REQUIREMENTS					
Description	Qty	Units	Unit Cost	Total Cost	Assumptions
Mobilization / Demobilization	1	LS	\$34,922	\$34,922	5% of base cost
Traffic Control	100	DAYS	\$575	\$57,500	2-person crew full time
Erosion Control	19986	LF	\$2	\$38,973	
QC/Testing/Commissioning	1	LS	\$60,000	\$60,000	
			Subtotal	\$191,394	

PUBLIC INFRASTRUCTURE					
Description	Qty	Units	Unit Cost	Total Cost	Assumptions
8" Gravity PVC - Offroad	3319	LF	\$55	\$182,545	4' deep, 3' wide trench, native fill
48" Manholes	14	EA	\$2,100	\$29,400	
3" PVC - Paved shoulder	3270	LF	\$26	\$85,020	3' wide cut, 6" AC
3" PVC - offroad	835	LF	\$18	\$15,030	2' trench, 4' deep
2.5" PVC - Paved shoulder	2300	LF	\$25	\$57,500	3' wide cut, 6" AC
2" PVC - Paved shoulder	3344	LF	\$23	\$76,912	3' wide cut, 6" AC
2" PVC - Offroad	4335	LF	\$15	\$65,025	2' trench, 4' deep
1.5" PVC stubouts to R/W	99	EA	\$1,000	\$99,000	Avg 30lf per svc, 3' w AC cut
Miscellaneous Restoration	1	LS	\$50,000	\$50,000	signs, ditches, landscaping
Valves/Cleanouts	1	LS	\$8,000	\$8,000	
Crossings	1	LS	\$30,000	\$30,000	
			Subtotal	\$698,432	

COST SUMMARY	
Subtotal for General Requirements	\$191,394
Subtotal for Public Infrastructure	\$698,432
Construction Subtotal	\$889,826
Permitting (5%)	\$44,491
Technical Services and Admin (15%)	\$133,474
Contingency (10%)	\$88,983
PROJECT TOTAL	\$1,156,774

PRIVATE INFRASTRUCTURE					
Description	Qty	Units	Unit Cost	Total Cost	Assumptions
STEP Units and Lateral	99	EA	\$5,800	\$574,200	Provided by ORENCO
Decommission Septic Tanks	99	EA	\$600	\$59,400	
City Connection Fee	99	EA	\$1,700	\$168,300	
			Subtotal	\$801,900	

**Facilities Plan
Windmaster Area Sanitary Sewer
Hood River County, Hood River, Oregon**

**Appendix B
Present Worth Tables**

COMPARATIVE ANNUAL COSTS AND PRESENT WORTH ANALYSIS

1/8/2007

Option 1 - Gravity and Grinder Pump System

Capital Cost of Money (Interest Rate)	8%
Inflation Rate	3%
Analysis Period (yrs)	20

Year	Capital Improvements	Debt Service	System O&M	Electrical Power	Total Annual Cost	Present Worth
2007	\$2,190,000	\$223,052	\$12,210	\$3,552	\$238,814	\$238,814
2008	\$0	\$223,052	\$12,576	\$3,659	\$239,286	\$221,562
2009	\$0	\$223,052	\$12,954	\$3,768	\$239,773	\$205,569
2010	\$0	\$223,052	\$13,342	\$3,881	\$240,275	\$190,741
2011	\$0	\$223,052	\$13,742	\$3,998	\$240,792	\$176,992
2012	\$0	\$223,052	\$14,155	\$4,118	\$241,324	\$164,245
2013	\$0	\$223,052	\$14,579	\$4,241	\$241,872	\$152,425
2014	\$0	\$223,052	\$15,017	\$4,369	\$242,437	\$141,464
2015	\$0	\$223,052	\$15,467	\$4,500	\$243,018	\$131,300
2016	\$0	\$223,052	\$15,931	\$4,635	\$243,617	\$121,874
2017	\$0	\$223,052	\$16,409	\$4,774	\$244,234	\$113,133
2018	\$0	\$223,052	\$16,901	\$4,917	\$244,870	\$105,026
2019	\$0	\$223,052	\$17,409	\$5,064	\$245,524	\$97,506
2020	\$0	\$223,052	\$17,931	\$5,216	\$246,199	\$90,532
2021	\$0	\$223,052	\$18,469	\$5,373	\$246,893	\$84,063
2022	\$0	\$223,052	\$19,023	\$5,534	\$247,608	\$78,062
2023	\$0	\$223,052	\$19,593	\$5,700	\$248,345	\$72,495
2024	\$0	\$223,052	\$20,181	\$5,871	\$249,104	\$67,330
2025	\$0	\$223,052	\$20,787	\$6,047	\$249,885	\$62,538
2026	\$0	\$223,052	\$21,410	\$6,228	\$250,690	\$58,093
2027	\$0	\$223,052	\$22,053	\$6,415	\$251,519	\$53,968

TOTAL COST	\$5,136,080	\$2,627,729
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Avg Annualized Present Worth Cost	\$131,386
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COMPARATIVE ANNUAL COSTS AND PRESENT WORTH ANALYSIS

1/8/2007

Option 2 : Grinder Pump Only System

Capital Cost of Money (Interest Rate)	8%
Inflation Rate	3%
Analysis Period (yrs)	20

Year	Capital Improvements	Debt Service	System O&M	Electrical Power	Total Annual Cost	Present Worth
2007	\$1,870,000	\$190,460	\$32,670	\$9,504	\$232,634	\$232,634
2008	\$0	\$190,460	\$33,650	\$9,789	\$233,899	\$216,574
2009	\$0	\$190,460	\$34,660	\$10,083	\$235,202	\$201,649
2010	\$0	\$190,460	\$35,699	\$10,385	\$236,544	\$187,779
2011	\$0	\$190,460	\$36,770	\$10,697	\$237,927	\$174,886
2012	\$0	\$190,460	\$37,873	\$11,018	\$239,351	\$162,902
2013	\$0	\$190,460	\$39,010	\$11,348	\$240,817	\$151,760
2014	\$0	\$190,460	\$40,180	\$11,689	\$242,328	\$141,401
2015	\$0	\$190,460	\$41,385	\$12,039	\$243,884	\$131,768
2016	\$0	\$190,460	\$42,627	\$12,401	\$245,487	\$122,809
2017	\$0	\$190,460	\$43,906	\$12,773	\$247,138	\$114,478
2018	\$0	\$190,460	\$45,223	\$13,156	\$248,838	\$106,728
2019	\$0	\$190,460	\$46,580	\$13,550	\$250,590	\$99,518
2020	\$0	\$190,460	\$47,977	\$13,957	\$252,393	\$92,810
2021	\$0	\$190,460	\$49,416	\$14,376	\$254,251	\$86,568
2022	\$0	\$190,460	\$50,899	\$14,807	\$256,165	\$80,759
2023	\$0	\$190,460	\$52,426	\$15,251	\$258,136	\$75,353
2024	\$0	\$190,460	\$53,999	\$15,709	\$260,167	\$70,320
2025	\$0	\$190,460	\$55,618	\$16,180	\$262,258	\$65,635
2026	\$0	\$190,460	\$57,287	\$16,665	\$264,412	\$61,273
2027	\$0	\$190,460	\$59,006	\$17,165	\$266,630	\$57,210

TOTAL COST		\$5,209,052	\$2,634,812
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Avg Annualized Present Worth Cost		\$131,741
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COMPARATIVE ANNUAL COSTS AND PRESENT WORTH ANALYSIS

1/8/2007

Option 3 : STEP System (Septic Tank Effluent Pump System)

Capital Cost of Money (Interest Rate)	8%
Inflation Rate	3%
Analysis Period (yrs)	20

Year	Capital Improvements	Debt Service	System O&M	Electrical Power	Total Annual Cost	Present Worth
2007	\$1,960,000	\$199,626	\$41,250	\$9,504	\$250,380	\$250,380
2008	\$0	\$199,626	\$42,488	\$9,789	\$251,903	\$233,244
2009	\$0	\$199,626	\$43,762	\$10,083	\$253,471	\$217,312
2010	\$0	\$199,626	\$45,075	\$10,385	\$255,086	\$202,498
2011	\$0	\$199,626	\$46,427	\$10,697	\$256,750	\$188,722
2012	\$0	\$199,626	\$47,820	\$11,018	\$258,464	\$175,910
2013	\$0	\$199,626	\$49,255	\$11,348	\$260,229	\$163,993
2014	\$0	\$199,626	\$50,732	\$11,689	\$262,047	\$152,907
2015	\$0	\$199,626	\$52,254	\$12,039	\$263,920	\$142,593
2016	\$0	\$199,626	\$53,822	\$12,401	\$265,848	\$132,996
2017	\$0	\$199,626	\$55,437	\$12,773	\$267,835	\$124,065
2018	\$0	\$199,626	\$57,100	\$13,156	\$269,881	\$115,753
2019	\$0	\$199,626	\$58,813	\$13,550	\$271,989	\$108,016
2020	\$0	\$199,626	\$60,577	\$13,957	\$274,160	\$100,814
2021	\$0	\$199,626	\$62,394	\$14,376	\$276,396	\$94,108
2022	\$0	\$199,626	\$64,266	\$14,807	\$278,699	\$87,863
2023	\$0	\$199,626	\$66,194	\$15,251	\$281,071	\$82,048
2024	\$0	\$199,626	\$68,180	\$15,709	\$283,515	\$76,631
2025	\$0	\$199,626	\$70,225	\$16,180	\$286,031	\$71,585
2026	\$0	\$199,626	\$72,332	\$16,665	\$288,623	\$66,883
2027	\$0	\$199,626	\$74,502	\$17,165	\$291,293	\$62,502

TOTAL COST		\$5,647,592	\$2,850,823
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Avg Annualized Present Worth Cost		\$142,541
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**Facilities Plan
Windmaster Area Sanitary Sewer
Hood River County, Hood River, Oregon**

**Appendix C
Individual Services**

Individual Services

COUNT SUMMARY					
Branch	Count of Gravity	Count of Pumped	Count of Services	Count W/o Service	Lot Count
S1, Tucker Rd N-S	23	11	34	3	37
S2, Tucker Rd E-W	0	7	7	1	8
S2A, Martin Rd	0	10	10	2	12
S2B, Jeanette Rd	0	11	11	1	12
S2C, Dillon Rd	0	11	11	1	12
S3, Barrett Dr	8	0	8	1	9
S5, Airport Dr	0	5	5	0	5
S6, Schull Dr	11	0	11	0	11
S7, Orchard Rd	2	0	2	0	2
SUMMARY	Total Count Gravity	Total Count Pumped	Total Count Services	Total Count W/o Svc	Total Lots
	44	55	99	9	108

Individual Services - S1 (Tucker Road North to South)

Lot Number	Branch	Zoning	Acres	Service?	Type	LF Service	Comments
West side of Tucker Rd							
100	S1	RC	0.53	Yes	Gravity	75	
200	S1	RC	0.54	Yes	Gravity	75	
300	S1	RC	0.16	Yes	Gravity	75	
400	S1	RC	0.28	Yes	Gravity	75	
500	S1	RC	0.07	Yes	Gravity	75	
1600	S1	RR 2.5	2.77	No	-	-	vacant lot
1601	S1	RR 2.5	2.91	Yes	Pumped	400	
1700	S1	RR 2.5	0.41	Yes	Gravity	150	
1800	S1	RR 2.5	0.36	Yes	Gravity	75	
1900	S1	RR 2.5	6.34	Yes	Pumped	400	
2000	S1	RR 2.5	0.47	Yes	Gravity	150	
2100	S1	RR 2.5	6.05	Yes	Pumped	1300	
4200	S1	RR 2.5	6.35	Yes	Gravity	200	
4500	S1	RR 2.5	3.08	Yes	Pumped	300	
4501	S1	RR 2.5	3.27	Yes	Pumped	300	
4900	S1	EFU	0.24	Yes	Gravity	75	
5000	S1	EFU	0.17	Yes	Gravity	75	
102	S1	EFU	4.85	Yes	Pumped	250	
200	S1	EFU	0.86	Yes	Pumped	250	
300	S1	EFU	7.94	Yes	Gravity	150	
500	S1	RR 2.5	0.4	Yes	Gravity	150	
502	S1	RR 2.5	2.5	Yes	Pumped	500	
3102	S1	RR 2.5	2.5	Yes	Pumped	900	Acreeage is incorrect on map
3300	S1	RR 2.5	0.9	Yes	Pumped	200	
East side of Tucker Rd							
1900	S1	C-1	0.64	Yes	Gravity	75	
1700	S1	C-1/M-2	8.11	No	N/A	N/A	Theater out of service
2100	S1	EFU	1.88	Yes	Gravity	75	
2200	S1	EFU	1.13	Yes	Gravity	75	
2300	S1	EFU	1.2	Yes	Gravity	50	
2400	S1	EFU	0.86	Yes	Gravity	50	
2503	S1	Airport Dev	15.12	Yes	Pumped	450	
2501	S1	Airport Dev	17.95	No	N/A	-	
400	S1	EFU	0.35	Yes	Gravity	100	
500	S1	EFU	0.3	Yes	Gravity	75	
600	S1	EFU	0.65	Yes	Gravity	150	
700	S1	EFU	4.77	Yes	Gravity	200	
800	S1	EFU	1	Yes	Gravity	75	

107.91

Count of Gravity Services	23
Count of Pumped Services	11
Count of all Services	34
Count of Lots without Service	3
Total Count of Lots	37

Total Length of Gravity Lines	2325
Total Length of PFM Lines	5250

Individual Services - S2 (Tucker Road West to East)

Line Number	Branch	Zoning	Area	Service?	Service Type	Flow (GPD)	Comments
1699	S2	RR-1/C-1	0.89	Yes	Pumped	150	
1400	S2	RR-1	2.77	Yes	Pumped	250	
1500	S2	RR-1	3.21	N	N/A	N/A	No visible residence
1699	S2	Airport Dev	17.6	Yes	Pumped	1500	
1691	S2	Not shown	0.97	Yes	Pumped	200	
1602	S2	Not shown	1	Yes	Pumped	190	
500	S2	RR-1	1.02	Yes	Pumped	175	
602	S2	RR-1	0.9	Yes	Pumped	75	

Count of Gravity Services	0
Count of Pumped Services	7
Count of All Services	7
Count of Lots Without Service	1
Total Count of Lots	8

Total Gravity Services	0
Total Pumped Services	2450
Average Pumped Service	350
Total Services	2450
Average Service	350

Total Length of Gravity Lines	0
Total Length of Pumps	2450

S2B - Martin Road	Branch	Zoning	Area	Service?	Service Type	Flow (GPD)	Comments
2100	S2B	RR-1	1.5	Yes	Pumped	100	Residence unclear
2102	S2B	RR-1	1	No	N/A	N/A	No visible residence
2103	S2B	RR-1	1	No	N/A	N/A	No visible residence
2201	S2B	RR-1	0.48	Yes	Pumped	75	
2000	S2B	RR-1	1.18	Yes	Pumped	100	
2300	S2B	RR-1	0.43	Yes	Pumped	75	
1900	S2B	RR-1	0.45	Yes	Pumped	300	
2400	S2B	RR-1	0.44	Yes	Pumped	75	
1800	S2B	RR-1	4	Yes	Pumped	300	
2501	S2B	RR-1	0.44	Yes	Pumped	75	
2500	S2B	RR-1	0.87	Yes	Pumped	75	
1200	S2B	RR-1	6.46	Yes	Pumped	100	

Count of Gravity Services	0
Count of Pumped Services	10
Count of All Services	10
Count of Lots Without Service	2
Total Count of Lots	12

Total Length of Gravity Lines	0
Total Length of Pumps	1,175

S2B - Jeanette Road	Branch	Zoning	Area	Service?	Service Type	Flow (GPD)	Comments
601	S2C	RR-1	4.26	Yes	Pumped	100	
604	S2C	RR-1	1.3	Yes	Pumped	400	
700	S2C	RR-1	0.4	Yes	Pumped	100	
800	S2C	RR-1	0.27	Yes	Pumped	100	
900	S2C	RR-1	0.33	Yes	Pumped	100	
1000	S2C	RR-1	0.34	Yes	Pumped	100	
1100	S2C	RR-1	0.71	Yes	Pumped	100	
1200	S2C	EFU	0.25	Yes	Pumped	100	
1300	S2C	EFU	2.59	Yes	Pumped	600	
1603	S2C	Airport Dev	5.65	No	N/A	N/A	No visible facilities
603	S2C	RR-1	0.94	No	Pumped	100	
600	S2C	RR-1	1.14	Yes	Pumped	100	

Count of Gravity Services	0
Count of Pumped Services	11
Count of All Services	11
Count of Lots Without Service	1
Total Count of Lots	12

Total Length of Gravity Lines	0
Total Length of Pumps	1600

S2D - Ditch Road	Branch	Zoning	Area	Service?	Service Type	Flow (GPD)	Comments
1700	S2D	RR-1	3	Yes	Pumped	300	
1300	S2D	RR-1	0.93	Yes	Pumped	200	
1308	S2D	RR-1	0.96	Yes	Pumped	100	
1303	S2D	RR-1	0.62	Yes	Pumped	100	
1304	S2D	RR-1	0.62	Yes	Pumped	100	
1302	S2D	RR-1	0.62	Yes	Pumped	100	
1305	S2D	RR-1	0.61	Yes	Pumped	100	
1307	S2D	RR-1	0.61	Yes	Pumped	100	
1306	S2D	RR-1	0.61	Yes	Pumped	100	
1501	S2D	RR-1	Unknown	Yes	Pumped	100	
1600	S2D	RR-1	0.25	Yes	Pumped	100	

Count of Gravity Services	0
Count of Pumped Services	11
Count of All Services	11
Count of Lots Without Service	1
Total Count of Lots	12

Total Length of Gravity Lines	0
Total Length of Pumps	1400

Individual Services - S3 (Barrett Drive East to West)

Lot Number	Branch	Zoning	Acres	Service?	Type	LF Service	Comments
<i>South Side of Barrett Dr.</i>							
600	S3	RR 2.5	0.95	Yes	Gravity	150	
700	S3	RR 2.5	0.95	Yes	Gravity	150	
800	S3	RR 2.5	2.39	Yes	Gravity	300	
900	S3	RR 2.5	2.81	Yes	Gravity	100	
1000	S3	RR 2.5	1.96	Yes	Gravity	500	
1100	S3	RR 2.5	0.4	No	-	-	No visible residence
1200	S3	RR 2.5	1	Yes	Gravity	500	
1300	S3	RR 2.5	1.86	Yes	Gravity	300	
1400	S3	RR 2.5	1.96	No	N/A	N/A	No visible residence
1500	S3	RR 2.5	2.85	Yes	Gravity	400	

17.13

Count of Gravity Services	8
Count of Pumped Services	0
Count of All Services	8
Count of Lots without Service	1
Total Count of Lots	9

Total Length of Gravity Lines	2400
Total Length of RM Lines	0

Individual Services - S5 (Airport Drive)

Lot Number	Branch	Zoning	Acres	Service?	Type	LF Service	Comments
2600	S5	Airport Dev	36	Yes	Pumped	300	Counted as 3 services
200	S1	EFU	0.35	Yes	Pumped	100	
300	S1	EFU	8.07	Yes	Pumped	150	

44 42

Count of Gravity Services	0
Count of Pumped Services	5
Count of All Services	5
Count of Lots without Service	0
Total Count of Lots	5

Total Length of Gravity Lines	0
Total Length of P Lines	550

Individual Services - S6 (Schull Drive)

Lot Number	Branch	Zoning	Acres	Service?	Type	FT Service	Comments
North side of Schull Dr.							
401	S6	RR-2.5	0.98	Yes	Gravity	75	
405	S6	RR-2.5	0.82	Yes	Gravity	75	
406	S6	RR-2.5	0.85	Yes	Gravity	100	
412	S6	RR-1	0.85	Yes	Gravity	75	
402	S6	RR-1	0.86	Yes	Gravity	150	
403	S6	RR-1	2.11	Yes	Gravity	75	
South side of Schull Dr.							
400	S6	RR-1	1.92	No	N/A	-	Vacant Lot
410	S6	RR-1	0.9	Yes	Gravity	100	
411	S6	RR-1	0.91	Yes	Gravity	75	
404	S6	RR-2.5	0.93	Yes	Gravity	150	
409	S6	RR-2.5	0.95	Yes	Gravity	200	
408	S6	RR-2.5	1.28	Yes	Gravity	100	

13.36

Count of Gravity Services	11
Count of Pumped Services	0
Count of All Services	11
Count of Lots without Service	0
Total Count of Lots	11

Total Length of Gravity Lines	1175
Total Length of FM Lines	0

Individual Services - S7 (Orchard Road)

Lot Number	Branch	Zoning	Acres	Service?	Type	LF Service	Comments
1000	S7	EFU	0.39	Yes	Gravity	75	
1001	S7	EFU	0.38	Yes	Gravity	75	

0.77

Count of Gravity Services	2
Count of Pumped Services	0
Count of all Services	2
Count of Lots without Service	0
Total Count of Lots	2

Total Length of Gravity Lines	150
Total Length of P-M Lines	0

**Facilities Plan
Windmaster Area Sanitary Sewer
Hood River County, Hood River, Oregon**

**Appendix D
Economic and Financial Analysis**

ECONOMIC & FINANCIAL ANALYSIS

1409 FRANKLIN ST. SUITE 201/VANCOUVER,
WASHINGTON/98660
(306)823-1700

Public Meetings
July 19, 2004
August 17, 2004
October 13, 2004
June 27, 2006

Hood River County
Windmaster Sanitary District

Preliminary Financing Assumptions and Projections

Overview

The following 4 tables summarize the assumptions and project the monthly user costs for the proposed Windmaster Corner Sanitary District

Table 1 Sources and Uses of Financing	3
Table 2 Forecast Assumptions and Sewer Rates	4
Table 3 Breakdown of sewer rate by cost category	5
Table 4 Cash Flow Forecast, Pro Forma	6

Table 1 shows the total cost of the project will be approximately \$2.2 million. Approximately \$1.1 million (50%) is expected to be grants and \$1.1 million in low-cost, low-interest loans. The \$250,000 loan from the state of Oregon has a 20 year term; the \$772,000 loan from the federal government (USDA Rural Development) has a 30 year term. The interest rates are estimated and higher than the current market. The annual cost of repaying the loans (annual debt service) will depend on the current market conditions at the time the loans are actually made to the District

Table 2 shows the forecast assumptions for operating costs and are based on the following agreement with the City of Hood River. Each connection will pay the City's sewer SDC which is currently \$1,700 per housing unit or equivalent. The City will use this money to improve the major sewer pump station and sewer lines that will be affected by the District's sewage flowing from the District through the City's sewer lines to the wastewater treatment plant. Each residential connection (or business) will pay the monthly sewer charge to Hood River for its ownership and operating costs for the treatment plant and collection lines, monthly sewer rate billing, accounting, and management. Also, the City will maintain the District's main gravity sewer lines. The District or individual customers will be responsible for the grinder pumps and sewer laterals that connect to the gravity sewer line.

Table 2 also shows the District will have new connections after construction of the sewer system—a very modest 1 to 6 new customers per year. The District will charge each new connection the City's SDC (currently \$1,700) plus the District's SDC which we estimate will be approximately \$5,000 per residence or residential equivalent for commercial developments. The District will retain the \$5,000 per connection to defray the future cost of capital repair and replacement. This money cannot be used for recurring operating costs or to pay Hood River's monthly sewer charges. The residential sewer rate has to increase to at least \$118 per month by the end of the second year of operations. The sewer rate may be more or less depending on several factors that cannot be forecast with accuracy: the actual final construction cost, the interest rate, the actual cost of operations for the District, and growth all affect the final rate.

Table 3 shows a break down of the sewer rate by cost category.

Table 4 is a cash flow forecast.

Table 1 Sources and Uses of Financing

**Hood River County
Windmaster Sanitary District**

Uses of Funds	
Construction Costs	
Final Design & CM	
Construction	1,415,757
Const. Management	\$202,251
Land & ROW (Hood River Sewer SDC)*	212,500
Contingency	134,834
Total Construction	\$1,965,342
Other Costs	
District formation	\$50,000
Financing & Analysis	30,000
Interest Interim Fin., Net	105,630
Total Other Costs	\$185,630
Total Costs	\$2,150,972
Sources of Funds	
State Grant	250,000
State Loan	250,000
STAG Grant	423,859
County Contribution	-
Net before USDA	923,859
USDA Grant	\$455,000
USDA Bonds	772,113
	\$1,227,113
Total Sources	2,150,972

Notes: *Includes City of Hood River SDC for 100 properties plus 25% for inflation.

Table 2 Forecast Assumptions and Sewer Rates

	2007	2008	2009	2010	2011	2012
	2008	2009	2010	2011	2012	2013
Return on investments	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
Growth Rate	1.00%	1.00%	2.00%	5.00%	1.00%	1.00%
Connections	98	99	101	106	107	108
WWTP charge per connection	\$35.00	\$37.00	\$39.00	\$41.00	\$43.00	\$45.00
System Development Charge (District)			\$5,000	\$5,000	\$5,000	\$5,000
Inflation						
Personnel		5.00%	5.00%	5.00%	5.00%	5.00%
Materials & Services		7.00%	7.00%	7.00%	7.00%	7.00%
Capital		5.00%	5.00%	5.00%	5.00%	5.00%
Rate Increases		130.0%	10.0%	5.0%	0.0%	0.0%
Sewer Rate, per EDU	\$45.00	\$104.00	\$114.00	\$120.00	\$120.00	\$120.00

Table 3 Breakdown of sewer rate by cost category

	2007	2008	2009	2010	2011	2012
	2008	2009	2010	2011	2012	2013
Hood River Wastewater Treatment Charges	\$35.00	\$37.00	\$39.00	\$41.00	\$43.00	\$45.00
District Operating Costs	14.46	21.04	21.45	21.47	21.98	22.55
Debt Service on Loans						
State of Oregon		17.55	17.17	16.32	16.13	15.94
USDA Rural Development		27.62	40.27	38.37	38.01	37.66
Total Rate Requirement	\$49.46	\$103.21	\$117.89	\$117.16	\$119.12	\$121.15

Note: The actual proposed rates are levelized to produce the necessary revenues.

Table 4 Cash Flow Forecast, Pro Forma

	2007	2008	2009	2010	2011	2012
	2008	2009	2010	2011	2012	2013
CASH FLOWS FROM OPERATING ACTIVITIES:						
Operating Receipts						
Sale of sewer services	26,460	61,780	138,200	152,600	154,100	155,500
Fees and charges						
Miscellaneous						
Total Operating Receipts	26,460	61,780	138,200	152,600	154,100	155,500
Operating Expenditures						
Personal services	15,000	15,000	15,800	16,600	17,400	18,300
Payments to Hood River, WWTP	0	22,000	47,300	52,200	55,200	58,300
Materials and services	2,000	10,000	10,200	10,710	10,817	10,925
Total Operating Expenditures	17,000	47,000	73,300	79,510	83,417	87,525
Net Cash Provided by Operating Activities	9,460	14,780	64,900	73,090	70,683	67,975
CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES:						
Capital expenditures	(982,671)	(982,671)				
District formation & fin. Planning	(80,000)					
Systems development fees			10,000	25,000	5,000	5,000
IF & Bond proceeds, RUS	772,113	772,113				
Repayment of IF		(772,113)				
Loan proceeds, Oregon	250,000					
Closing Costs	(40,000)					
SIAG Grant	423,859					
Grant, RUS		455,000				
Grant, State		250,000				
Principal Payments	0	(8,131)	(20,647)	(21,628)	(22,655)	(23,731)
Interest Expense	(32,815)	(45,530)	(48,962)	(47,937)	(46,863)	(45,738)
Tax Receipts	0					
Net Cash Provided by (Used in) Capital and Related Financing Activities	310,486	(331,333)	(59,609)	(44,565)	(64,518)	(64,469)
CASH FLOWS FROM INVESTING ACTIVITIES:						
Interest income on investments	2,420	2,480	170	420	690	780
Net Increase (Decrease) in Cash & Cash Equivalents	322,366	(314,073)	5,461	28,945	6,855	4,286
CASH AND CASH EQUIVALENTS - July 1	0	322,366	8,293	13,754	42,699	49,554
CASH AND CASH EQUIVALENTS - June 30	322,366	8,293	13,754	42,699	49,554	53,840

**Facilities Plan
Windmaster Area Sanitary Sewer
Hood River County, Hood River, Oregon**

**Appendix E
Land Use Compatibility Statement**

Department of Environmental Quality
LAND USE COMPATIBILITY STATEMENT (LUCS)



WHAT IS A LUCS? The Land Use Compatibility Statement is the process used by the DEQ to determine whether DEQ permits and other approvals affecting land use are consistent with local government comprehensive plans.

WHY IS A LUCS REQUIRED? Oregon law requires state agency activities that impact land use be consistent with local comprehensive plans. DEQ Oregon Administrative Rules (OAR) Chapter 340, Division 18 identifies agency activities or programs that significantly affect land use and must have a process for determining local plan consistency.

WHEN IS A LUCS REQUIRED? A LUCS is required for nearly all DEQ permits and certain approvals of plans or related activities that affect land use. These permits and activities are listed on p 2 of this form. A single LUCS can be used if more than one DEQ permit/approval is being applied for concurrently.

A permit modification requires a LUCS when any of the following applies:

1. Physical expansion on the property or proposed use of additional land;
2. A significant increase in discharges to water;
3. A relocation of an outfall outside of the source property; or
4. Any physical change or change of operation of an air pollutant source that results in a net significant emission rate increase as defined in OAR 340-200-0020.

A permit renewal requires a LUCS if one has not previously been submitted, or if any of the above modification factors apply.

HOW TO COMPLETE A LUCS:

Step	Who Does It	What Happens
1	Applicant	Completes Section 1 of the LUCS and submits it to the appropriate city or county planning office.
2	City or County Planning Office	Completes Section 2 of the LUCS by determining if the activity or use meets all local planning requirements, and returns to the applicant the signed and dated LUCS form <u>with findings of fact for any local reviews or necessary planning approvals</u>
3	Applicant	Includes the completed LUCS with <u>findings of fact</u> with the DEQ permit or approval submittal application to the DEQ.

WHERE TO GET HELP: For questions about the LUCS process, contact the DEQ staff responsible for processing the permit/approval. Headquarters and regional staff may be reached using DEQ's toll-free telephone number 1-800-452-4011. For general questions, please contact DEQ land use staff listed at: www.deq.state.or.us/pubs/permithandbook/lucs.htm.

CULTURAL RESOURCES PROTECTION LAWS: Applicants involved in ground-disturbing activities should be aware of federal and state cultural resources protection laws. *ORS 338.920 prohibits the excavation, injury, destruction, or alteration of an archeological site or object, or removal of archeological objects from public and private lands without an archeological permit issued by the State Historic Preservation Office. 16 USC 470, Section 106, National Historic Preservation Act of 1966 requires a federal agency, prior to any undertaking, to take into account the effect of the undertaking that is included on or eligible for inclusion in the National Register. For further information, contact the State Historic Preservation Office at 503-378-4168, extension 232.*

SECTION 1 TO BE COMPLETED BY APPLICANT

<p>A. Applicant Name: <u>BERGER/ABAM Engineers</u> Contact Name: <u>Dan Johnston, PE</u> Mailing Address: <u>700 NE Multnomah Ste 900</u> City, State, Zip: <u>Portland, OR 97232</u> Telephone: <u>(503) 731-6041</u> Fax Account No.: <u>911422812</u></p>	<p>B. Project Name: <u>Windmaster Area Sanitary Sewer</u> Physical Address: <u>Windmaster Corner</u> City, State, Zip: <u>Hood River County, OR 97031</u> Tax Lot No.: <u>See Plans</u> Township: <u>2N</u> Range: <u>10E</u> Section: <u>5</u> Latitude: <u>45° 40' 41.9"</u> Longitude: <u>-121° 52' 39.1"</u></p>
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For latitude/longitude, use the DEQ Location Finder at <http://deq12.deq.state.or.us/website/findloc>

C. Describe the type of business or facility and services or products provided:
Design of community sanitary sewer system.

SECTION 1 TO BE COMPLETED BY APPLICANT (Continued)

Applicant Name: Dan Johnston, PE, BERGER/ABAM Engineers

Project Name: Windmaster Area Sanitary Sewer

D. Check the type of DEQ permit(s) or approval(s) being applied for at this time.

<input type="checkbox"/> Air Notice of Construction <input type="checkbox"/> Air Discharge Permit (excludes portable facility permits) <input type="checkbox"/> Title V Air Permit <input type="checkbox"/> Parking/Traffic Circulation Plan <input type="checkbox"/> Air Indirect Source Permit <input type="checkbox"/> Solid Waste Disposal Permit <input type="checkbox"/> Solid Waste Treatment Permit <input type="checkbox"/> Solid Waste Compost Registration or Permit <input type="checkbox"/> Solid Waste Letter Authorization Permit <input type="checkbox"/> Solid Waste Material Recovery Facility Permit <input type="checkbox"/> Solid Waste Transfer Station Permit <input type="checkbox"/> Solid Waste Tire Storage Permit	<input type="checkbox"/> Pollution Control Bond Request <input type="checkbox"/> Hazardous Waste Treatment, Storage, or Disposal Permit <input type="checkbox"/> Clean Water State Revolving Fund Loan Request <input checked="" type="checkbox"/> Wastewater/Sewer Construction Plan/Specifications (includes review of plan changes that require use of new land) <input type="checkbox"/> Water Quality NPDES Individual Permit <input type="checkbox"/> Water Quality WPCF Individual Permit (for onsite construction-installation permits use DEQ's Onsite LUCS form) <input type="checkbox"/> Water Quality NPDES Stormwater General Permit (1200-A 1200-C, 1200-CA 1200-COLS, and 1200-Z) <input type="checkbox"/> Water Quality General Permit (all general permits, except 600, 700-PM, 1700-A, and 1700-B when they are mobile.) <input type="checkbox"/> Water Quality 401 Certification for federal permit
--	--

E This application is for: permit renewal new permit permit modification other: _____

SECTION 2 TO BE COMPLETED BY CITY OR COUNTY PLANNING OFFICIAL

Please Note: A LUCS approval cannot be accepted by DEQ until all local requirements have been met. Written findings of fact for all local decisions addressed under Item C below are required. Written findings for an activity or use addressed by the acknowledged comprehensive plan in accordance with OAR 660-031-0020 may simply reference the specific plan policies, criteria, or standards that were relied upon in rendering the decision and indicate why the decision is justified based on the plan policies, criteria, or standards.

A. The facility proposal is located: inside city limits inside UGB outside UGB

B. Name of the city or county that has land use jurisdiction (the legal entity responsible for land use decisions for the subject property or land use): _____

C. Does the activity or use comply with all applicable local land use requirements (as required by OAR Chapter 660, Division 31)?

YES, you must complete below or attach findings to support the affirmative compliance decision

i) Relevant specific plan policies, criteria, or standards:

see attached information, including Court Ordinance #240, Article 47

ii) Provide the reasons for the decision: (Health Hazard Overlay Zone) of Court Zoning Ordinance

NO, you must complete below or attach findings for noncompliance, and identify requirements the applicant must comply with before LUCS compatibility can be determined

i) Relevant specific plan policies, criteria, or standards:

ii) Provide the reasons for the decision:

D Planning Official Signature: Eric D. Walker Title: Principal Planner
 Print Name: ERIC D. WALKER Telephone No.: (541) 387-6840 Date: 8/29/06

E. If necessary, depending upon city/county agreement on jurisdiction outside city limits but within UGB:

Planning Official Signature: _____ Title: _____
 Print Name: _____ Telephone No: _____ Date: _____

Article 47 --HEALTH HAZARD OVERLAY ZONE (HH)
(Adopted May 6, 2002)

47.10 Purpose

The purpose of the Health Hazard Overlay Zone is to ensure that sewer systems installed in areas declared as public health hazards, as a result of a sewage problem, are designed and constructed to the minimum size necessary to serve the health hazard area and are restricted to those uses specifically allowed under the current Oregon Administrative Rules regarding Goal 11.

47.20 Applicability

This article applies to all areas declared as public health hazards in accordance with OAR 660-011-0000 and which a sewer system is installed or extended in order to mitigate that health hazard. This article becomes effective for a given health hazard area upon approval of the sewer system.

47.30 System Design

Any sewer system required to mitigate a documented health hazard shall be designed and constructed so that its capacity does not exceed the minimum necessary to serve the area within the boundaries described under OAR 660-011-0060, except for urban reserve areas as provided under OAR 660-021-0040(6).

47.40 Permitted uses

All uses which were permitted at the time the sewer system was approved for the base zones located within the health hazard area continue to be permitted uses unless the proposed use conflicts with section 47.50 of this article. Additionally, pre-existing, non-conforming uses will not be affected by the establishment of a health hazard area.

47.50 Limitations on use

- a. Restrictions on sewer service: In accordance with OAR 660-011-0060(4)(b)(D), the sewer system which has been installed to abate the health hazard shall not serve any user/use that was not an existing use or an allowed use under the pre-sewer system zoning as reflected in the Background Document portion of the comprehensive plan.
- b. Rural use: In accordance with OAR 660-011-0060(4)(b)(E), the sewer system which has been installed to abate the health hazard shall not serve any use that is not rural in nature consistent with Goal 14 and OAR 660-004-0018 unless an exception has been taken under Goal 14 or the parcel/lot is within an Unincorporated Community or unless the use was in existence at the effective date of this ordinance
- c. Residential use: In accordance with OAR 660-011-0060(4)(b)(F), the sewer system which has been installed to abate the health hazard shall not be used as an authority for allowing a higher density of residential development than would have been authorized without the presence of the sewer system.

HOOD RIVER COUNTY

ORDINANCE NO. 240

AN ORDINANCE AMENDING THE HOOD RIVER COUNTY COMPREHENSIVE LAND USE PLAN, POLICY DOCUMENT AND BACKGROUND REPORT, AND PLAN MAP AND ZONING ORDINANCE, IN COMPLIANCE WITH STATE WIDE PLANNING GOAL NUMBER 11 AND OAR 660-DIVISION 11, AND REPEALING ALL PRIOR ORDINANCES AND MAPS INCONSISTENT WITH SUCH AMENDMENTS.

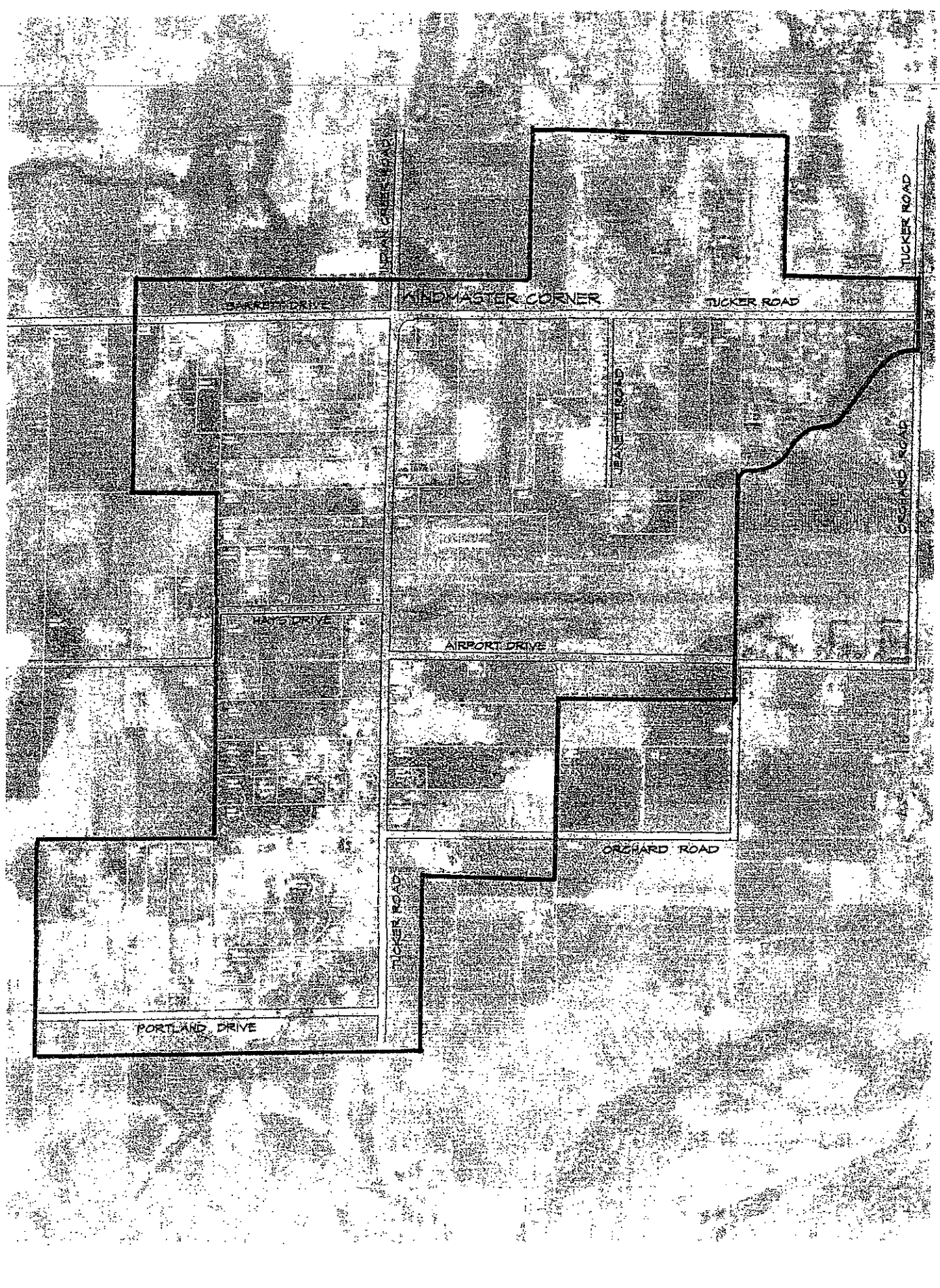
WHEREAS, Statewide Planning Goal 11 – Public Facilities Planning does not allow the installation or extension of a sewer system outside an Urban Growth Area unless the provisions of OAR 660 – Division 11 are met with regard to the existence of a health hazard caused by the presence of sewage; and

WHEREAS, the Hood River County Planning Commission held public workshops and hearings on Jan 10, 2001, February 28, 2001, February 27, 2002 and April 10, 2002; and the Commission, through the hearings process, received written and oral testimony and Staff reports, and incorporated numerous changes into the proposed amendments, based on the testimony and material received; and

WHEREAS, the Hood River County Board of County Commissioners held public workshops and hearings on December 18, 2000 and May 6, 2002 and, after reviewing the written and oral testimony and Staff and Planning Commission recommendations, voted to adopt the Planning Commission's findings with regard to the existence of a health hazard area caused by sewage, the boundary map and description of the health hazard area and the requisite amendments to the Comprehensive Plan, Plan Map and Zoning Ordinances and Background Report necessary to implement a Health Hazard Overlay Zone to provide the development safeguards required by State-Wide Planning Goal No. 11;

NOW, THEREFORE, it is hereby

ORDAINED by, the Board of County Commissioners of HOOD RIVER COUNTY that the amendments to the Hood River County Comprehensive Plan, Plan Map and Zoning Ordinances, and Background Report, as recommended by the Hood River County Planning Commission, attached hereto as Exhibits "A", "B", "C", and "D" and by this reference incorporated herein, be adopted; and it is further



**Agenda Item C, Action Item: Windmaster Corners Sewage Conveyances:
EQC Review and Approval of Proposed Facilities and Schedule.**

April 19, 2007 EQC Meeting

**Attachment 9. Appendix A and B of OAR Division 52 – Review of Plans
and Specifications.**

Appendix A – Sewer Pipelines (9a)

Appendix B – Raw Sewage Lift Stations (9b)

APPENDIX A

SEWER PIPELINES

(1) MINIMUM REQUIREMENTS FOR SEWER - PIPELINES

(a) Capacity:

Sewers shall be of such diameter as to pass without overflow, bypass, or back flow onto damageable property of a user the design peak flow including sewage and infiltration. All unavoidable inflow from roof, surface, footing, foundation, or other groundwater or surface water sources shall be excluded from capacity allowance.

(b) Velocity:

Sewers shall be designed to have a velocity to "self clean" or transport constituent solids to the treatment facility or the owner shall periodically service sewers to flush, transport, or remove solids from sewers with minimal velocity.

(2) GUIDELINES FOR SEWER PIPELINES

(a) Capacity:

- (A) Collection sewers should be designed for the ultimate development of the tributary areas as determined by master sewerage and land use plans of the owner.
- (B) The design of sewers should be based upon initial and ultimate flows. Flows should be broken down into domestic, industrial, and infiltration/inflow fractions. A peaking factor should be applied to domestic and industrial fractions.
- (C) Domestic flows should be between 50 and 100 gallons per capita per day (gpcd). Peaking factors should be between 1.8 and 4.0. Infiltration allowance should be normally less than 2,000 gallons per acre per day; any greater allowance should be justified. Any significant inflow allowance should be justified.
- (D) The minimum diameter of sewers should be 8 inches for maintenance purposes. Short nonextendable 6 inch sections of up to 250 feet are permissible.
- (E) Replacement sewers should be designed commensurate with flow conditions.

(b) Velocity:

- (A) Sewers should be laid on a gradient which will produce a mean velocity, when flowing full or half full, of at least (2) two feet per second, based upon the Manning formula with "n", the coefficient of roughness, valued at 0.013.
- (b) Sewers with minimal flow such as upper

reaches of laterals or those sewers serving few dwellings should be steepened and/or reduced in diameter to approach a (2) two feet per second selfcleaning velocity. Actual flows during initial years of use should be carefully evaluated in this regard.

- (C) Force mains and inverted siphons should be designed for (3) three feet per second at average flows.
- (D) The minimum gradient for 8 inch sewers should be no less than 0.4 percent regardless of pipe material.
- (E) The minimum gradient for 6 inch sewers should be no less than 0.6 percent, preferably 0.75 percent.
- (F) The flow channel(s) through manhole bases should be smooth and conform to the shape and slope of the inlet sewer(s).
- (G) Intersecting sewers, sewer connections, etc., should be made without causing backup into the smaller sewer. For intersecting unequal sized sewers in manholes, the elevation at 0.8 of full depth of flow in each sewer should match.

(c) Watertightness:

Completed sewer construction shall result in limited infiltration/exfiltration through pipe walls, joints, fittings, and connection fittings, etc., and no inflow. The limit shall be consistent with the pipe and manhole materials and with what is obtainable at the time by the construction industry on representative jobs for the same type of construction using high quality materials and state-of-the-art methods of workmanship. All completed sewer lines in new work shall be tested for watertightness using either recognized air or water testing requirements and procedures.

(c) Watertightness:

- (A) Watertightness begins with good material and finally depends upon sound field practices. Good inspection and tests should be supplemented with an initial television inspection after trench backfilling is complete. Since many defects do not appear initially, an eleventh month final inspection should be performed where that capability is available and determined necessary to obtain acceptable in-place work. If only one television inspection is considered, the eleventh month inspection is recommended.
- (B) Exfiltration testing or the low pressure air test for sanitary sewers should be a pres-

sure at least 6 feet greater than the groundwater conditions which the sewer is subject to at test time.

- (C) Pipe materials, joints, fittings, and appurtenances should be selected for their watertight capabilities.
- (D) Acceptance or performance standards should not necessarily be uniform for all pipe materials since average testing results with good workmanship for work will vary depending upon pipe materials. The range of allowable exfiltration/infiltration for work acceptance should be between 50 and 200 gallons per day per inch-of-diameter per mile (gpdidm). Nonporous (non-airpermeable) pipe should sustain pressure for twice the computed time for the same one pound per square inch (psi) air pressure drop required by the air test. Test sections should be from manhole-to-manhole or about 700 feet maximum.
- (E) The watertightness of all building sewers should conform to the State Plumbing Code and be tested without exception.
- (F) Manholes should be water tested for exfiltration during construction and/or visually inspected during first wet weather season after construction for infiltration. Leaks should be promptly repaired.
- (G) Curved sewers should be as watertight as other sewers and be tested. While not recommended, horizontal/vertical curves at times may be allowed but should be limited in use. When used, the minimum radius of curvature should be not less than 200 feet and the maximum computed joint opening no more than 3/8 inch. Complete and accurate records should be kept of the exact location of such curved sewers for future reference. Reasonable field control should be exercised to not compound joint deflections and compromise watertightness.

(d) Structural Strength:

The completed installation including the excavated trench, the pipe, the bedding, and the pipe zone materials shall resist imposed loads from backfill, impact, and live loads (construction and design) without pipe failure through crushing, loss of watertightness, settlement, or significant capacity loss.

(e) Ability to Pass Solids:

Sewer systems shall be free of depressions, sharp edges, roughness, side sewer projections, obstructions, restrictions, displaced "O" rings, etc., which can cause solids to accumulate or deposit.

(d) Structural Strength:

- (A) Bedding material should be placed full trench width from at least 4 inches under to spring line of all pipe for a leveling course and proper pipe support. Hand shaping of the native trench bottom for rigid pipe is not recommended but may be allowed, if appropriate, and uniform pipe support can be obtained and grade/ alignment can be maintained.
- (B) Cantilevering of nonreinforced rigid pipe at manholes should be limited to the least distance practicable to make a flexible connection. A flexible joint should be within 12 inches of manhole for smaller pipe sizes. A second flexible joint should be provided within 4 feet of the manhole.
- (C) Where cover from top of pipe to finished grade is less than 36 inches, special design and/or construction requirements should be considered including, but not limited to, raising finish grade, increasing class of pipe and/or pipe bedding, use of ductile iron, concrete encasement and restriction of construction equipment from travel over partially backfilled trench.

(e) Ability to Pass Solids:

- (A) New sewers should be thoroughly flushed and visually inspected for accumulated debris prior to use.
- (B) Building sewer connections should be made with fittings which prevent any projection into the main sewer. The main sewer should not be cracked, crushed, or otherwise damaged in making taps. All taps should be watertight.
- (C) A tolerance for vertical deviation from true grade line should be plus or minus 0.02 feet. Depressions for solids deposition should be avoided. Similarly, the horizontal tolerance for deviation from line should be plus or minus 3/8 inch.

(D) Drop manhole piping should be easily maintained, self cleaning or able to "overflow" into the manhole. Pressure sewer piping connections, flow measuring devices, etc., in manholes should be designed to not obstruct flow.

(E) Flow channels in manholes should slope at least 0.1 feet from inlet to outlet.

(f) Durability:

(A) The materials and details of construction shall provide an in-place sewerage system which will resist corrosion of the pipe and manhole materials caused by any source or condition. Any corrosive effect shall be consistent with the design life of the sewer.

(B) Resistance to erosion of surfaces by grit, high velocity flow, etc., shall be addressed if appropriate.

(C) Temperature effect upon thermoplastic materials shall be appropriate.

(g) Stability:

(A) Line and Grade: Horizontal alignment and vertical grade of in-place sewers upon construction completion and construction acceptance shall be relatively stable.

Design considerations, construction specifications, inspections, etc., shall preclude pipe settlement, shifting, or flotation such that capacity, watertightness structural integrity, ability to pass solids, maintainability, etc., are not compromised either at construction or any later time.

(B) Diameter: Rigid, flexible and

(f) Durability:

(A) Sewers should be constructed of materials resistant to or protected from biological degradation, acid and alkaline solutions, normal sewer temperature variations, abrasion and industrial wastes (where applicable), or other harmful service conditions which may exist in the sewerage system.

The owner should have a user ordinance which restricts discharge of harmful substances into the sewerage system.

(B) Velocities over 15 feet per second in sewers should have special consideration for erosion control.

(g) Stability:

(A) Appropriate foundation stabilization or soils should be employed in unstable soils. Back fill should be in small lifts and compacted uniformly to specified density along and around the pipe.

(B) The Soil Class and density for bedding and pipe zone materials should be carefully selected and then compacted in the field to the required in-place density.

PVC and ABS composite sewer pipe should be deflection tested upon construction completion prior to acceptance with an approved nine blade go-no-go gauge. Initial deflection at construction completion should be no more than the following:

semiflexible pipes tend to lose minimum inside diameter if not designed and/or installed properly. Design considerations, construction specifications, field inspections, etc., shall preclude diameter loss such that capacity, watertightness, structural integrity, ability to pass solids, maintainability, etc., are not compromised either at construction or any later time.

- (i) PVC (ASTM D-3034) sewer pipe should deflect no more than 4 to 5 percent based upon inside base diameters of 7.76, 9.71, 11.56 and 14.14 inches for 8, 10, 12, and 15 inch nominal pipe respectively.
- (ii) ABS (ASTM D-2680) composite sewer pipe should deflect no more than 2 to 3 percent based upon inside average diameters of 7.75, 9.75, 11.75 and 14.75 inches for 8, 10, 12, and 15 inch nominal pipe respectively.

- (C) Sewers on slopes over 25 percent should be evaluated for slippage or pipe bedding depending upon soil type, groundwater presence, construction conditions, etc. Appropriate anchors should be provided if necessary.

(h) Operation, Maintenance, and Safety:

Sewer systems require periodic and unscheduled maintenance for sustained operation. Designs shall conform to requirements of the sewage works owner for manhole construction, spacing, size, details and easements. All parts of the sewerage system shall be readily accessible. The minimum inside bottom diameter of manholes shall be 42 inches.

(h) Operation, Maintenance, and Safety:

- (A) Access to the sewer by the sewer owner is essential to perform maintenance tasks. Easements should be granted along the sewer line to the system owner for any sewer for emergency repairs. Manholes and cleanouts are necessary for routine access. Structures should not be located over sewers.
- (B) Owners should review own procedures, equipment, construction standards, etc., for sewer maintenance. Requirements of the owner should be obtained by designers upon start of sewer design since the owner must assume all future maintenance. Stricter standards of the owner should prevail if in conflict with these guidelines.
- (C) General Manhole/Cleanout Standards for Sewers:
 - (i) The minimum inside bottom diameter should be no less than 48 inches. The least inside dimension may be reduced 38 inches where an integral

inside drop is acceptable to the owner. No more than one inside drop should be installed in a manhole.

- (ii) Minimum cover opening diameter should be 22 inches.
- (iii) Manholes should be located at:
 - (I) Every change in grade or alignment of sewer.
 - (II) Every point of change in size or elevation of sewer.
 - (III) Each intersection or junction of sewers.
 - (IV) Upper end of a lateral sewer.
 - (V) At intervals of 500 feet or less except for 24 inch and larger sewers.
- (iv) Cleanouts should not be substituted for manholes except at the upper end of lateral sewers 250 feet or less in length.
- (v) Channel width and depth should be equal pipe diameter. Manhole base ledges should be sloped to drain at least 1 in 12.
- (vi) Access to manholes may be by portable ladder. Manhole rungs and in-place ladders which are subject to considerable corrosion and sliming are not recommended.
- (vii) Where free fall of sewage into a manhole exceeds 24 inches from inlet pipe invert to manhole invert, an approved drop manhole should be used.

(D) Inverted Siphons:

Inverted siphons should include at least two pipe lines of such size and hydraulic gradient as to maintain a velocity of at least 3 feet per second in one pipe under conditions of average dry weather flow. Control manholes must be provided at both ends of the inverted siphon line. The inlet and outlet details shall be so arranged that the normal flow is diverted to either barrel so that the other barrel may be removed from service for maintenance.

(i) Separation of Water and Sewer Lines:

Protection of the water supply, be it distribution system, production facilities or source is not only prudent but mandatory and absolutely necessary.

Sanitary sewers and appurtenances thereto shall not physically connect to a public or private potable water supply system so as to permit the passage of any sewage or polluted water into the potable supply.

Sewer construction shall not disturb, degrade, or decrease the watertightness of any existing water supply line.

(i) Separation of Water and Sewer Lines:

(A) Parallel Water and Sewer Lines:

- (i) Sewer lines should conform to Figure A-1.
- (ii) Common trench construction for water and sewer should be avoided where practical. Where used, the minimum pipe separations of Figure A-1 should be maintained.

(B) Vertical Separation at Crossings of Water and Sewer Lines:

No special precautions should be necessary where top of sewer line is at least 1.5 feet below bottom of waterline and adequate structural protection for each line is provided.

(C) Exceptions: Use of Pressure Pipe Material for Sewer Line:

- (i) Where the above horizontal or vertical separations cannot be maintained, the following pressure pipe materials should be used in addition to whatever waterline improvements or reconstruction that may be advisable or required for protection of water. The use of these pressure pipe materials from manhole-to-manhole is encouraged to avoid discontinuity

of materials.

- (I) Ductile iron pipe, class 50, ANSI Standard A21.51 (AWWA C-151) with either Push-on or mechanical rubber gasket joints in accordance with ANSI Standard A21.11 (AWWA-C111).
 - (II) PVC pressure pipe, ASTM D-2241, SDR 32.5, (125 psi) with rubber-gasket joint in accordance with UNI-Bell Plastic Pipe Association recommended Standard Specification UNI-B-1 for a pressure-joint assembly.
 - (III) Asbestos-Cement pressure pipe, class 100, ASTM C-296 (AWWA C-400) with rubber gaskets in accordance with ASTM D-1869
 - (IV) High density polyethylene pipe (Driscopipe 1000) PE 3406, minimum SDR 32.5, with butt fused joints.
 - (V) Other materials approved by the State Health Division.
- (ii) At crossings requiring pressure pipe materials, the following should apply with one standard length of special pressure pipe centered over the waterline in all cases:

Pipe Material	Standard Pipe Length	Minimum Laying Length Each Side of Waterline Crossing
Ductile Iron	18 Feet	18 Feet
PVC	20 Feet	20 Feet
Asbestos-Cement	13 Feet	19 Feet
High-Density Polyethylene	38 Feet	19 Feet

(D) Soil Restoration at Crossings:

Soil removed in sewer line trench construction at waterline crossings where sewer crosses over water should be replaced in all areas to as near natural densities as possible through mechanical compaction to restore any natural resistance to groundwater movement which did exist prior to construction. Soil should include no rock fragments over 1-1/2 inch in the pipe zone.

(E) Well Protection:

No sewer pipe should be laid less than 50 feet from any well without specific Health Division approval. Pressure pipe materials should be used to protect wells where minimum setbacks are not obtainable or where additional protection is required as determined by the State Health Division.

(F) Pipe Testing:

Whenever a pressure pipe material is used for any of the above purposes of separation, an appropriate pressure test should be conducted on the pressure pipe to confirm watertightness. Test pressures should be no less than 15 psig where use will be for a gravity sewer and higher where use will be for a pressure sewer (force main).

(G) Other Exceptions should be resolved jointly with the water purveyor and the State Health Division.

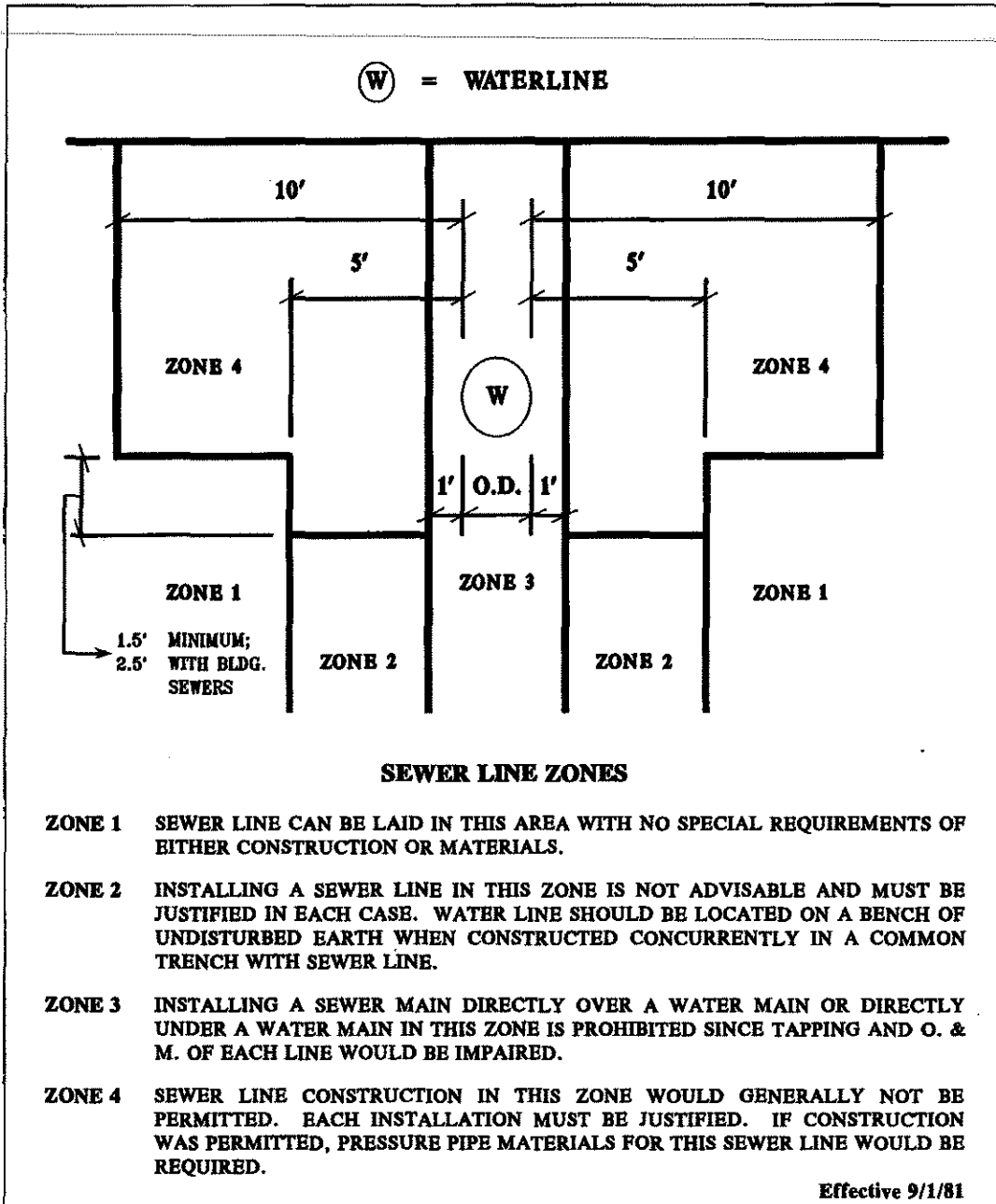


FIGURE A-1
SEPARATION OF PARALLEL WATER-SEWER LINES

APPENDIX B

RAW SEWAGE LIFT STATIONS

(1) MINIMUM REQUIREMENTS FOR RAW SEWAGE LIFT STATIONS

(a) Capacity:

Stations shall pass peak hourly flow including domestic, industrial and infiltration/inflow allowance.

(b) Solids Handling:

Pumping equipment shall pass at least 2-1/2 inch spheres. Valves, fittings etc., shall be capable of passing at least 3 inch spheres. Minimum force main size shall be 3 inches.

(c) Reliability:

- (A) Mechanical reliability shall be achieved by redundant lift units such that the peak hourly flow can be passed with the largest unit out of service. Redundancy shall include check and gate valves and other 'common mode' failure sensitive items such as vacuum pumps or compressors on control systems.

- (B)(i) Power outages shall result in no raw sewage discharges or bypasses to waters of the state based upon a predictable maximum period of power outage which will occur from year-to-year. Where such reliability does not exist, facilities and/or procedures shall be provided to prevent the discharge or bypass.

(2) GUIDELINES FOR RAW SEWAGE LIFT STATIONS

(a) Capacity:

Lift stations should be sized for the immediate flow requirement and expandable to the longrange (ultimate) requirement. Alternatively interim lift stations may be proposed if the date of expansion is unknowable or beyond the useful life of the lift station.

(b) Solids Handling:

All equipment should be sized to handle at least a 3-inch spheres. Force mains should be at least 4 inches in diameter.

(c) Reliability:

- (A) Where no specific records exist, a four (4) hour minimum electrical power outage should be assumed.
- (B) Events which should be excluded from design considerations are those which are rare, unusual, and cataclysmic in nature.

Means to prevent discharge or by pass include, but are not limited to, the following:

(i) Electric generator:

- Stationary or portable.
- Automatically or manually started.

(ii) Auxiliary fuel fired pump:

- Stationary or portable.

(C) Failure of prudent Operation and maintenance shall not be considered a valid reason for a station failure and resultant discharge or bypass.

(D) (i) Alarms shall be provided to all stations to announce at least high wet well conditions.

(ii) Telemetering to location with a 24-hour attendant shall be required in sensitive areas.

(d) Operation and Maintenance:

(A) Lift equipment shall be easily removable. Screwed fittings shall not be used for equipment removal. Lifting eyes or hoists shall be provided for equipment removal as appropriate.

(B) (i) A means to wash down wet wells shall be provided for all stations.

(ii) Potable water piped into wells or dry wells shall be equipped with a reduced pressure backflow prevention device.

(C) Wet wells shall have 'hopper

(iii) Storage:

- Sewer lines and manholes.
- Wet well.
- External basin.

(iv) Water supply reduction.

(C) (Future)

(D) (i) Alarms signals should be relayed to the sewer system owner in an effective manner.

(ii) Alarm should be actuated independently of the station control system. Example: Pumps are controlled by pneumatic system and separate float actuated alarm is provided.

(iii) Alarm power should have a battery powered backup electrical source.

(d) Operation and Maintenance:

(A) Flanged or bolted compressions fittings should be used for pump removal.

(B) Frequent wet well washdown should be assumed for all stations. A source of high volume wash water through a nozzle should be provided for this purpose at or on finish grade.

bottoms' at a slope of no flatter than one to one (1: 1), and flat bottom area shall be minimized to prevent deposition of solids.

(e) Safety:

- (A) Wet and dry wells of all lift stations shall be considered manholes which will be entered by the owner's personnel.
- (B) Each dry well shall have permanently installed ladder, lights, and forced fresh (out-side) air supply to the bottom of the well. Air supply shall be activated with light switch and intermittently operated with a timer.
- (C) Wet wells including single well lift stations, shall have either installed or portable equipment for access, lighting, ventilation, etc., to be used when entered.

(e) Safety:

- (A) No amount of safety equipment should replace basic safety procedures, knowledge, training and precautions.
- (B)
 - (i) Designers should follow appropriate safety codes.
 - (ii) Air supply should be sized for a least 30 air changes per hour where installed.
- (C)
 - (i) Frequently entered wet wells should have permanently installed equipment for access, lighting and ventilation, etc.
 - (ii) Infrequently entered wet wells may be served with portable equipment.

**BEFORE THE ENVIRONMENTAL QUALITY COMMISSION
OF THE STATE OF OREGON**

In the Matter of Hood River County's
Request for Formation of the Windmaster
Sewer Service District

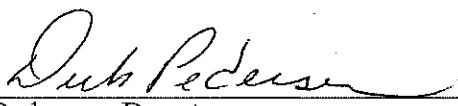
Certificate of Approval
Under ORS 431.720

In August of 2006, the Hood River County Board of Commissioners adopted a resolution requesting that the Oregon Department of Human Services initiate proceedings for the formation of the Windmaster Sewer Service District under the authority of ORS 431.705 to 431.760, which governs the formation of districts in response to health hazards. On or about August 29, 2006, the County served a copy of the resolution on the Environmental Quality Commission as provided in ORS 431.720.

This matter came before the Environmental Quality Commission at its regularly scheduled meeting on April 19, 2007. The Commission considered information submitted by the County, its consultants, the Department of Environmental Quality, and heard presentations from department staff and legal counsel.

The Commission hereby certifies to the Oregon Department of Human Services that it considers the proposed facilities and the time schedule for installation of such facilities to be adequate to remove or alleviate the dangerous conditions identified by the County.

Dated this 30 day of April, 2007

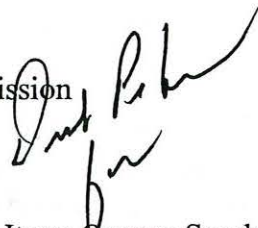


Dick Pedersen, Deputy
For the Oregon Environmental Quality Commission

**Outline of Agenda Information Item on Oregon Smoke Management for
Friday, April 20, 2007**

- 9:00 **Opening comments from DEQ and ODF (15 min)** – Andy Ginsburg, DEQ, Paul Bell, ODF. Why we are here (EQC interest in smoke management), brief comments on prior day field trip, preview of what EQC will hear today, introduction of BOF member Barbara Craig.
- **Overview of the Oregon Smoke Management Plan (OSMP) (25 min)** – Brian Finneran, DEQ. Brief overview of following topics: health effects of smoke, Clean Air Act requirements related to prescribed burning, how the OSMP fits into DEQ's air quality plans, general effectiveness of OSMP, statutory authority, responsibilities, and process for OSMP approval.
 - **Update on two recent smoke incidents and lessons learned (20 min)** – Larry Calkins, DEQ, Jim Trost, ODF. Brief summary of recent smoke intrusions in La Grande and Florence. Changes proposed by USFS in response to La Grande, ODF findings and response to Florence smoke investigation.
 - **Summary of current OSMP Periodic Review (30 min)** – Charlie Stone, ODF, Brian Finneran, DEQ. Highlights of ODF's periodic review of the OSMP, committee recommendations, highlights of proposed rule changes, summary of proposed AQ related improvements, upcoming timetable for rulemaking, public hearings, and adoption dates.
 - **EQC Discussion (30 min): Opportunity for Commission members and Barbara Craig (Oregon Board of Forestry) to discuss and exchange ideas on key issues related to smoke management. These include:**
 - The need to balance public health protection with the need to improve forest health and meet landowner burning objectives.
 - How to better involve the public, address smoke problems, and educate the public on the issue of forest health.
 - How to better encourage use of alternatives to burning under the OSMP.
- 11:00 **Wrap up (10 min)** – Dick Pedersen, DEQ, summation of perspectives heard from EQC and Board of Forestry.

Date: April 5, 2007
To: Environmental Quality Commission
From: Stephanie Hallock, Director
Subject: Agenda Item D, Informational Item: Oregon Smoke Management Plan
April 19-20, 2007 EQC Meeting



Why this is Important

Each year in Oregon approximately 150,000 - 200,000 acres are burned in Oregon's forests through the practice of prescribed burning. This burning is managed by the State Department of Forestry (ODF) under the **Oregon Smoke Management Plan (OSMP)**. This burning occurs on state, federal, and private forest lands, and generates considerable smoke and air pollution. Minimizing smoke impacts and protecting public health is a major objective of the OSMP. Other objectives are to maximize burning opportunities and reduce the risk of wildfire. The OSMP attempts to minimize smoke impacts by conducting forest burning under weather conditions that disperse the smoke and steer it away from populated areas. Despite these efforts, some smoke impacts in communities still occur. These impacts can range from mild, nuisance conditions to more intense impacts that can pose a serious risk to public health, and potentially violate federal air quality standards. Smoke from prescribed burning can also adversely affect the enjoyment of outdoor recreation activities and the ability to view scenic vistas and mountains by increasing haze and reducing visibility.

Purpose of Item

At its December 15, 2006 meeting, the Commission expressed an interest in understanding the issues involved in prescribed forestry burning and smoke management in Oregon. The purpose of this information item is to give the Commission an overview and context for forest health issues in Oregon, how fire is used as a forest management tool, and the importance of the OSMP in minimizing air pollution and protecting public health.

This information item also initiates a conversation and exchange of ideas between the Commission and the Oregon Board of Forestry on key policy topics that affect both DEQ's and ODF's respective missions.

The OSMP plays a key role in meeting state goals for forest health that require a balancing of both forest management and air quality objectives. The OSMP also plays a central role in several Department air quality

plans, including protecting public health standards for particulate, and reducing visibility impairment in Oregon's wilderness areas, national parks (Crater Lake), and national scenic areas such as the Columbia River Gorge.

ODF is in the process of completing a 3-year review of the OSMP, and has developed proposed rules for improvements to the plan that will soon be submitted to the Oregon Board of Forestry for hearing authorization, with public hearings scheduled for the summer. As explained below, state statute requires the OSMP be approved by both the State Forester and Department.

Background

"Prescribed" burning means a planned forest burn that is conducted under a "prescription" or prescribed set of conditions that must be met before ignition. These prescribed conditions include fire safety criteria as well as specific meteorological conditions needed to disperse smoke and minimize risk to the public. Prescribed burning is a long-standing practice in Oregon, as it is throughout the West. If not managed well, the smoke from this burning can pose a serious public health risk. At the same time, there is a need to restore forest ecosystem health, and reduce the risk of wildfire, and the threat of even greater smoke impacts from uncontrolled fire. Major smoke events can result in air quality levels exceeding federal air quality standards for fine Particulate Matter (PM 2.5). Even brief exposures to smoke can cause health problems for persons with asthma, emphysema, congestive heart disease and other existing medical conditions. The elderly, pregnant women, and young children are especially high-risk groups. Smoke from forest burning also affects visibility in national parks and wilderness areas, as well as the enjoyment of outdoor recreation activities.

The OSMP was developed as a voluntary program in 1969 and adopted as a regulatory program in 1972. The objective of the program is to manage forest burning on public and private forest lands, using weather forecasting and other smoke management tools to minimize smoke impacts while maximizing opportunities for burning. The program must comply with federal air quality and visibility requirements, protect public health, and minimize emissions by encouraging alternatives to burning.

Since its adoption, the OSMP has developed into one of the most advanced smoke management programs in the West. During this time, the Department's role has been oversight and coordination with ODF. By monitoring air quality, occasionally responding to smoke complaints, and encouraging on-going program improvements. The primary responsibility for responding to public questions and

complaints about prescribed burning lies with ODF.

Historically the OSMP has been very effective in avoiding major, prolonged smoke impacts that can result in exceeding air quality standards. However, this may prove more difficult in the future. The Environmental Protection Agency (EPA) has recently lowered the federal 24-hour PM2.5 standard, making it more protective of public health. This lower standard will be more sensitive to significant smoke impacts from prescribed burning.

Another challenge to the OSMP has been to avoid the more typical short-term smoke intrusions (a few hours) that can trigger health problems for sensitive individuals and high-risk groups. This is becoming more of a challenge as greater population growth occurs in the state, especially near or next to forest lands.

The Department adopted a Visibility Protection Plan in 1986 to protect Crater Lake National Park and eleven wilderness areas. This plan included visibility protection strategies for the summer months only (the highest visitation period). One of these strategies was to shift prescribed burning out of the summer and into the spring and the fall. As a result of this and concerns about fire danger and wildfire, there is currently very little forest burning in the summer months. However, new Regional Haze Rules adopted by EPA will require visibility improvements in wilderness areas on a year-round basis. These rules have a requirement to adopt advanced smoke management programs for forest burning and agricultural burning. The OSMP is an advanced program and satisfies most of this requirement. The Department will evaluate whether additional smoke management improvements will be needed in future years to address the new Regional Haze Rules.

One of the requirements in the OSMP is to conduct a periodic review of the effectiveness of the plan. The last major review was conducted in 1992. Minor rule changes have occurred since that time. In 2002, ODF began a comprehensive periodic review of the OSMP. A Smoke Management Review Committee was established to provide recommendations. This Committee published a report in 2005 with specific recommendations for improvements. ODF convened an additional advisory committee to review these recommendations and develop an implementation plan that identify actions needed (rule changes, funding, legislation) to carry out the recommendations.

This informational meeting will provide the Commission with a summary of the current periodic review, the Department's role in the review, and the improvements being proposed to the OSMP.

Key Issues Commission and Board of Forestry Discussion

This agenda item initiates a conversation and exchange of ideas between the Commission and the Oregon Board of Forestry on key policy topics that affect respective missions of the Department and ODF. Commissioner Ken Williamson and Board of Forestry Commissioner Barbara Craig will help guide the discussion on the following topic areas:

- The need to balance public health protection with the need to improve forest health and meet landowner burning objectives;
- How to better involve the public to address smoke problems, and educate the public on the issue of forest health; and
- How to encourage use of alternatives to burning under the OSMP

Background Information to Consider:

Authorities and Process for OSMP Approval: Oregon law (ORS 477.013) gives the State Forester and the Department joint approval authority for the OSMP. Changes to the OSMP need both the approval of the Oregon Board of Forestry and the Commission. The OSMP is part of the Oregon State Implementation Plan (SIP) for meeting Clean Air Act requirements. Any changes to OSMP also require the Commission approval as a SIP revision. The current recommended improvements to the OSMP will be proposed by ODF as a rulemaking this summer. Final rules will be adopted by the Board of Forestry late this year. The new OSMP rules are anticipated to come before the EQC for SIP adoption in December 2007.

Changes to the federal PM2.5 standard. In 2006 EPA revised the PM2.5 health standard, significantly lowering the daily 24-hour standard. Prior to this change there were no known exceedances of the PM2.5 standard in Oregon. Under the new lower standard, the possibility has increased that a prescribed burn may cause or contribute to an exceedance of the PM2.5 standard in a community. In September 2006, a major smoke intrusion into La Grande resulted in the PM2.5 standard being exceeded for three days. Last fall the Department also measured high PM2.5 levels in other communities because of smoke from several prescribed burns and other burning sources. Although DEQ expects these to be rare instances, the lowering of the daily PM2.5 standard could result in exceedances in areas of the state where there is active prescribed burning.

Smoke Sensitive Receptor Areas (SSRAs). Under the OSMP, many larger cities and heavily populated areas (i.e., the Willamette Valley) receive greater smoke protection to reduce the risk of smoke impact. These areas are called "Designated Areas" (DAs). This designation can result in limiting the number of burning opportunities, this affecting forest landowner burning objectives. ODF is proposing to change the name of these DAs to "Smoke Sensitive Receptor Areas" (SSRAs). ODF also plans to propose three new SSRA's: Redmond, The Dalles, and the Columbia River Gorge. Adding new SSRAs, provides greater protection to public health.

Prescribed Burning, Wildfire, and Smoke Intrusion Trends.

Over the last 25 years, prescribed burning smoke intrusions into DAs have declined significantly under the OSMP. In the 1980s, there were on average about 30 intrusions in DAs statewide per year. Currently this total is about 5 per year. These smoke intrusions are measured either by the Department monitoring equipment or determined visually by ODF personnel. Intrusions are recorded as hourly impacts, and classified as either light, moderate, or heavy impacts. Much of the reduction in smoke intrusions can be attributed to technical and operational improvements to the OSMP. Some of the reduction is also related to a major decline in prescribed burning in Western Oregon, where most of the DAs are located, due to a decline in forest harvesting. This decline in burning has been offset by a moderate increase in prescribed burning in Eastern Oregon, in response to the greater forest health problems in that area of the state. During this same time period, wildfires have been highly variable. 2002 was one of the worst wildfire years in Oregon history, due in large part to the Biscuit Fire in Southwest Oregon. There is an increasing trend in the West towards higher wildfire years. During these years, wildfire emissions are vastly greater than prescribed burning emissions.

Florence Smoke Investigation. ODF recently completed an investigation on smoke impacts that occurred in the coastal city of Florence during the fall and winter of 2004/2005. This investigation was conducted in coordination with the Department DA and the Lane County Regional Air Pollution Authority (LRAPA). It concluded that forestry and non-forestry burning contributed to the smoke problems in Florence. Florence is not currently listed as a DA.

Next Steps The Oregon Board of Forestry is meeting on June 2, 2007, to consider hearing authorization for the proposed OSMP revisions. If authorized, public hearings would take place this summer, with both Board of Forestry and EQC adoption later in the year.

EQC Involvement See above.

Attachments None.

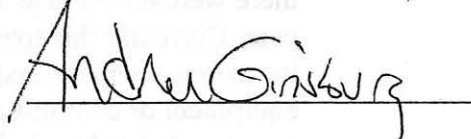
Available Upon Request ODF's draft Smoke Management Plan rule proposal, and the 2005 Oregon Smoke Management Review Committee recommendation report.

Approved:

Section:

Division:



Report Prepared By: Brian Finneran
David Collier

Phone: (503) 229-6278

Email: finneran.brian@deq.state.or.us

Oregon Forests in the 21st Century



a presentation of



**OREGON FOREST
RESOURCES INSTITUTE**

The Sustainability Triangle



Environmental Sustainability



ENVIRONMENTAL BENEFITS

- Clean water
- Clean air
- Habitat for fish and wildlife

Economic Sustainability



- Timber
- Commercial fishing
- Recreation businesses
- Other

ECONOMIC BENEFITS

SUSTAINABILITY

Social Sustainability

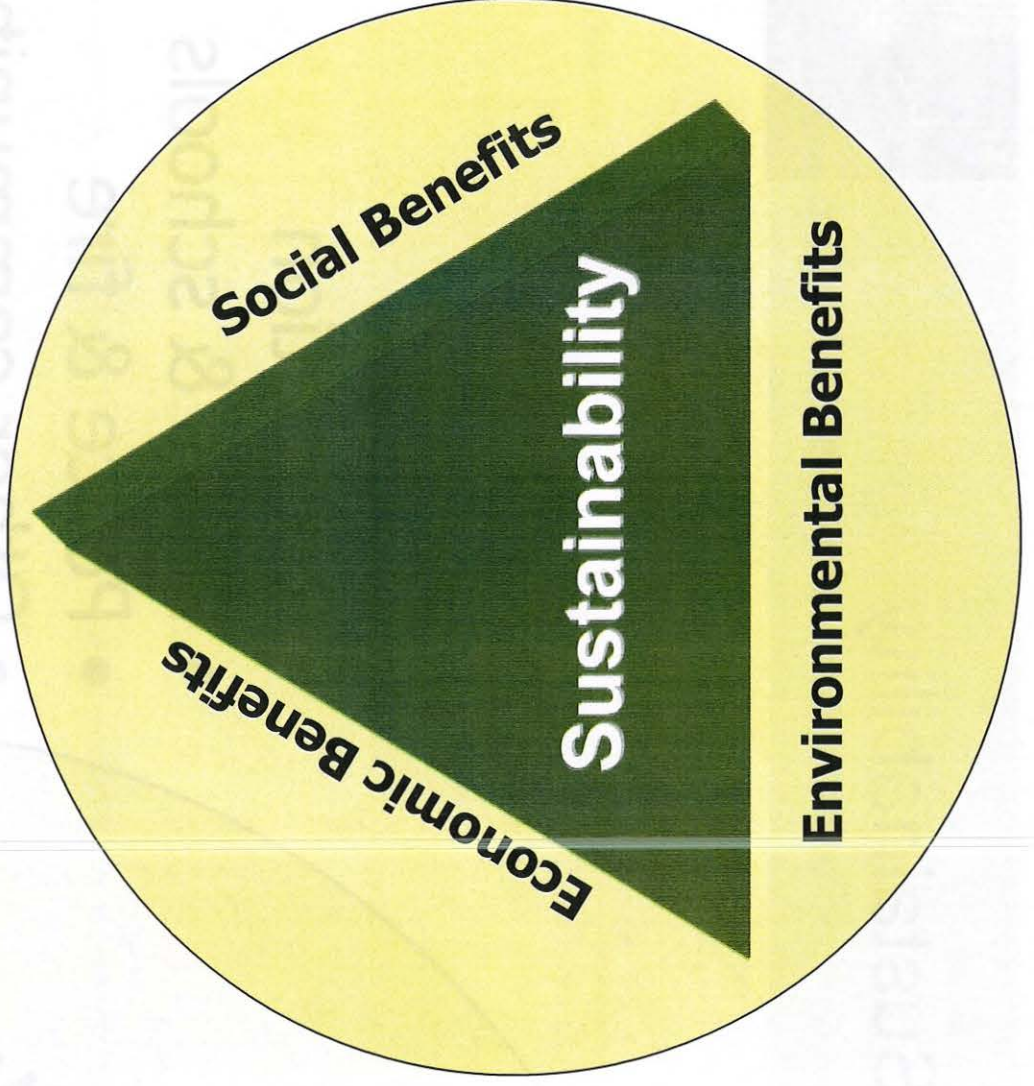


SOCIAL BENEFITS

- Recreation
- Parks & schools
- Police & fire
- Other community services

BILITY

The Bottom Line Of Sustainability



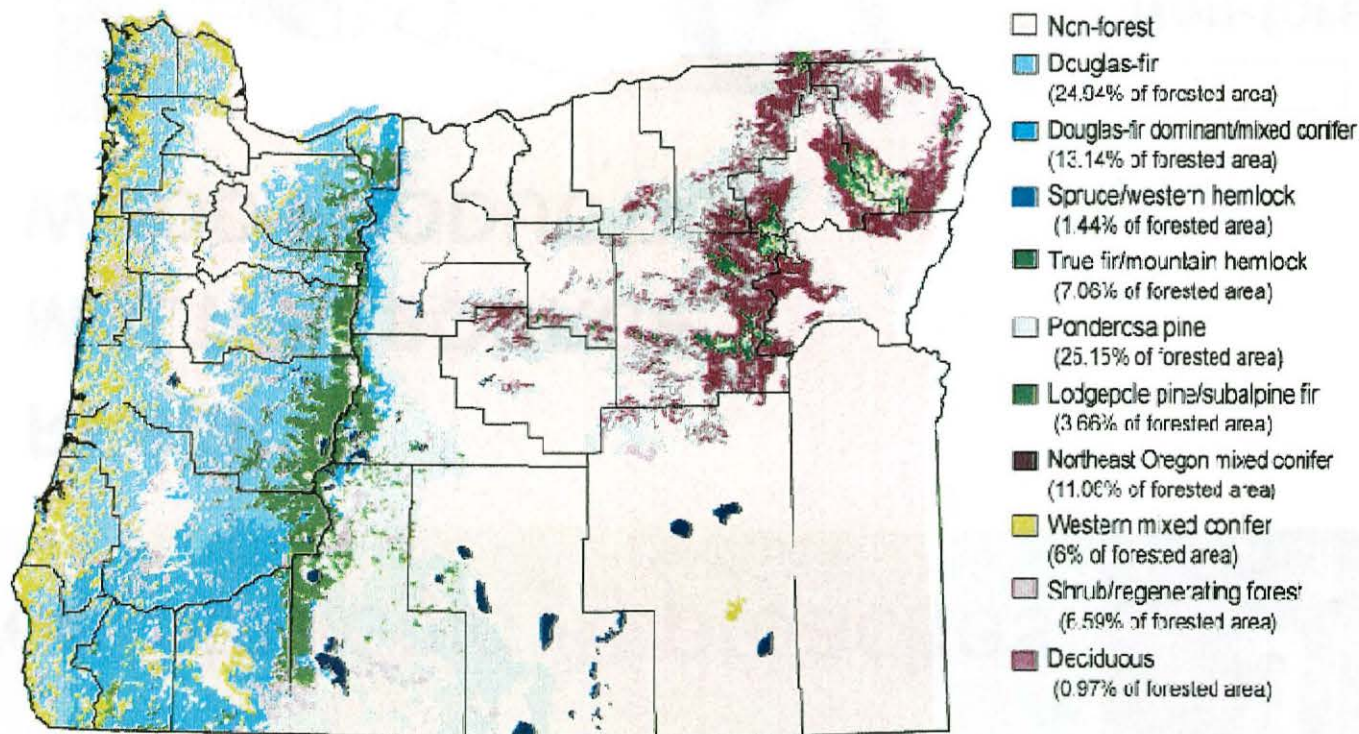
Diverse Forest Types



Westside = Douglas-fir dominates

Eastside = Ponderosa pine and mixed conifer dominate

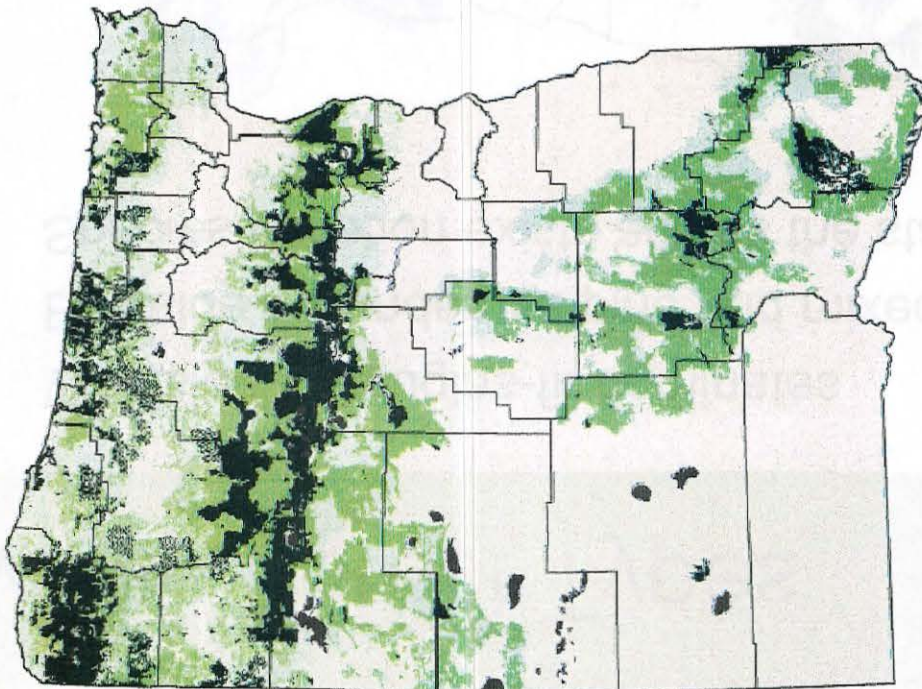
Species variation exists across the state:



Three Strategic Approaches



- RESERVE
- MULTI-RESOURCE
- WOOD PRODUCTION



Non-forest

Reserve forest

Multi-resource forest

Wood production forest

Management Strategies



Reserve Forests

Mostly federal,
some state, tribal, private



Wood Production Forests

Mostly industry, family,
some state, tribal



Multi-resource Forests

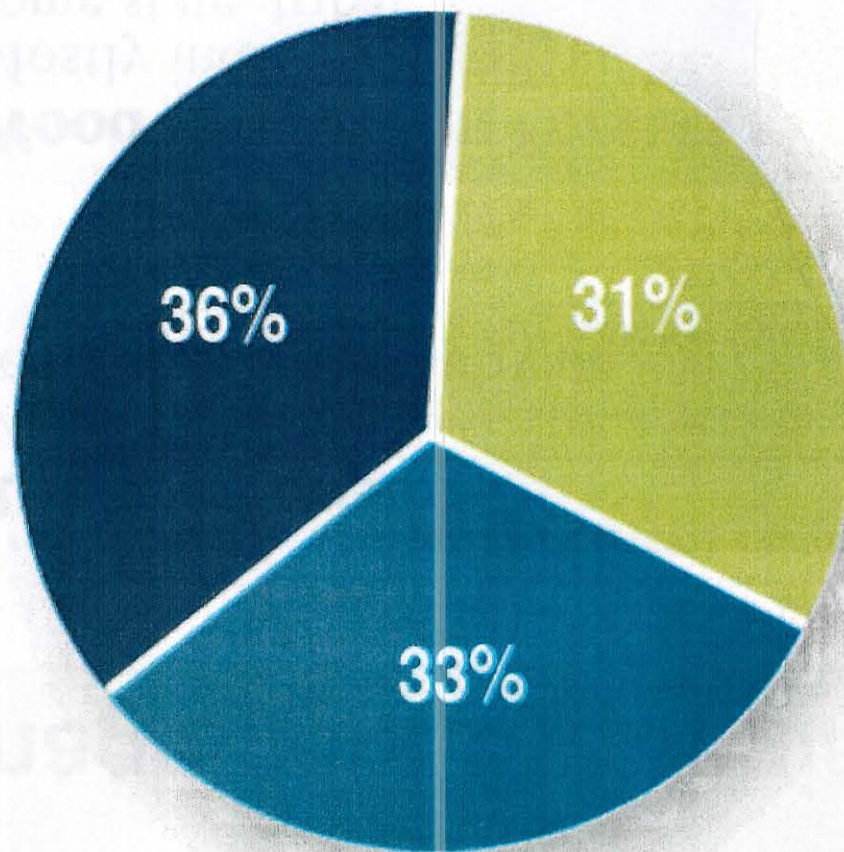
Mostly state, tribal,
some family, some federal



Three Forestland Classes



Proportion of all Oregon forestland



Reserve

Primarily managed for non-economic commodity values

Multi-Resource

Lands managed for both timber production and non-economic values

Wood Production

Actively managed for wood production

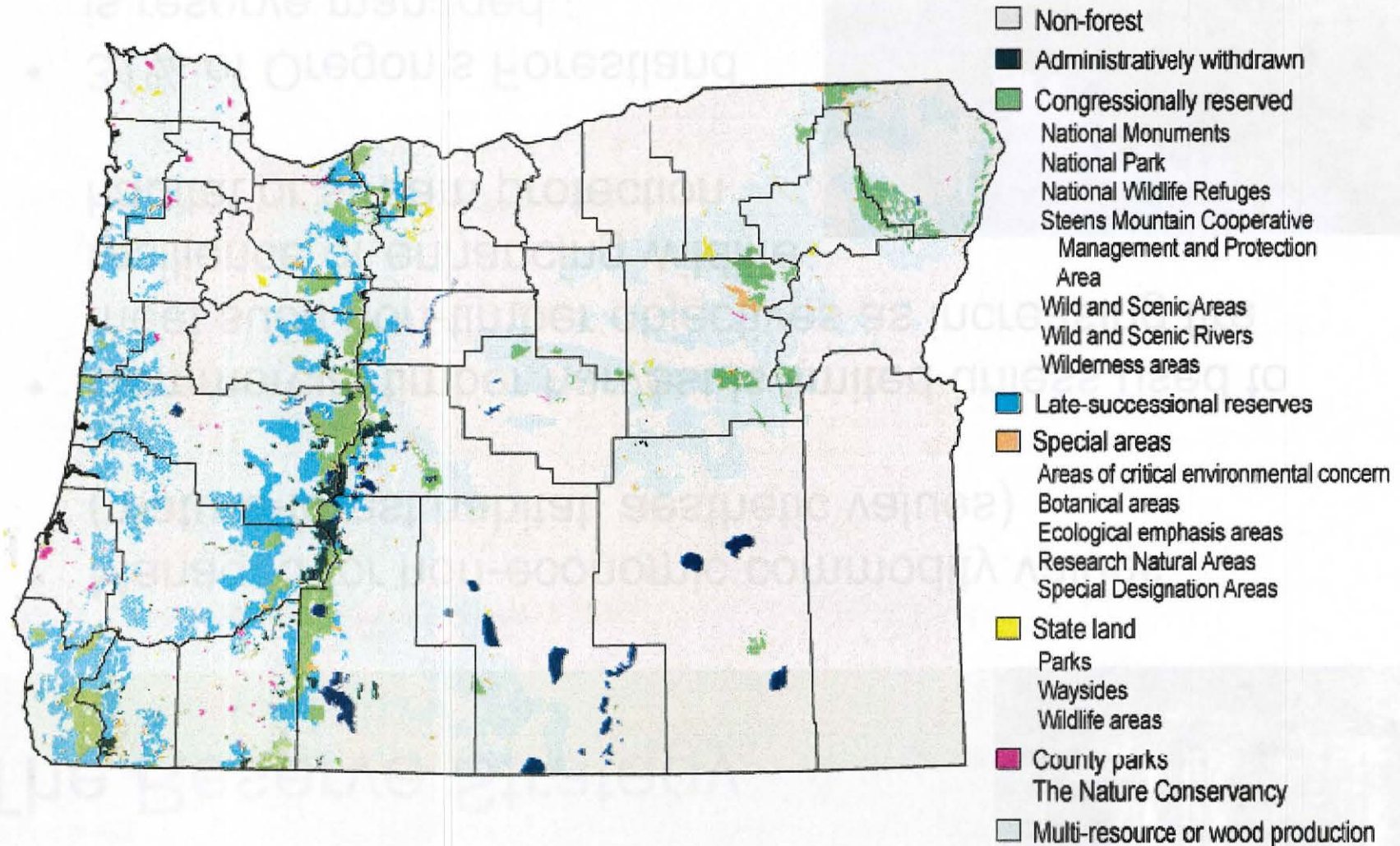
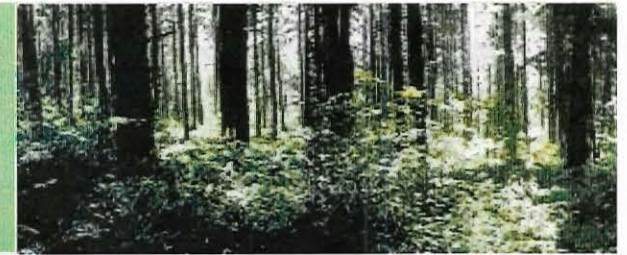
The Reserve Strategy



- Managed for non-economic commodity values (mature-forest habitat, aesthetic values)
- Commercial timber harvest is limited unless used to meet such non-timber objectives as increasing fire resilience or enhancing wildlife habitat or stream protection
- 31% of Oregon's Forestland is reserve managed (8.8 million acres)



Reserve Forestlands



Management Intensity and Benefits



Management intensity: **LOW**

Environmental benefits:

Habitat for wildlife sensitive to human activities; older-forest attributes; watershed protection

Social benefits:

Scenic values; non-motorized recreation; research opportunities; aesthetic values

Economic benefits:

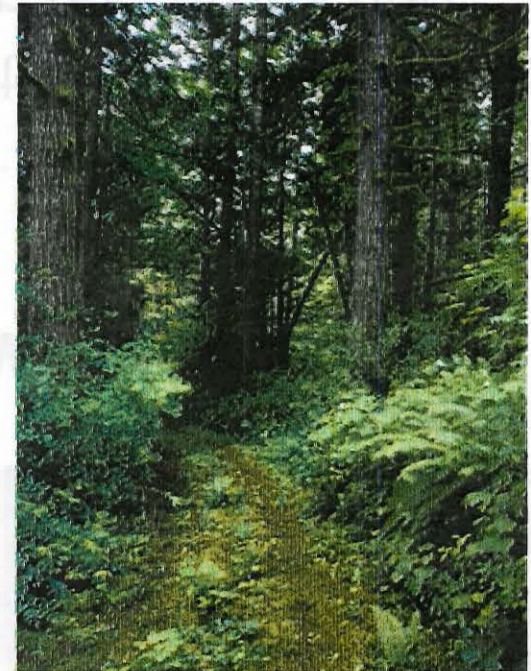
Tourism, non-wood forest products economics, employment

Multi-Resource Strategy

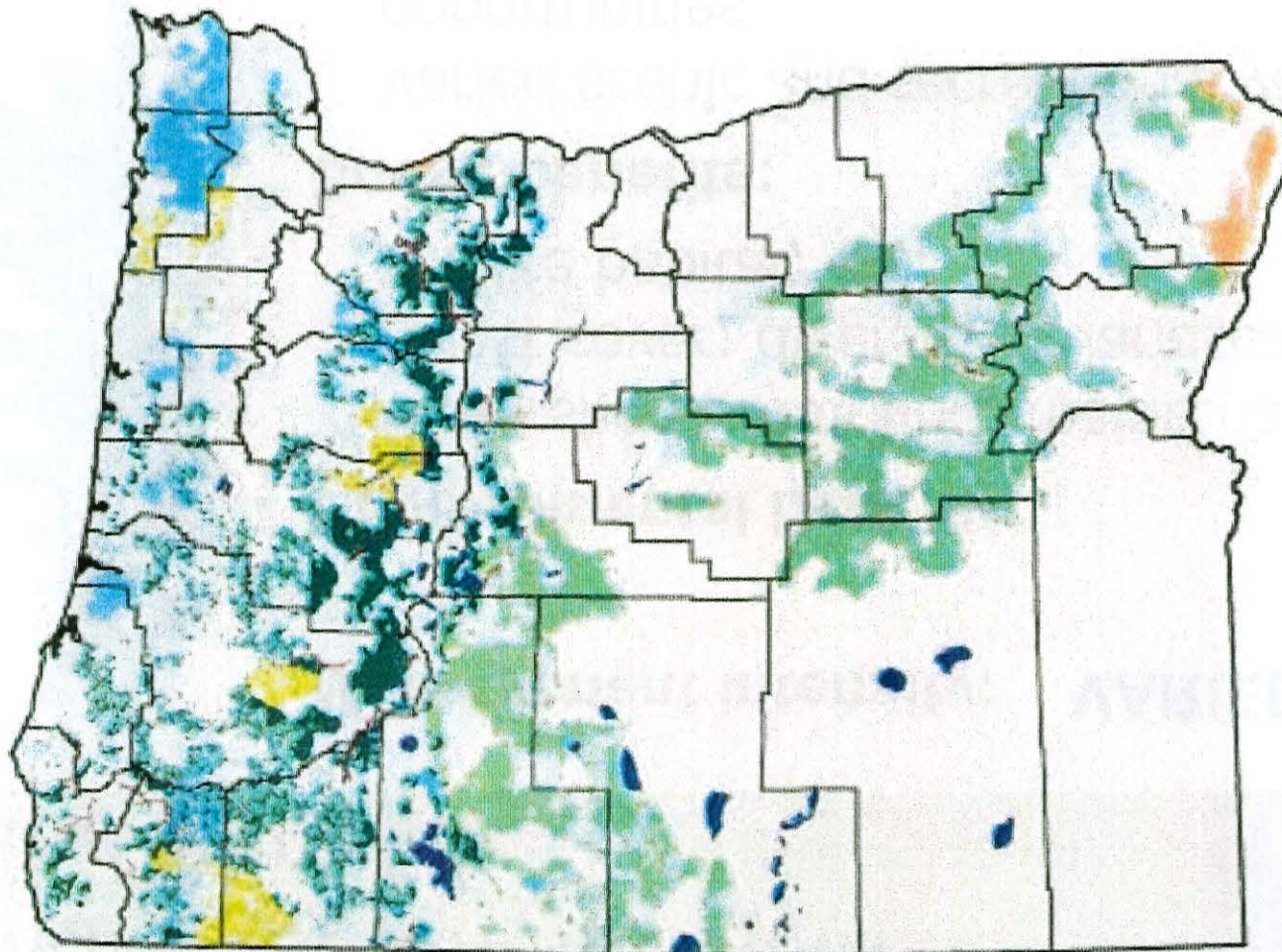


Forestlands on which timber harvest is integrated with non-wood production values by means of state regulations, forest plan, agency policy, or owner objectives.

- Varying management techniques and intensities
- Many social, economic and environmental benefits
- Represents 33% of Oregon's forestland (9.2 million acres)

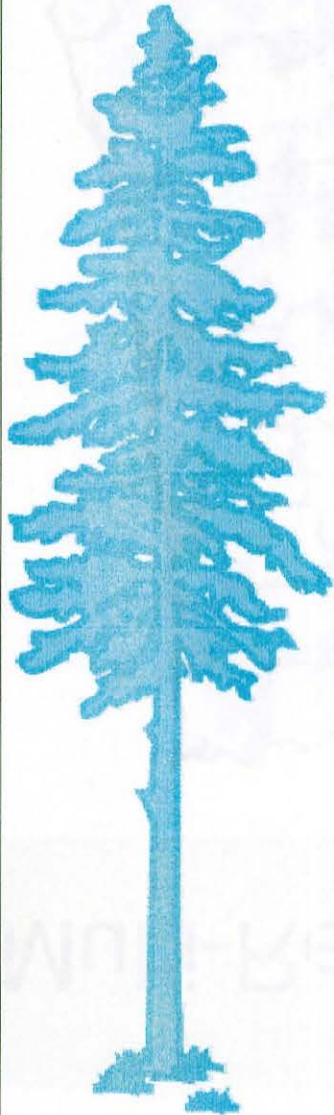


Multi-Resource Forestlands



-  Non-forest
-  Matrix
-  Eastside screens, Experimental forests, Other BLM and USFS
-  State Forests, State Research Areas
-  National Grassland National Recreation Areas, National Scenic Areas
-  Adaptive Management Areas
-  Oregon scenic waterways
-  Reserve or wood production

Management Intensity and Benefits



Management intensity: **VARIED**

Environmental benefits:

Watershed protection; maintenance of land in forest cover; diversity of landscape and fish and wildlife habitat, etc.

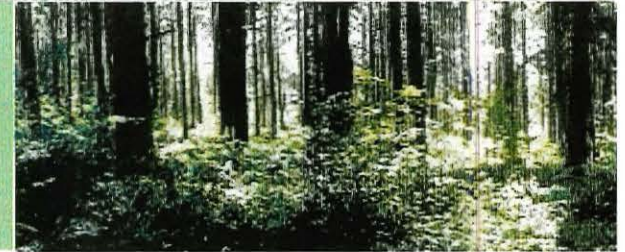
Social benefits:

Varied scenic and recreational values; research opportunities

Economic Benefits:

Tourism, wood products employment; non-wood forest products; local economy

Wood Production Forestlands

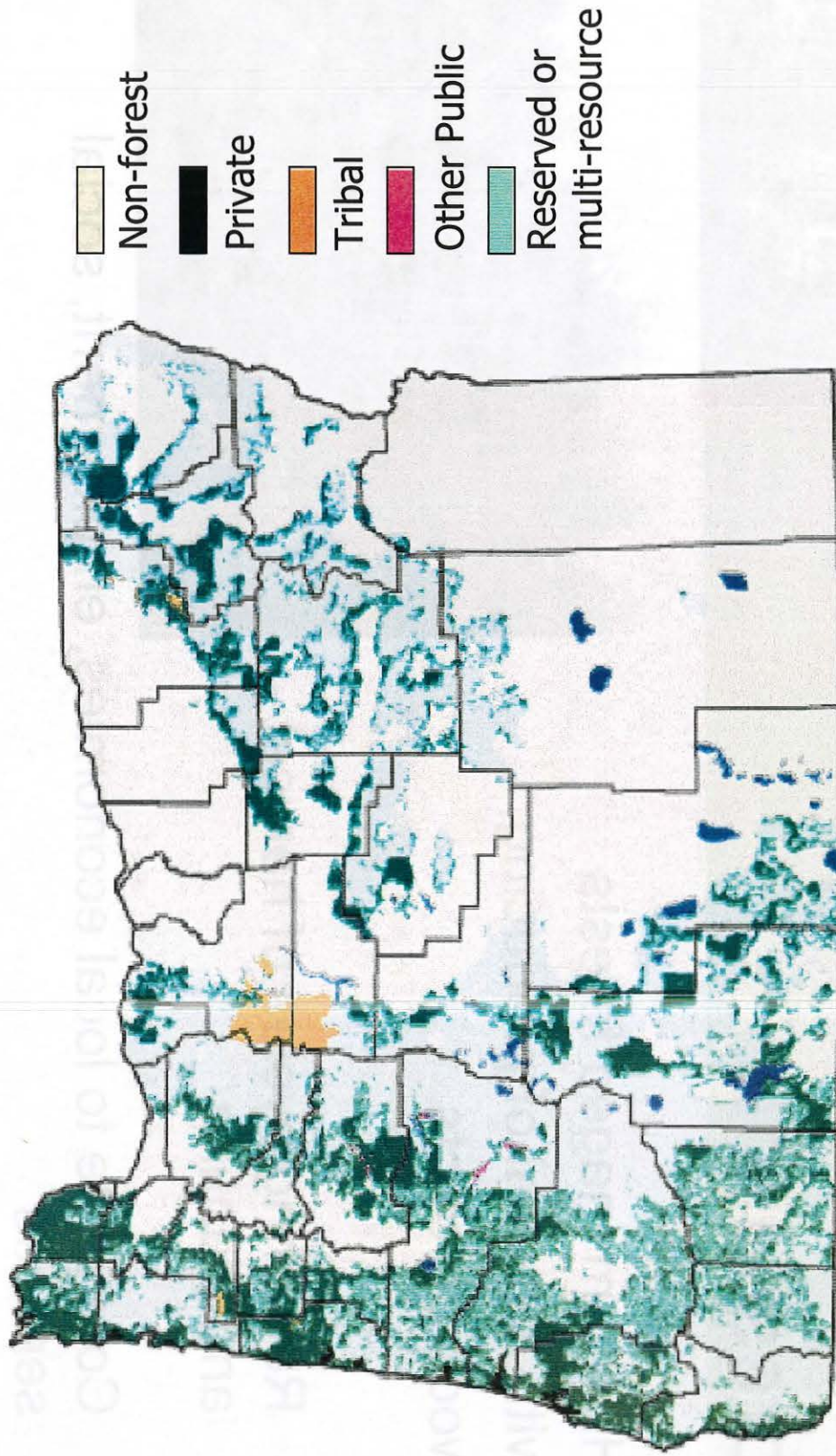


Highly managed forests
with the goal of producing
wood products

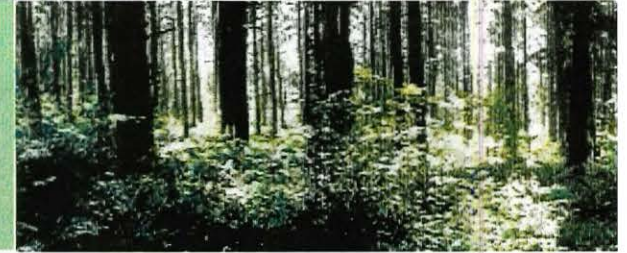
- Recurring cycles of harvest and planting
- Contribute to local economies, employment, social services
- 36% of Oregon's Forestland (9.9 million acres)
- Subject to a variety of management restrictions



Wood Production Forestlands



Management Intensity and Benefits



Management intensity: MODERATE to HIGH

Environmental benefits:

Watershed protection; maintenance of land in forest cover, diversity of landscape and fish and wildlife habitat.

Social benefits:

Recreational values, hunting, and fishing; research opportunities

Economic Benefits:

Wood products; employment in harvesting and manufacturing; motorized tourism recreation.

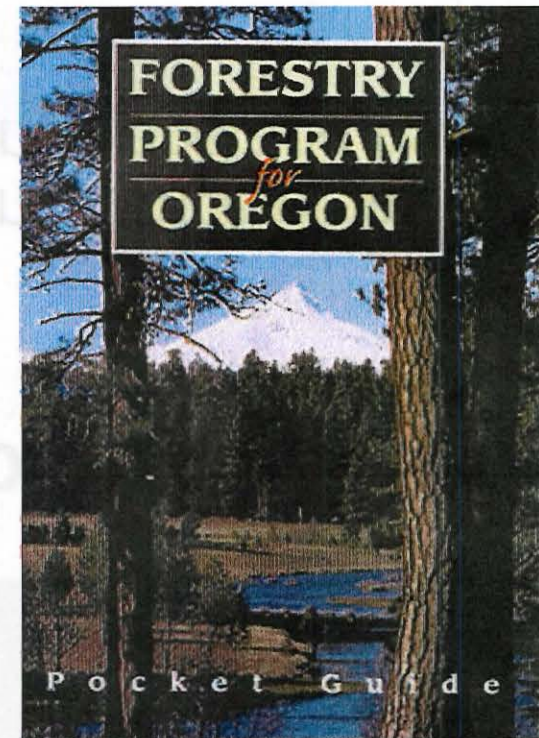
Forest Protections



Oregon's Wood Production forestlands are governed by the Oregon Forest Practices Act for:

- Soils
- Water
- Fish and Wildlife Habitat

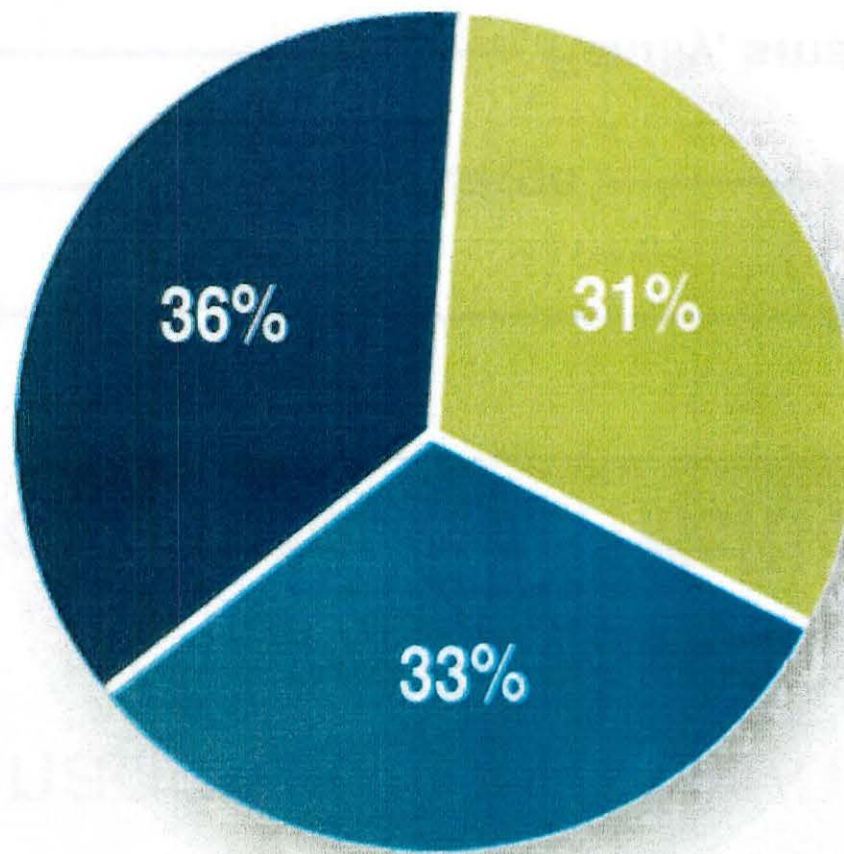
Private land owners offer additional layers of protection including restoration projects under the Oregon Plan for Salmon and Watersheds, and multiple certification programs.



Three Forestland Classes



Proportion of all Oregon forestland



Reserve

Primarily managed for non-economic commodity values

Multi-Resource

Lands managed for both timber production and non-economic values

Wood Production

Actively managed for wood production

Management and Ownership



Wood Production

Multi-resource

Reserve

← Industry →

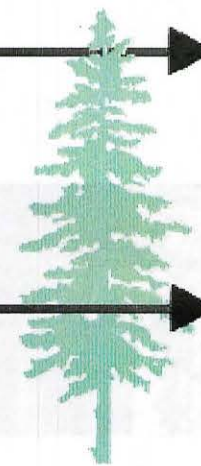
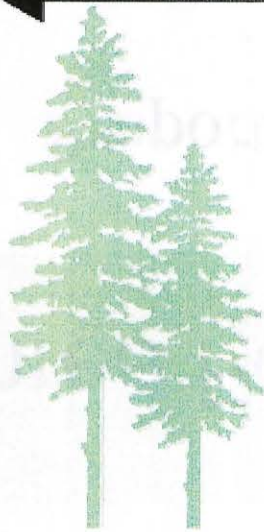
← Private, Large →

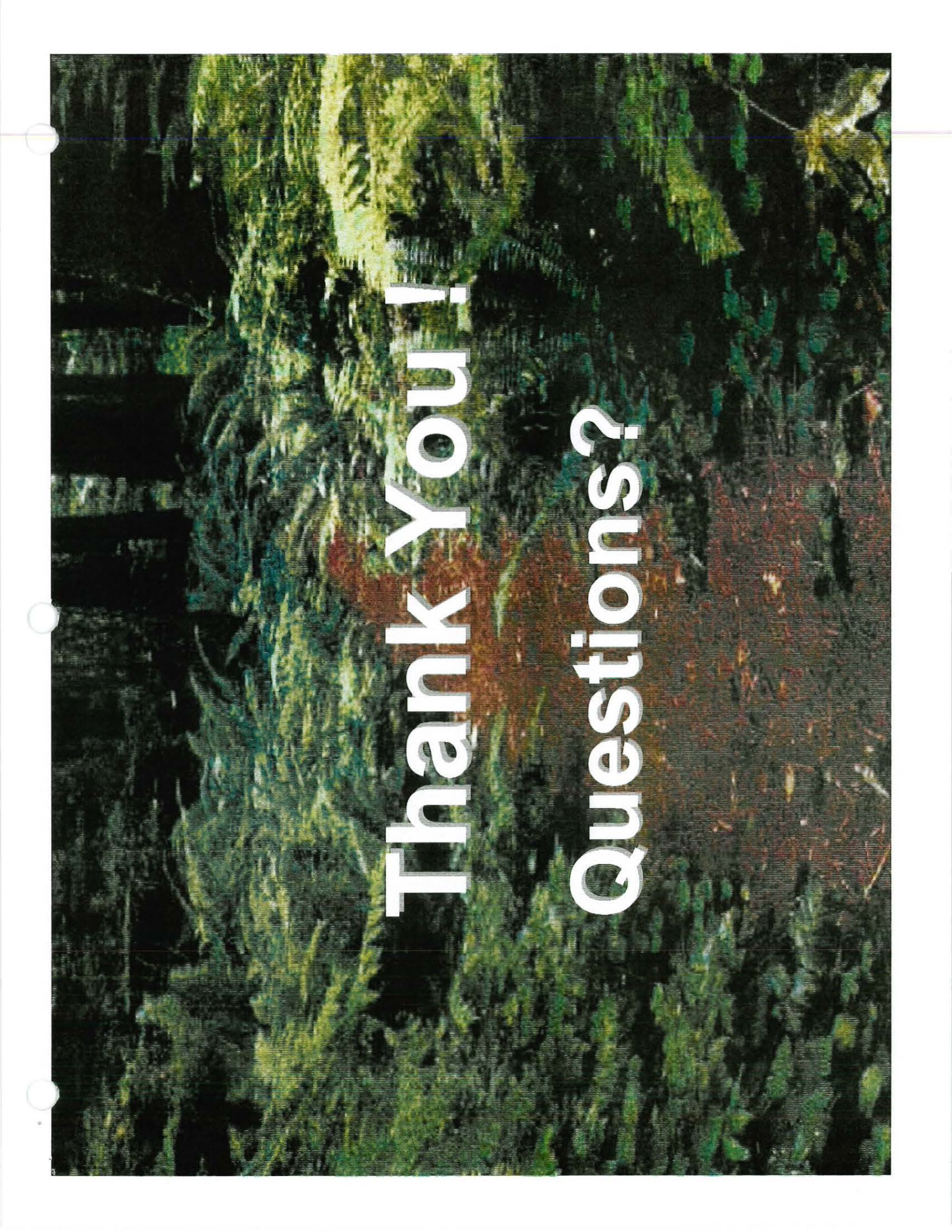
← Family, small →

← Tribes →

← State →

← Federal →





Thank You!
Questions?



EQC Information Item Oregon Smoke Management

AGENDA REVIEW

- 1. Oregon Smoke Management Plan Overview**
- 2. Update on recent smoke incidents and lessons learned.**
- 3. Summary of current OSMP Periodic Review**
- 4. EQC Discussion - Opportunity to Discuss key smoke management issues:**
 - **Balancing public and forest health objectives**
 - **Involving the public, address smoke problems and educate on forest health**
 - **Encouraging use of Alternatives to Burning**



EQC Information Item Oregon Smoke Management

April 20, 2007

Overview of the Oregon Smoke Management Plan

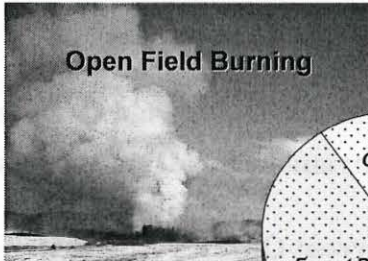
Brian Finneran
DEQ Senior Air Quality Specialist



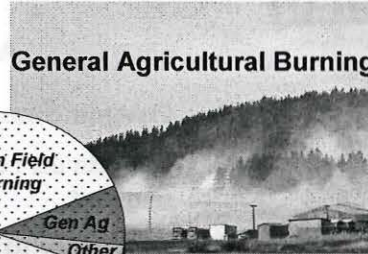
DEQ

Major Open Burning Sources in Oregon

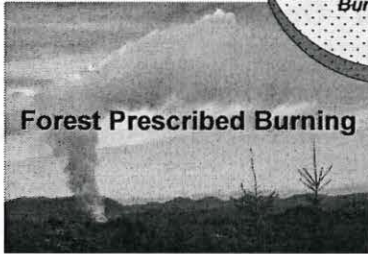
Open Field Burning



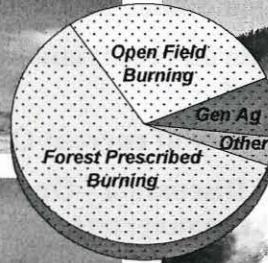
General Agricultural Burning



Forest Prescribed Burning



Other Burning

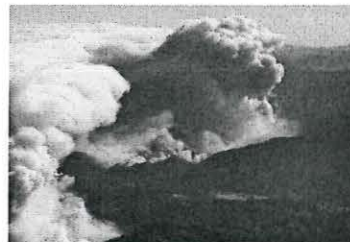


DEQ

Wildfire

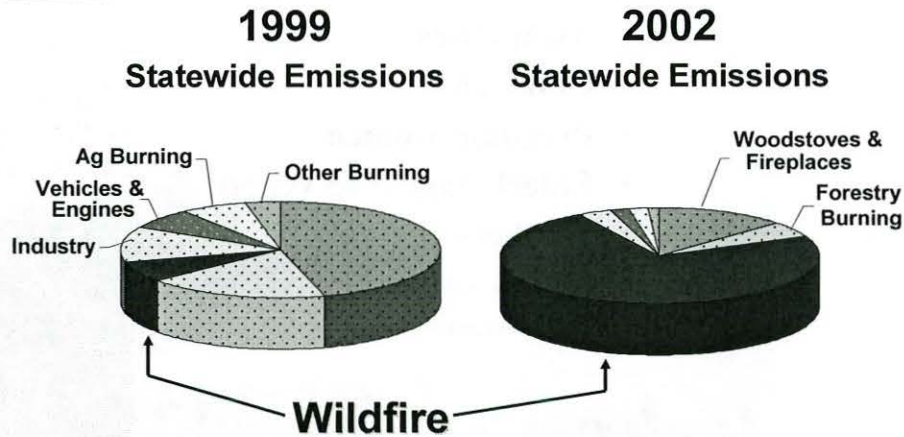


2002 Biscuit Fire in southern Oregon burned 499,965 acres





Wildfire Emissions Fluctuations

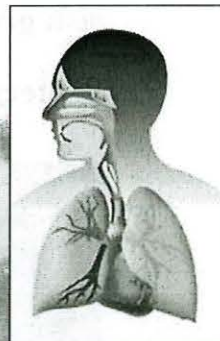


Source: Oregon DEQ



What's in Smoke?

- Fine particulate matter (PM2.5)
- Polycyclic aromatic hydrocarbons (PAHs)
- Carbon monoxide
- Aldehydes
- Nitrates / Sulfates
- VOCs
- Mercury





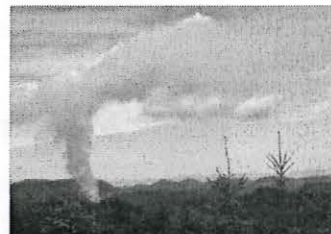
High Risk Groups

- Asthmatics
- Children
- Pregnant women
- Elderly (age > 65 years)
- Smokers
- Individuals with pre-existing conditions



Need for Smoke Management

- Protect against Air Quality Standard violations
- Protect sensitive individuals, high-risk groups
- Protect Visibility





DEQ

Protecting AQ Standards

- Most basic component of smoke management programs.
- Historically, very rare for prescribed burning impacts to exceed AQ standards.
- Daily PM standard is a 24-hr average – most impacts last only a few hours.



DEQ

Protecting Smoke-Sensitive Groups

- To adequately protect public health, must address smoke impacts below PM standards.
- Often called “nuisance” smoke, but can affect sensitive groups.
- Vast majority of prescribed burning smoke impacts in this category. Source of most smoke complaints.
- Greatest challenge for “advanced” smoke management programs.





DEQ

Protecting Visibility

- Relatively new component in smoke management.
- 156 national parks and wilderness designated as “Class I areas” by Congress in 1977.
- Takes only very small amounts of smoke to significantly reduce visibility in a national park.
- Class I areas not protected as much as cities and populated areas.



DEQ

Oregon Smoke Management Plan

- 1972 adopted as regulatory program.
- Covers all state, federal and private forestlands.
- Objectives:
 - Protect public health
 - Minimize smoke intrusions and emissions
 - Protect Class I area visibility (summer)
 - Maximize burning opportunities
 - Coordinate with other state smoke management programs.





Regulatory Overview of OSMP

- OSMP joint approval authority (ORS 477.013) by the State Forester and DEQ Director.
- OSMP is incorporated into Oregon State Implementation Plan (SIP) to meet Clean Air Act requirements for protecting air quality and visibility.
- Changes to OSMP require EQC approval, as a SIP revision.



Operation overview of OSMP

- Identify best weather conditions for optimum smoke dispersal.
- Focus on protecting “Designated Areas”.
- ODF determines burning areas, issues daily burning instructions to local forest districts.
- District selects actual burn unit. Daily communication between district and Salem office.
- Burning tracked by “real-time” monitoring and observations from forest districts.





DEQ

Periodic Review of OSMP

- OSMP required to be periodically reviewed for performance and possible improvements.
- Last periodic review in 1992. Plan currently under review, with ODF proposing major revisions this summer.
- ODF will describe current Periodic Review.



DEQ

OSMP meeting AQ Objectives

- OSMP successful in minimizing smoke intrusions.
- Many operational and technical improvements made since adoption.
- Few smoke intrusions into Designated Areas– few smoke complaints each year.
- OSMP effective in protecting PM10 Nonattainment Areas.





Future Smoke Management Challenges

1. EPA change to daily PM2.5 standard.
2. Meeting EPA's Regional Haze Rule.
3. Responding to on-going population growth.



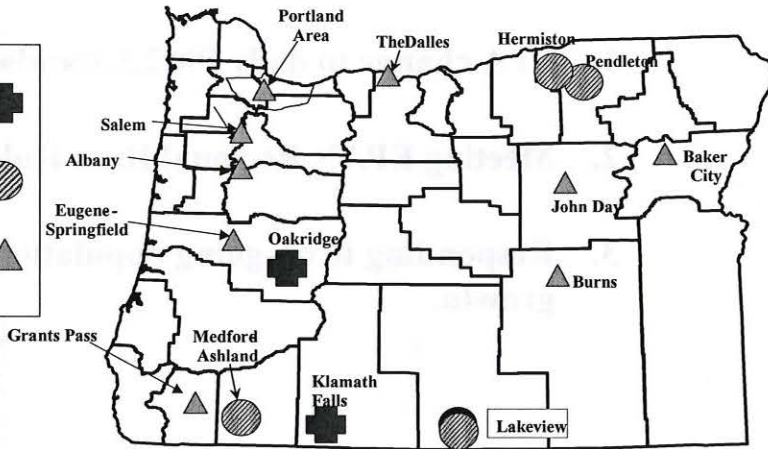
1. Change to PM2.5 Standard

- EPA lowered daily PM2.5 standard from 65 to 35 ug/m³.
- Several cities at risk of violating the new standard.
- The challenge: major prescribed burning impacts now have potential to exceed the 24-hour standard.

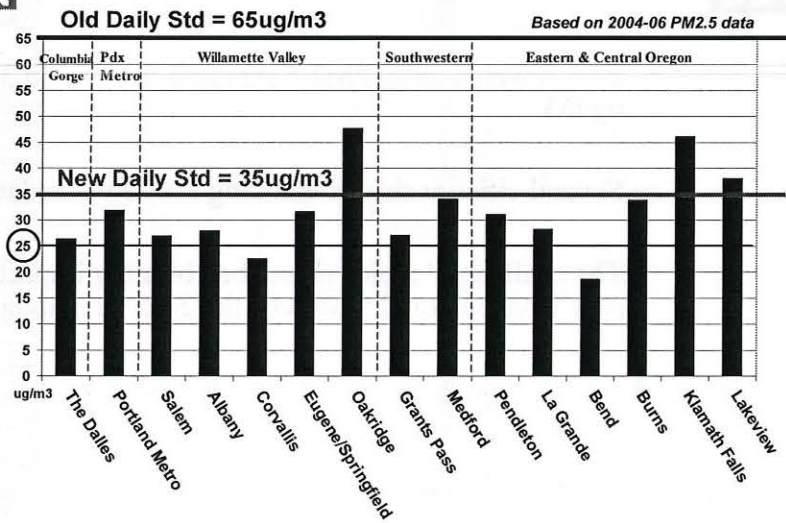


Cities at risk of under the revised PM2.5 standard

- Tier-1 Expected to Violate 
- Tier-2 At Risk Of Violation 
- Tier-3 Areas of Concern 



Comparison of old PM 2.5 standard to new standard



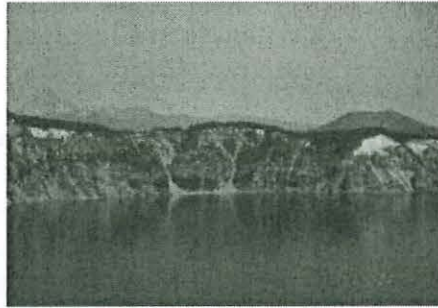


2. Challenges to Protect Visibility

Crater Lake National Park



Good Visibility >200 miles



Bad Visibility <20 miles



What is Regional Haze?

“Regional haze” is air pollution from many sources that travels long distances into scenic areas such as national parks and affects visibility (the scenic view).

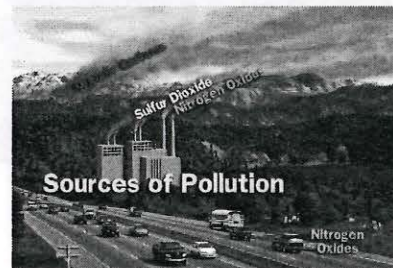
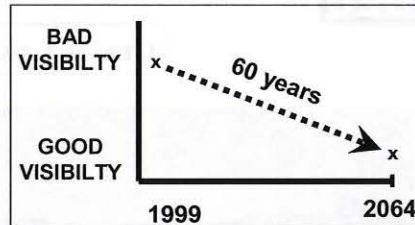




DEQ

EPA's Regional Haze Rule

- Adopted July 1999.
- Goal: Reduce haze levels in Class I areas over next 60 years.
- Adopt comprehensive strategies to address all contributing haze sources.



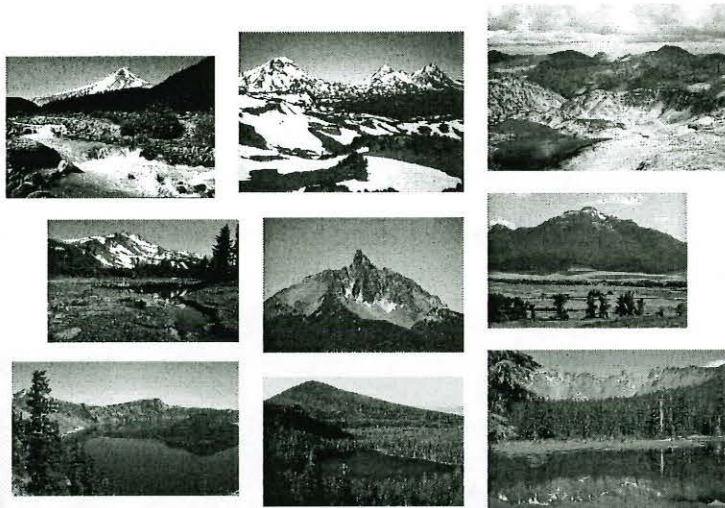
DEQ

Oregon Class I Areas





Oregon Class I Areas



How will Regional Haze Rule affect Prescribed Burning?

- Oregon Visibility Plan “pre-regional haze”. Summer focus only.
- Regional Haze Rule is year-round, requires “Enhanced Smoke Management Programs”:
 1. Actions to minimize emissions
 2. Evaluation of smoke dispersion
 3. Alternatives to fire
 4. Public notification
 5. Air quality monitoring
 6. Enforcement/Compliance
 7. Program evaluation
 8. Burn authorization
 9. Regional coordination.





How will Regional Haze Rule affect Prescribed Burning?

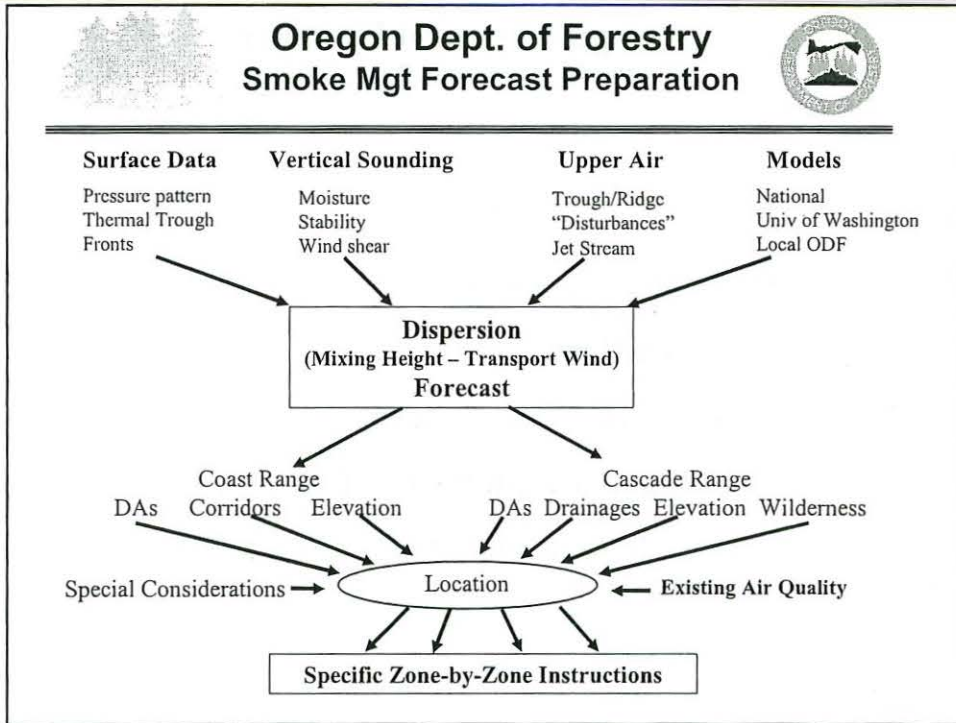
- OSMP meets 'Enhanced Smoke Management Program' criteria.
- Likely new provisions needed in future to show "reasonable progress" in reducing haze.
- 2012 Regional Haze SIP update.



3. Challenge of Population Growth

- Pop growth = More intensive smoke management
- Future improvements = new weather forecasting tools, expand air monitoring and smoke tracking.
- Pop growth = more smoke complaints, better coordination with state/local governments.
- Need for public education on forest health.
- "Wildland Urban Interface" - focus on fire danger, alternatives to burning, biomass utilization.





Oregon Dept. of Forestry
Daily Operations Procedures

Land Manager Selects of Parcels to Burn:

Smoke related considerations include –

- Fuel loading
- Treatment objectives
- Weather, fuel moistures, location



Oregon Dept. of Forestry Daily Operations Procedures

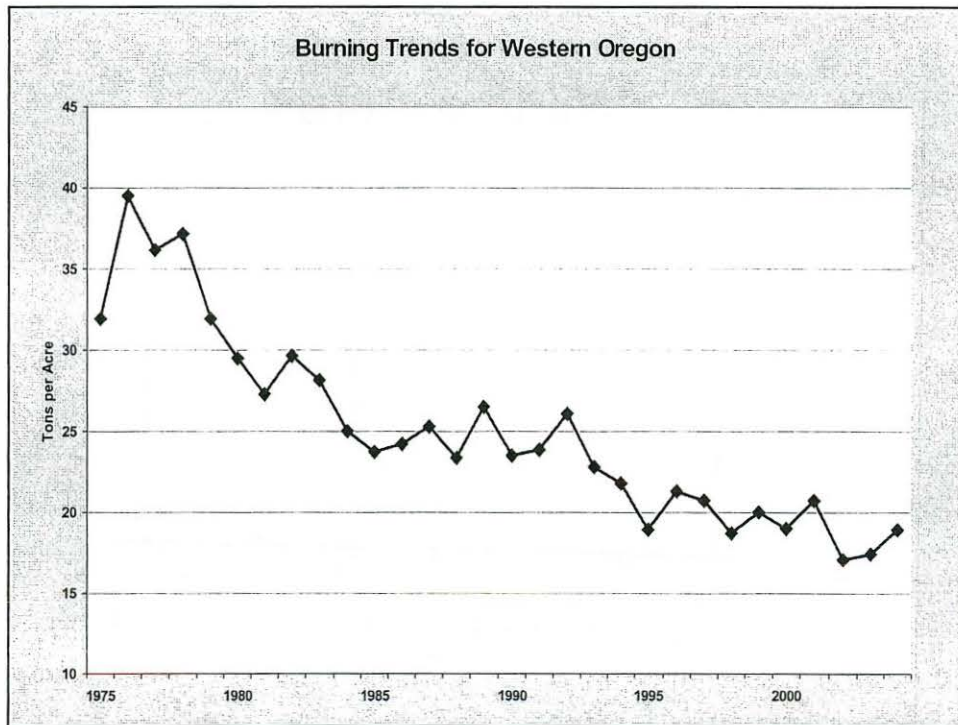
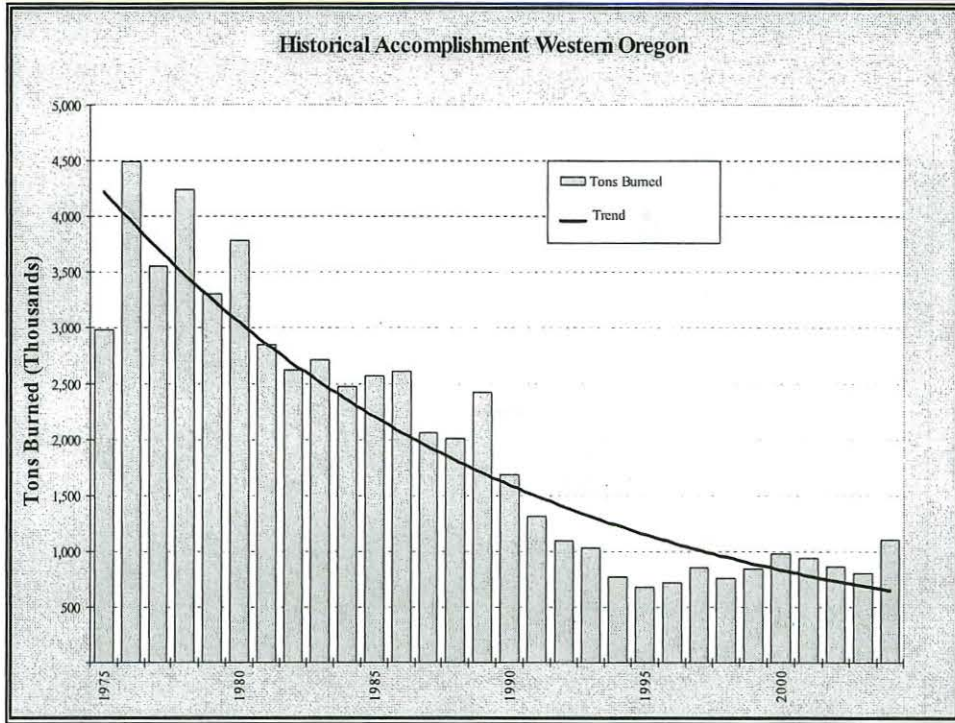


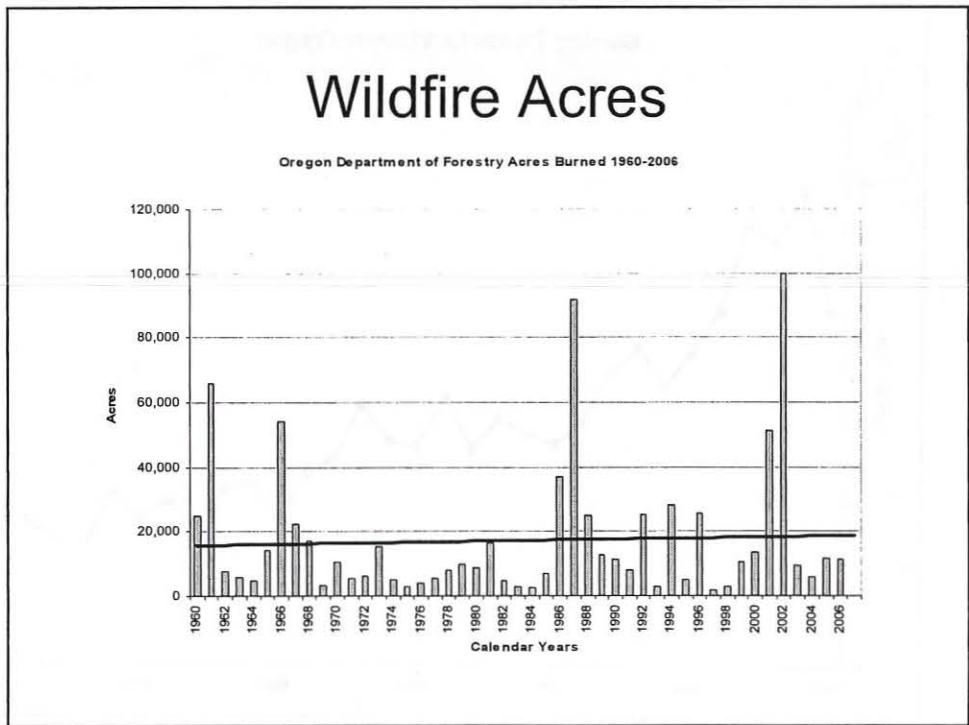
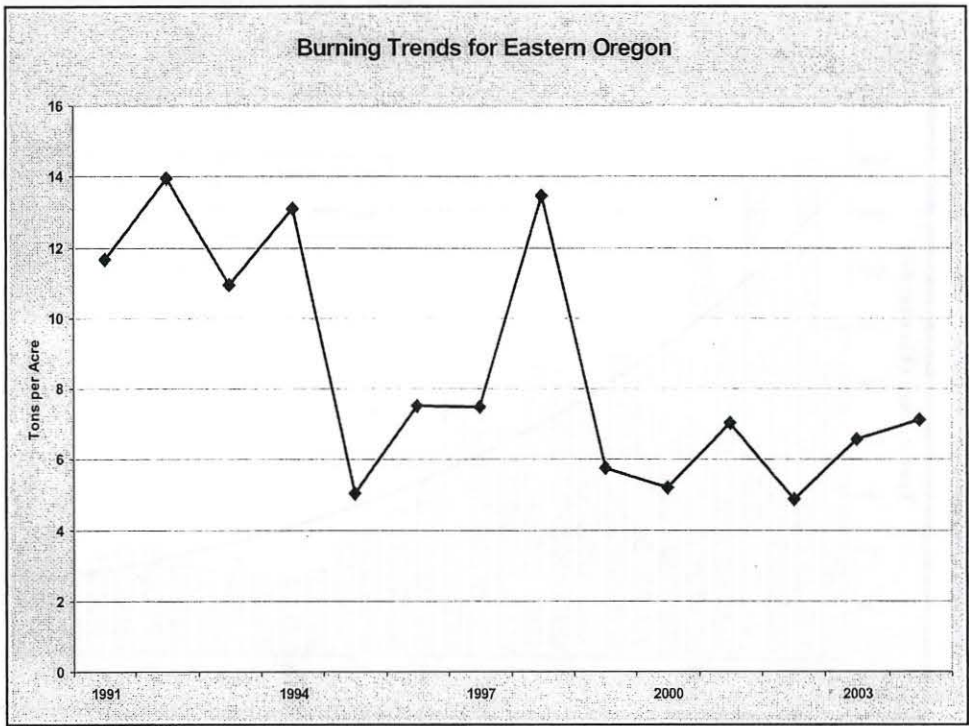
Final Decision to Burn:

Considerations include –

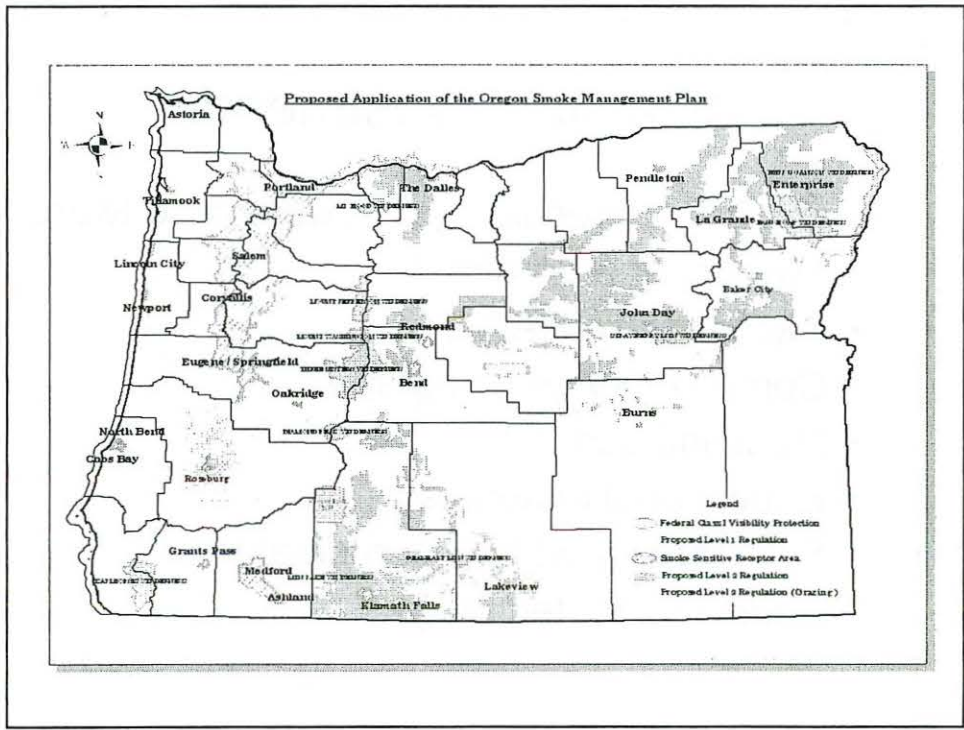
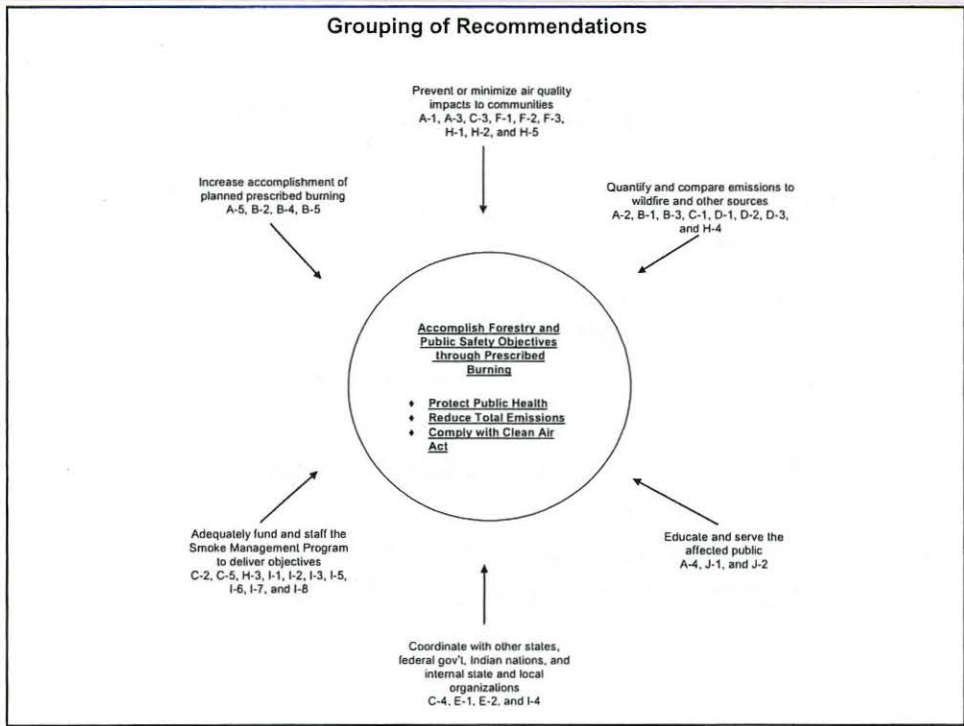
- Fire Control/Safety
- Satisfies Fuel Reduction Needs
- Complies with Smoke Instructions

All considerations must equal “Yes” for burn to proceed.





Grouping of Recommendations



Proposed Legislation

- HB 2973 makes policy changes to OSMP statutes
 - changes “restricted” to “regulated”
 - requires wildfire emissions data
 - allows more efficient fee system
- HB 3468 requests additional funding mechanisms
 - \$240,000 GF appropriation
 - 2 cent/MBF harvest tax (\$80,000/year)

“Capital Investments”

- Improved forecasting hardware & software
- Two upper air profilers
- Two portable RAWS
- Computer system upgrade
- Modeling support
- Educational materials
- Fuels specialist/field coordinator
- Additional meteorologist

Proposed Rule Package

- **AMEND**
OAR Chapter 629, Division 43 – Fire Prevention
- 629-043-0040
[Burning] Burn Permits
- **DELETE**
-629-043-0041
Burning in Restricted Areas
-629-043-0043
Smoke Management Plan

Proposed Rules (cont.)

- **ADOPT**
OAR Chapter 629, Division 48 – Smoke Management
-629-048-0001
Title and Scope
-629-048-0005
Definitions
-629-048-0010
Purpose
-629-048-0020
Necessity of Prescribed Burning
-629-048-0100
Regulated Areas

Proposed Rules (cont.)

-629-048-0110

Characterization of Smoke Incidents

-629-048-0120

Air Quality Maintenance Objectives

-629-048-0130

Visibility Objectives

-629-048-0140

Smoke Sensitive Receptor Areas

-629-048-0150

Criteria for Future Listing of Smoke Sensitive Receptor Areas

-629-048-0160

Bear Creek/Rogue River Valley SSRA

Proposed Rules (cont.)

-629-048-0200

Alternatives to Burning

-629-048-0210

Best Burn Practices; Emission Reduction Techniques

-629-048-0220

Forecast Procedures

-629-048-0230

Burn Procedures

-629-048-0300

Registration of Intent to Burn

-629-048-0310

Fee Structure

Proposed Rules (cont.)

-629-048-0320

Reporting of Accomplishments

-629-048-0330

Emission Inventories

-629-048-0400

**Coordination with Other Regulating Jurisdictions
and for Other Pollutants**

-629-048-0450

Periodic Evaluation and Adaptive Management

-629-048-0500

Enforcement

“What’s Next?”

- Request approval for formal rulemaking at Board of Forestry’s June 6 meeting
- Hold hearings around the state in late July and August
- Prepare report and final rule package
- Request Board to promulgate rules, Nov. 2
- Request DEQ approval – file w/Sec’y of State



Proposed AQ improvements

1. New section on AQ objectives:
 - Encourages use of alternatives, Emission Reduction Techniques (ERTs) and other voluntary actions at the burn site to minimize emissions.
 - Includes trying to avoid impacting nearby residences.



Proposed AQ improvements

2. New section on Visibility objectives:
 - Lists 9 ESMP criteria required under RHR
 - When burning inside Class I area, use best practices.
 - When burning outside, try to avoid direct plume impacts in Class I areas.



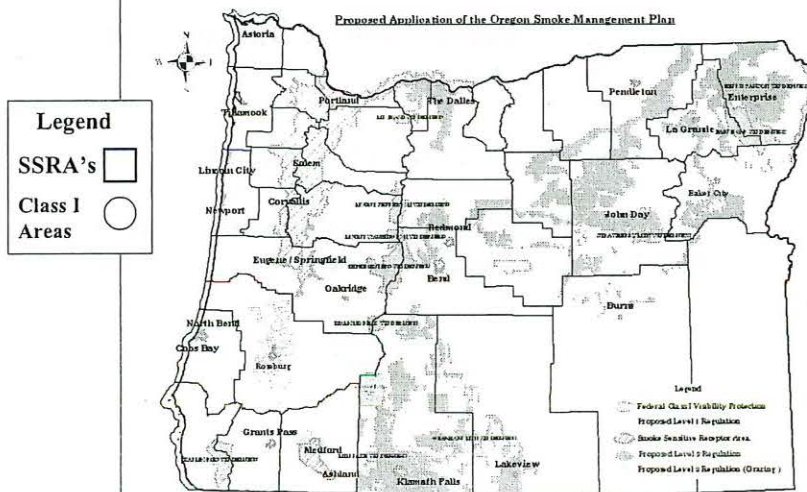
Proposed AQ improvements

3. Changes to Smoke Protected Areas:
- New term “Smoke Sensitive Receptor Area” (SSRA) to cover all smoke protected areas.
 - Three new SSRAs being proposed:
 - Columbia Gorge Scenic Area
 - City of The Dalles
 - City of Redmond



Smoke Protected Areas

Smoke Sensitive Receptor Areas (SSRAs)





Proposed AQ improvements

4. New section on Alternatives to Burning:
 - Encourages alternatives, provides a detailed list of options
 - Recommends an 'Alternative to Burning' reference manual for identifying options.
5. New section summarizing "Best Burn Practices" and Emission Reduction Techniques:
 - Provides detailed list.



Proposed AQ improvements

6. New section on Smoke Management Coordination.
7. New section on Enforcement.
 - Detailed list of enforcement actions for violations of OSMP.

Recommendations to Increase Burning Accomplishments

Recommendation:

A-5 Improve the smoke tracking system by strengthening the real time observation of smoke as a means to enhance ODF's forecasting ability.

B-2 Maximize burning opportunities through utilization of "best day" burning strategies while minimizing "marginal day" burning in proximity to SSRAs and other smoke sensitive areas. This could be accomplished through improved forecasting and tracking capability and technological advances and field data measurements.

B-4 Develop a formal protocol to enable local managers to work with landowners using Department guidance to prioritize units to be burned.

B-5 Eliminate references in the SMP Administrative Rule to "per 150,000 acres on any one day."

Index	Proposed Actions	Code	Timeline	Resp. Party	Progress Measure
1	• The Administrative Rules should be amended to remove the burn distance/tonnage restrictions. (B-2 & B-5)	1	11/07	-Charlie Stone -ODF Forecasters	- Rule amended. - Monitoring for "best burn days."
2	• As an adjunct to item # 39 below, create a tracking system to capture landowner comments on possible missed burn opportunities. (B-2)	1	9/07	Jim Trost	- Complaint directive and tracking system in place.
3	• Admin. units (state & fed.) should evaluate the need to develop local prioritization schemes if they have had recurring problems with high priority units not getting burned. Priority model should be incorporated into the smoke management plan by rule or directive. (B-4)	1	3/08 11/07	- Dist. for., dist. rangers & BLM area managers - Jim Trost	- District foresters and cooperators have attended the workshop in item # 10 below. - Priority model captured in SMP.
4	• Improve technology as necessary and justified to further refine forecasts and instructions. Tie large capital purchases to a pre-approved business plan. (B-2)	2	Will be tied to the business/funding plan	Jim Trost	- New technologies evaluated and employed where practicable.
5	• Funds should be solicited from DEQ/EPA and allocated in the ODF Smoke Management budget for aerial and ground monitoring of smoke behavior and impacts, as needed. (A-5)	2	As resources become available	New SM coord. & Bill Lafferty	- Increased smoke behavior monitoring conducted and documented
6	• Staff should develop the monitoring protocol and forms. (A-5)	2	6/07	ODF forecasters	- Protocol developed and distributed.
7	• Staff should analyze the monitoring results for program improvements in the long run. (A-5)	2	Ongoing	ODF forecasters	- Adjustments made, if warranted, to "burning instruction templates."
8	• The monitoring should be documented in writing and photographically for future reference and program improvement. (A-5)	2	6/07	State & fed. field personnel	- Documentation system developed and in use.

Code #'s

- | | |
|---|---|
| 1 - Agree; will attempt with existing resources | 3 - Agree; will require cooperation with other entities |
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**ODF Implementation Plan for Smoke Management
Review Committee Recommendations**

Index	Proposed Actions	Code	Timeline	Resp. Party	Progress Measure
9	<ul style="list-style-type: none"> • Admin. units (state & fed.) should contact program staff to request burn monitoring. If funds are available, monitoring should be done when: <ul style="list-style-type: none"> ○ Burning in marginal weather situations. ○ A smoke impact to a DA/SSRA is occurring. ○ New burning techniques, new burning instructions are being tried. (A-5) 	2	Depends on increase in funding	Dist. for., dist. rangers & BLM area managers	- Increased number of burn audits conducted and documented.
10	<ul style="list-style-type: none"> • Regional workshops of various land managers, and ODF field and staff representatives should be held to explore prioritization schemes in use that may be adopted at the local administrative unit level (state & federal). If adopted locally, the local land managers could meet annually to formulate specific priorities. Use the workshop for a general update on smoke management also. (B-4) 	3	3/08	Jim Trost, district foresters, federal land managers and landowners	- Workshops held.

Recommendations to Minimize Air Quality Impacts

Recommendation:

A-1 Continue to take all necessary steps to assure current and future NAAQS and Regional Haze Rule requirements are met.

A-3 Increase real-time air monitoring in SSRAs as needed.

C-3 Prior to the declaration of a Wildland Fire Use (WFU) fire, the responsible federal land management agency will consult with the Oregon Smoke Management Program on potential air quality impacts.

F-1 Establish Smoke Sensitive Receptor Areas (SSRAs).

F-2 SSRA's should be comprised of the existing Exhibit 2 Map and the communities specified in the northeast Oregon and Lake and Klamath County Agreements.

F-3 Retain Other Areas Sensitive to Smoke category and definition.

H-1 Increase commitment to alternatives to burning by revising OAR 629-043-0043.

H-2 Identify a process in the Operational Guidance for land managers to evaluate the feasibility of using alternatives and emission reduction techniques (ERT's) prior to burning, and include a reference and description of the two WRAP documents.

H-5 Provide land managers with greater economic incentives, and other incentives or rewards, for using alternatives.

Index	Proposed Actions	Code	Timeline	Resp. Party	Progress Measure
11	<ul style="list-style-type: none"> • Ensure the Smoke Management Program remains in compliance with National Ambient Air Quality Standards and the Regional Haze Rule. (A-1) 	1	Ongoing	Jim Trost	- No EPA enforcement actions against forest burning in Oregon.
12	<ul style="list-style-type: none"> • Meet with DEQ on an annual basis to review key elements of the smoke management plan and NAAQS compliance. (A-1) (see also item # 45) 	1	Annually	Jim Trost	- Meetings being held & results summarized.

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**ODF Implementation Plan for Smoke Management
Review Committee Recommendations**

Index	Proposed Actions	Code	Timeline	Resp. Party	Progress Measure
13	<ul style="list-style-type: none"> Review rule references to "other areas sensitive to smoke" and amend the rule together with adoption and implementation of the new SSRA system. (F-3) 	1	11/07	Charlie Stone	- Rule amended.
14	<ul style="list-style-type: none"> Amend OAR 629-043-0043(1) by changing "conform" to "comply" and at the end of the objective statement adding "by encouraging cost effective utilization of forest and range biomass, alternatives to burning, and alternative burning practices". (H-1) 	1	11/07	Charlie Stone	- Rule amended.
15	<ul style="list-style-type: none"> Incorporate the information on plastic use to cover burn piles into an ODF administrative rule revision as agreed to in the "Memorandum of Understanding" between ODF and DEQ on 3-28-05. (H-2) 	1	11/07	Charlie Stone	- Rule adopted
16	<ul style="list-style-type: none"> Enhance ODF's website to include information on emission reduction techniques and alternatives to burning. (H-2) 	1	Complete	Jim Trost & Rod Nichols	- Information available on ODF website, with links to alternatives to burning.
17	<ul style="list-style-type: none"> Develop voluntary procedures for land managers to use in the evaluation of feasibility for various burning alternatives and emission reduction techniques. (H-2) 	2	12/07 (if fuels specialist is funded)	Jim Trost & fuels specialist	- Procedures written
18	<ul style="list-style-type: none"> The biomass specialist should play an active role in developments in the biomass utilization arena and in creating viable economic incentives for the use of alternatives to burning, and communicate those to land managers. (H-5) 	2	Ongoing (if biomass specialist is funded)	Darren Mahr	- Reports on any developments circulated to land managers.
19	<ul style="list-style-type: none"> DEQ and ODF should identify areas where additional air quality sampling is vital; i.e., potential SSRAs, and DEQ should install and monitor the necessary instrumentation. The federal agencies, ODF and DEQ should pursue funding opportunities, especially through federal grants. (A-3) 	2 & 3	Depends on DEQ and funding	Brian Finneran & Jim Trost	- New air quality monitoring devices installed and operating. .
20	<ul style="list-style-type: none"> ODF and DEQ should cooperate so that all available real-time air quality information is available to ODF. ODF meteorologists should monitor that information prior to issuing burning instructions and use it to limit or curtail burning when air quality is nearing critical thresholds. ODF meteorologists should notify the state and federal operational (field) units when a critical air quality event is near or impending. (A-3) 	3	Already occurring Ongoing	Brian Finneran & Jim Trost ODF forecasters	- Burning instructions reflect all available real-time air quality monitoring information
21	<ul style="list-style-type: none"> ODF should work with federal land management agencies engaging in Wildland Fire Use (WFU) to incorporate likely air quality/smoke management 	3	6/07	Bill Lafferty	- Federal land mgmt. agency decisions to implement or continue WFU are being made

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**ODF Implementation Plan for Smoke Management
Review Committee Recommendations**

Index	Proposed Actions	Code	Timeline	Resp. Party	Progress Measure
	impacts into their WFU Decision Criteria Checklist. (C-3)				with consideration of smoke management forecasts.
22	<ul style="list-style-type: none"> • ODF and DEQ should jointly describe the concept and develop the criteria for designation of Smoke Sensitive Receptor Areas (SSRAs) in an administrative rule, including the criteria found on page 43 of the 2005 Smoke Management Review Committee Report: <ul style="list-style-type: none"> ○ Intrusion history; ○ Other pollution impacts; ○ Proximity to areas of increased prescribed burning; ○ Existence of any known tracking or monitoring in areas being considered; ○ Population (density), smoke sensitive groups, meteorology and trends; and ○ Existing woodstove curtailment program. (F-1) 	3	11/07	Charlie Stone & Brian Finneran	- Rule adopted describing SSRAs and establishing the criteria for SSRA designation.
23	<ul style="list-style-type: none"> • ODF and DEQ should jointly list the communities or areas that will be treated as SSRAs in an administrative rule. Initially, the list should include all the current Designated Areas and northeast Oregon and Klamath agreements plus any non-attainment areas and air quality management areas. Any future changes to the list should be designated through a public rulemaking process using the criteria to be created under item # 22 above. (F-2) 	3	11/07	Charlie Stone & Brian Finneran	- Rule adopted listing location of SSRAs.
24	<ul style="list-style-type: none"> • ODF should develop criteria for listing of other areas subject to the "sensitive to smoke" treatment. These are areas which are not classified as an SSRA, but would be treated as an SSRA at certain times. Examples could include recreation areas during high use periods and festival days in certain towns. The local ODF district or federal agency administrative units would need to be aware of event driven smoke sensitive areas and regulate burning accordingly. (F-3) 	3	11/07	Charlie Stone & Brian Finneran	- Develop criteria to be included in the rule amendment contemplated in item # 13.

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Recommendations to Quantify Emissions

Recommendation:

- A-2 Develop reporting systems for daily and annual emission inventories for both wildfire and prescribed burning.
- B-1 The entire state should become a Regulated Area. Smoke Management Plan rules should expand from Class 1 forestland to all forestland within and outside state protected areas. This decision affects all forest, rangeland, underburning, maintenance, habitat restoration, and forest health burning within the state of Oregon and will require that all burns will be reported, tracked, and monitored. Discontinue the use of Restricted Area terminology in lieu of Regulated Area references. These changes will allow total smoke emissions to be more effectively tracked and inventoried as required by the Regional Haze Rule.
- B-3 Provide access to "Photo Series for Quantifying Forest Residue" for managers to better quantify fuel volumes.
- C-1 Review how the land manager determines total tons consumed and how ODF calculates emissions, in order to more accurately reflect the amount of emissions produced.
- D-1 Establish a smoke tracking system for all wildfires based on existing state and federal reporting and data collection procedures.
- D-2 Implement a statewide system to collect both prescribed fire and wildfire emission data in order to develop emission inventories.
- D-3 Compare the emission inventories developed from this tracking system (D-2) to monitor data to assess whether there are actual reductions in emissions resulting from prescribed burning vs. wildfire.
- H-4 Develop a tracking system and implement an up-to-date database on use of alternatives to burning and emission reduction techniques.

Index	Proposed Actions	Code	Timeline	Resp. Party	Progress Measure
25	<ul style="list-style-type: none"> The ODF prescribed burning accomplishment reporting system should be used to estimate (daily) the prescribed burning emissions from forestland. (The ODF emission inventory system is currently under revision to incorporate the latest modeling information.) That system should be monitored at least monthly to ensure accuracy. Amend the administrative rule to require daily (weekly for private land) reporting of burning accomplishments in eastern Oregon. (A-2 & D-2) 	1	6/07 11/07	- Jim Trost -Charlie Stone	- Data system updated. - Rule amended.
26	<ul style="list-style-type: none"> The ODF Smoke Management staff should survey landowners through OFIC, OSWA, federal and ODF personnel to determine who needs the "Photo Series for Quantifying Forest Residue" and does not have it. If copies are available, they should be ordered and sent to all those in need. If not available, staff should reproduce the series, if possible and is not cost prohibitive. The photo series should be put on the ODF website. (B-3) 	1	6/07 6/07	Jim Trost	- Information available on ODF website. - Photo series made available (color copies for purchase) for those who want them in printed form.

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**ODF Implementation Plan for Smoke Management
Review Committee Recommendations**

Index	Proposed Actions	Code	Timeline	Resp. Party	Progress Measure
27	<ul style="list-style-type: none"> Staff should periodically review methods of consumption estimation and emission calculation to determine if there is a more accurate or efficient method. They should review the latest research and science for this determination. The staff should provide recurring training opportunities for those doing the estimations. (C-1) 	1	Complete	Jim Trost	- Revised audit procedures in place.
28	<ul style="list-style-type: none"> Make sure that land managers are properly trained (re-trained) in tonnage estimation procedures for loading and consumption. Workshops discussed in item # 10 might be used for this. (C-1) 	1	3/08	Jim Trost	- Workshops held.
29	<ul style="list-style-type: none"> The directive should reference a manual of procedures to estimate fuel loading and consumption. (C-1) 	1	6/07	Jim Trost	- Fuel loading estimation procedures in directive.
30	<ul style="list-style-type: none"> Use information currently collected by ODF (FIRES database) (forestland only) and federal land management agencies (all lands) relative to wildfires to estimate emissions. The prescribed fire databases might be modified to also collect this information. Amend ORS 477.554 to reflect a purpose of gathering wildfire emissions data for comparison with prescribed burning. (D-1 & D-2) 	1 & 3	9/07 7/07	- Jim Trost & Jim Russell -Charlie Stone	- Estimation and reporting procedures developed and database operative. -Statute amended
31	<ul style="list-style-type: none"> Long-term data from prescribed fire and wildfires should be maintained and longer term trends analyzed to estimate the amount of wildfire emissions offset by prescribed burning. The data should be used carefully and consistently, due to the inevitable emission swings in short time frames. (System should capture as much accurate past data as possible to reflect improvements already made.) (A-2 & D-3) 	1	Annually	Jim Trost	- Annual compilation of data.
32	<ul style="list-style-type: none"> Periodically report data, analysis and conclusions regarding the total emissions resulting from prescribed fire vs. wildfire. (D-3) 	1	12/2010	Jim Trost	- Analysis and report every 3-5 years.
33	<ul style="list-style-type: none"> ODF should continue to work with the Western Regional Air Partnership (WRAP) and Fire Emissions Joint Forum (FEJF) on regional haze rule development to ensure Oregon's input is considered. (B-1) 	1	Ongoing	Jim Trost	- Meetings being attended and Oregon influence evident.
34	<ul style="list-style-type: none"> ODF should create a database that tracks the use of alternatives to burning and makes some estimates of emissions avoided thereby. Systems already in place for quantifying federal land burning alternatives should be considered and incorporated as appropriate. (H-4) 	2 & 3	2/08	Jim Trost, fuels specialist & Jim Russell	- Database created and in use.

Code #'s

1 - Agree; will attempt with existing resources
2 - Agree; will require additional resources

3 - Agree; will require cooperation with other entities
4 - Not sure; will need to consult SMAC, BOF or Legislature

**ODF Implementation Plan for Smoke Management
Review Committee Recommendations**

Index	Proposed Actions	Code	Timeline	Resp. Party	Progress Measure
35	<ul style="list-style-type: none"> • DEQ should use the approved ODF emission inventory calculations for prescribed fire and wildfire when reporting to EPA, etc. (D-2) 	3	Annually	Brian Finneran	- DEQ annual emission summaries use ODF data and calculations methodology.
36	<ul style="list-style-type: none"> • DEQ, DOA and ODF have conferred and are in agreement that ODF will not be fully implementing the review committee's recommendation B-1, particularly with regard to regulating the entire state and/or collecting emissions information from private rangelands. ODF will, however, propose amendment of the statutes to change the reference in ORS 477.013 and other appropriate locations from "restricted areas" to "regulated areas." (B-1) 	4	7/07	Charlie Stone.	- Statute amended.
37	<ul style="list-style-type: none"> • ODF should amend OAR 629-043-0041 to remove references to the Restricted Area. A new administrative rule should describe the regulated area of the state to include all classified forestland and all federal forestland within the boundaries of a forest protection district. There is no intent to regulate rangeland burning or impose fees on Class 2 or 3 private forestland areas that do not currently pay fees. (B-1) 	4	11/07	Charlie Stone	- Rule amended.
38	<ul style="list-style-type: none"> • A workgroup should be formed including representatives from rangeland burners, eastern Oregon prescribed burners, western Oregon prescribed burners and federal and ODF smoke management staff to discuss the future implications of the regional haze rule and to chart a cooperative path toward collection of emissions data or other mechanisms to ensure continuing compliance with the federal Clean Air Act. This will be a controversial topic, and care should be taken to get the understanding, acceptance, and support of the user groups prior to the development of the 2012 State Implementation Plan. (B-1) 	4	12/10	Paul Bell & a DEQ representative	- Workgroup is formed and understanding, acceptance and support is achieved.

Code #'s

- | | |
|---|---|
| 1 - Agree; will attempt with existing resources | 3 - Agree; will require cooperation with other entities |
| 2 - Agree; will require additional resources | 4 - Not sure; will need to consult SMAC, BOF or Legislature |

Recommendations for Public Education and Service

Recommendation:

- A-4 Improve the citizen complaint tracking system. Use this system to improve the Smoke Management Program. Use the complaint system as an educational outreach opportunity.
- J-1 Develop and implement integrated procedures and standards for taking and following up on complaints.
- J-2 Develop a comprehensive education and outreach program for the Smoke Management Program that may include any of the following activities:
- Develop smoke management education kits in cooperation with other agencies to be used by agencies that target specific groups and provides consistent and coordinated messages.
 - Provide a one-page description of the Program to operators and landowners when they file a 'notification of operation'.
 - Include information on the Smoke Management Program in various training opportunities and training modules.
 - Develop an integrated website that describes the SMP and how it dovetails with other smoke management programs in the state.
 - Duties of the Biomass Utilization Specialist (From Matrix Question H) should include education and outreach. However, because this is a big job, a Smoke Management and Communication Outreach Committee should be formed and coordinated by the specialist position. This committee would identify the educational task to be done, who would do it, and coordinate educational efforts with other programs and agencies. The committee could be comprised of PNWCG, ODA, OFRI, KOG, ODF Agency Affairs, and representatives from other agencies involved in smoke management. If this position is not created and funded, we suggest this committee still be formed.
 - Work with OFRI to develop a color publication highlighting how the Smoke Management Program works and protects Oregonians. Also, develop questions specific to the topic of smoke that can be incorporated into OFRI's public opinion survey that is conducted periodically to gauge the public's knowledge and attitude about smoke.

Index	Proposed Actions	Code	Timeline	Resp. Party	Progress Measure
39	<ul style="list-style-type: none"> Adapt the Forest Practices complaint investigation directive to use in the smoke management arena and use training to ensure that all employees who handle complaints do so in a respectful and helpful manner. (A-4 & J-1) 	1	9/07	Jim Trost & Charlie Stone	<ul style="list-style-type: none"> - Receiving accurate information on smoke impacts. - Complainants do not feel need to carry their complaint to another agency or level.
40	<ul style="list-style-type: none"> Complaint data should be analyzed periodically by ODF for use in helping to refine burning instructions. (A-4 & J-1) 	1	Ongoing	ODF forecasters	<ul style="list-style-type: none"> - Analysis occurring.
41	<ul style="list-style-type: none"> ODF should analyze and seek the necessary resources to develop the educational and outreach program as described in detail in the review committee's recommendations shown above. ODF will likely also use the Agency Affairs section in this effort. (J-2) 	2	12/08 (if resources are made available)	Jim Trost & Dan Postrel	<ul style="list-style-type: none"> - A variety of handout materials and website articles have been produced and made available.
42	<ul style="list-style-type: none"> OFRI should be consulted or used for developing a brochure on the smoke management program. (J-2) 	2 & 3	07-09 biennium	Jim Trost	<ul style="list-style-type: none"> - OFRI publication on the Smoke Management Program.

Code #'s

- | | |
|---|---|
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Recommendations for Interagency Coordination

Recommendation:

C-4 Adopt the definition of prescribed burning (fire) as found in the first line of National Fire and Aviation Executive Board Directive Task Group Briefing Paper #03 dated January 19, 2005 as "Any fire ignited by management actions to meet specific objectives."

E-1 Address interstate coordination between Oregon (involving DEQ and ODF), Washington, Idaho, Nevada, and California through interagency agreements or MOU. Daily smoke management coordination of planned burning activity, projections of interstate smoke transport, and emissions reporting should be included. These agreements should also address regional smoke management coordination of agricultural and rangeland burning.

E-2 Address intrastate coordination of prescribed fire, agricultural, and rangeland burning through agreement or MOU among ODF, DEQ, ODA, tribes, LRAPA, rural fire districts, protection associations, and the counties that operate local air quality and smoke management programs.

I-4 The Smoke Management Program will remain available to the sovereign Indian nations if they choose to use it. Reporting requirements and fees that are currently paid should be continued on tribal lands where participation exists. Burning on additional lands will remain exempt from fees for the Program, unless agreement is reached with that nation that funding support is acceptable. However, ODF should coordinate with EPA and tribes on Tribal Implementation Plan development.

Index	Proposed Actions	Code	Timeline	Resp. Party	Progress Measure
43	<ul style="list-style-type: none"> The ODF smoke mgmt. staff should meet with adjacent states' staffs. The parties should explore smoke sensitive areas, coordination and communication. (E-1) 	3	Ongoing March and Sept. each year	Jim Trost	<ul style="list-style-type: none"> - Program leaders in each state know and talk to each other. - Meet (or conference call) semi-annually.
44	<ul style="list-style-type: none"> If the coordination in item # 43 above will include rangeland and agricultural burning, other entities beside ODF (DEQ and ODA) will also need to be involved. (E-1) 	3	Ongoing	Brian Finneran & ODA	See item # 43.
45	<ul style="list-style-type: none"> ODF staff should meet periodically with DEQ air quality staff to discuss program status, trends, successes, problem areas, public complaints and their resolution, needed coordination actions, communication needs and to review SSRAs. (E-2) (see also #12) 	3	Annually	Jim Trost & Brian Finneran	- Meetings being held & results summarized.
46	<ul style="list-style-type: none"> ODF & DEQ smoke management staffs should periodically meet with their counterparts in the other named organizations. The parties should explore smoke sensitive areas, coordination and communication. (E-2) 	3	9/07 and then annually	Jim Trost	Meetings being held.
47	<ul style="list-style-type: none"> ODF should work with others to establish an air quality alert notification system to notify local fire districts and county officials and to ensure a coordinated and appropriate response. (E-2) 	3	3/08	Jim Trost	- Alert system in place and functioning.

Code #s

- | | |
|---|---|
| 1 - Agree; will attempt with existing resources | 3 - Agree; will require cooperation with other entities |
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**ODF Implementation Plan for Smoke Management
Review Committee Recommendations**

Index	Proposed Actions	Code	Timeline	Resp. Party	Progress Measure
48	<ul style="list-style-type: none"> Staff should continue to make the Smoke Management Program available to, and conduct outreach with the tribes, to try to have them fully participate in the Smoke Management Program. (I-4) 	3	Ongoing	Jim Trost & Tribes	- Operating agreements executed where desired by the tribes.
49	<ul style="list-style-type: none"> If after statute amendments are drafted, it is determined to be useful to have a rule definition for prescribed burning, and it is compatible with the federal land management agencies' definition, make them as similar as possible. Examine closely to avoid unintended consequences. (C-4) 	4	11/07	Charlie Stone	-Definition adopted in rule.

Recommendations for Funding and Staffing

Recommendation:

C-2 Forest health burning will no longer be exempt from fees.

C-5 Assess staffing and technology needs to meet anticipated increases in forest health burning based on annual surveys of land management agencies.

H-3 Create a new position at ODF for a Biomass Utilization Specialist.

I-1 ODF should develop a business plan that identifies positions, technology, and program enhancement costs to implement recommendations of this Committee.

I-2 No fees for wildland fire (WFU) use. Continue to consider the impacts of smoke from WFU in the decision to permit them to burn.

I-3 Allow the USFS and BLM to pay an annual flat fee for smoke management services. Include NPS and Fish & Wildlife burn acreage in the BLM fee.

I-5 General Fund dollars are an appropriate component of the Program. ODF should develop a strategy to secure additional General Fund dollars.

I-6 Add another meteorologist to the Program, in order to provide for increased services over the near term.

I-7 Add a Biomass Utilization Specialist to the Program. This recommendation is consistent with recommendations of several work groups in the Fire Program Review and is discussed in length in Matrix Question H of this report.

I-8 The standing Smoke Management Advisory Committee should convene to address funding issues. The standing Committee should be directed to include a wide variety of landowners who burn and don't burn to provide input to ODF on a funding structure. This Committee would consider, but not be limited to the following concepts:

- a. Monetary incentives for using alternatives to burning (i.e., tax credits, discounted fees).
- b. A working capital fund to collect monies to purchase new equipment and services to improve technology and infrastructure. A portion of the burn fees should be the source of revenue for this fund.
- c. Fees charged for all Class I forestland with no exemptions. Rangeland should be part of the daily burning inventories, but fees would not be assessed on this type of burning. Continue to assess fees to private landowners on a per-acre basis in areas currently paying fees. Assess a flat fee for each acre, regardless of the type of burn conducted, in order to minimize record keeping and monitoring.
- d. A minimum fee for any burning in areas where fees apply.
- e. Program fees in the harvest tax, which minimizes ODF as the bill collector.

Code #'s

- 1 - Agree; will attempt with existing resources
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**ODF Implementation Plan for Smoke Management
Review Committee Recommendations**

Index	Proposed Actions	Code	Timeline	Resp. Party	Progress Measure
50	<ul style="list-style-type: none"> Propose amendment of ORS 477.562 to the 2007 Legislature, to eliminate the fee exemption for forest health burning. If the statute is amended, OAR 629-043-0041 will also need to be amended. (C-2) 	1	7/07 3/08	Charlie Stone	- Statute amended. - Rule amended.
51	<ul style="list-style-type: none"> ODF staff should develop a process to determine the federal land management agencies' anticipated "out-year" fuel reduction accomplishments and their implications to ODF's program needs. (C-5) 	1	Biennially	Jim Trost	- Responses received.
52	<ul style="list-style-type: none"> After quantifying the results from item # 51, together with private landowner burning trends, ODF staff should recommend any necessary changes to staffing and technology. (C-5) 	1	Biennially	Bill Lafferty	- Biennial budget developed.
53	<ul style="list-style-type: none"> ODF staff should prepare a business/funding plan that illustrates current program funding and staffing and then adds a menu of choices for additional increments of program and services (also showing costs) to facilitate decision making for future program delivery. (I-1) 	1	6/07	Charlie Stone & Michelle Remmy	- Funding plan complete.
54	<ul style="list-style-type: none"> ODF should request the Smoke Management Advisory Committee (SMAC), with input from additional affected parties, to evaluate current program funding, the business plan described in item # 53 and then recommend funding changes sufficient to ensure the continued fiscal viability of the program and that will be supported by those most affected. (I-8) 	1	10/06 6/07	Charlie Stone	- SMAC re-organized and meetings held - Fee structure proposal delivered to ODF
55	<ul style="list-style-type: none"> Results of the SMAC work in item # 54 above will likely require statutory amendments and will certainly require administrative rule amendments. (I-8) 	1	7/07 3/08	Charlie Stone	- Statutes amended. - Rules amended.
56	<ul style="list-style-type: none"> ODF should develop a strategy to increase General Fund support for the SM Program, including: background, rationale, stakeholder support, legislative briefings and a Program Option Package (POP) as the mechanism for the 2007 budget. (I-5) 	2	7/07	Bill Lafferty & the SMAC	- Statutes amended and budget adopted including GF appropriation.
57	<ul style="list-style-type: none"> A biomass specialist position has already been requested and approved for federal funding in the 2005-'07 budget, but without any specific funding identified. Federal competitive grant funding has been requested, but has not yet been awarded. If federal competitive grant funding cannot be obtained, ODF should consider temporarily using SFA grant funding to get the work contemplated for this position "up and running." (H-3 & I-7) 	2	Complete	Bill Lafferty	- Position filled and functioning.

Code #'s

- | | |
|---|---|
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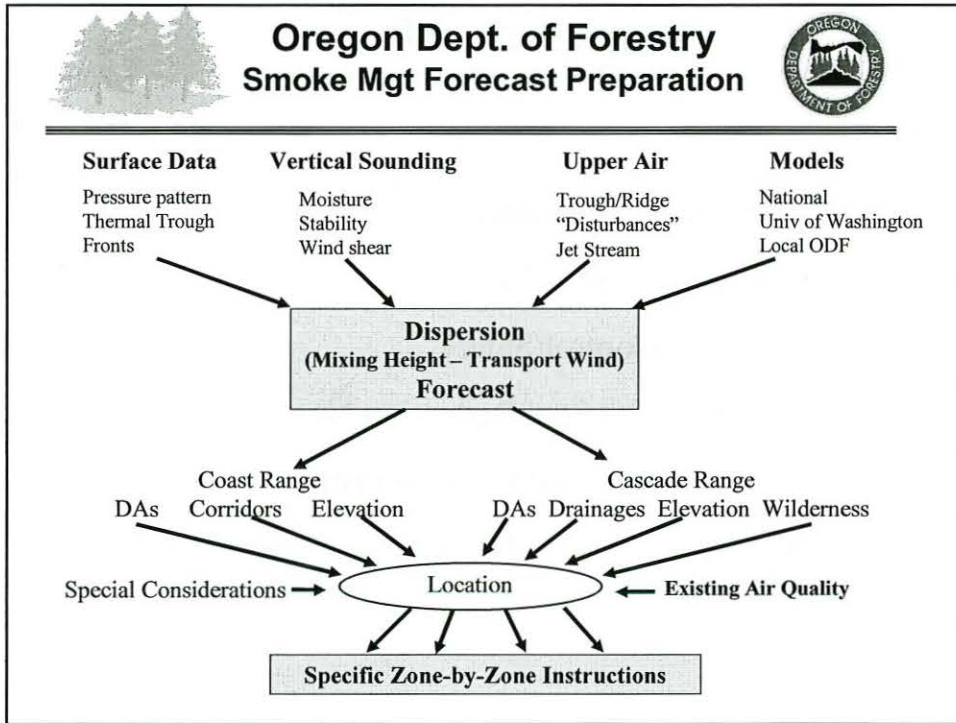
**ODF Implementation Plan for Smoke Management
Review Committee Recommendations**

Index	Proposed Actions	Code	Timeline	Resp. Party	Progress Measure
58	<ul style="list-style-type: none"> ODF should assess the need for an additional meteorologist. This may be especially critical if additional SSRAs are incorporated into the plan, beyond current levels. With the trend towards less burning in western Oregon, eastern Oregon forest health burning will likely be the driver of any additional meteorologist need. Virtually all forest health burning in eastern Oregon is done by the federal agencies, so the funding will likely have to come from those agencies. (I-6) 	2	Depends on increase in federal land burning activity and funding	Jim Trost & Bill Lafferty	- Position filled and functioning.
59	<ul style="list-style-type: none"> Fees are not currently charged WFU fires, but associated workload should be included in the annual fee assessment from the federal agencies. (I-2) 	3	3/08	Jim Trost & Jim Russell	- Fee structure does not explicitly charge for WFU fires, but overall captures federal lands fair share for meteorological services, etc.
60	<ul style="list-style-type: none"> ODF should work with the federal land management agencies to determine an effective and efficient "once-a-year" payment program. ORS 477.560 may have to be amended and OAR 629-043-0041 will have to be amended if this proposal is to advance. (I-3) 	3	7/07	Charlie Stone, Michelle Remmy & Jim Russell	- Statute amended. - Rule amended. - Fee system in place.
61	<ul style="list-style-type: none"> The Smoke Management Advisory Committee should be asked to review the entire fee base periodically. Periodic evaluation of fee levels should be accomplished to ensure fee levels are adequate, but not excessive, to meet program needs. (I-3 & I-8) 	3	3/09 and biennially thereafter	Smoke Management Advisory Committee	- Rule adopted or amended as appropriate.

Code #'s

1 - Agree; will attempt with existing resources
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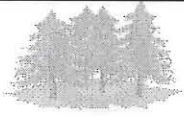
Oregon Dept. of Forestry
Daily Operations Procedures

Land Manager Selects of Parcels to Burn:

Smoke related considerations include –

- Fuel loading
- Treatment objectives
- Weather, fuel moistures, location

(continued) 1/1/11



Oregon Dept. of Forestry Daily Operations Procedures

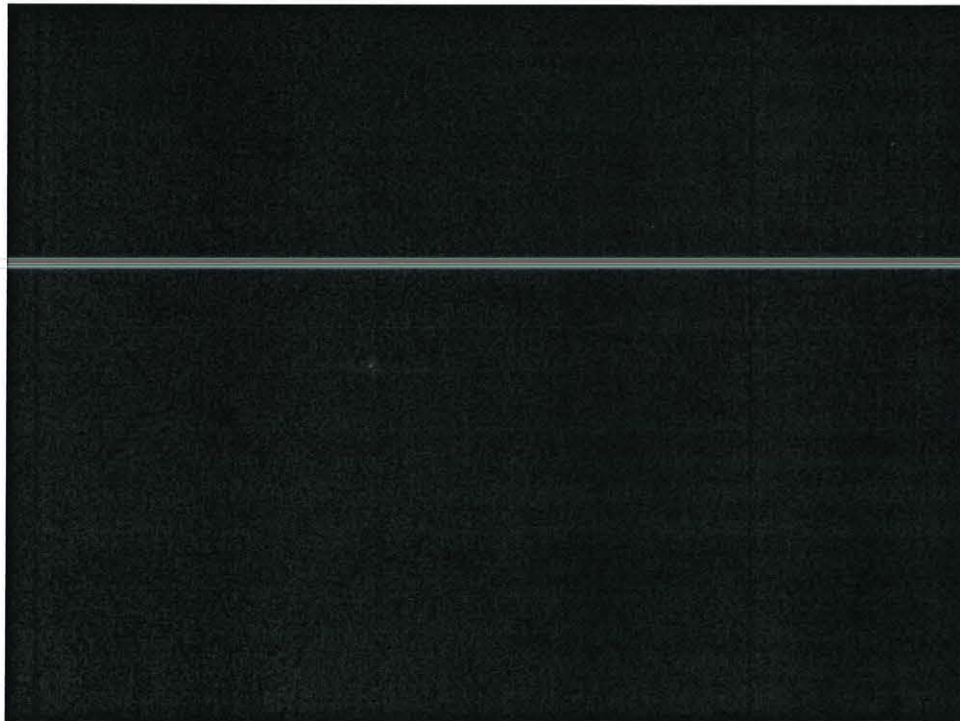


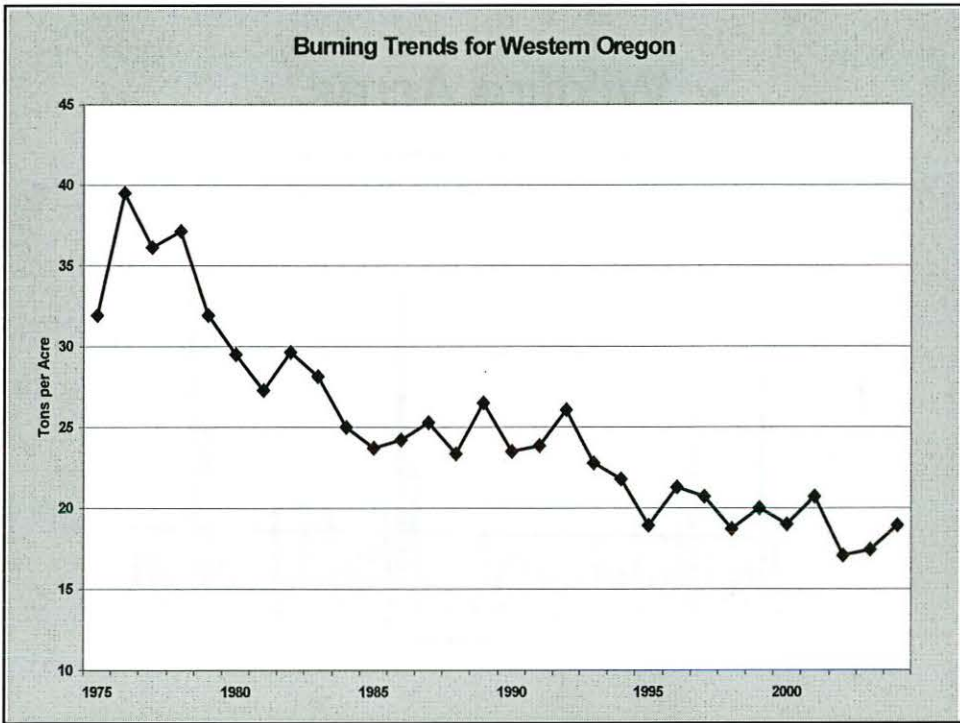
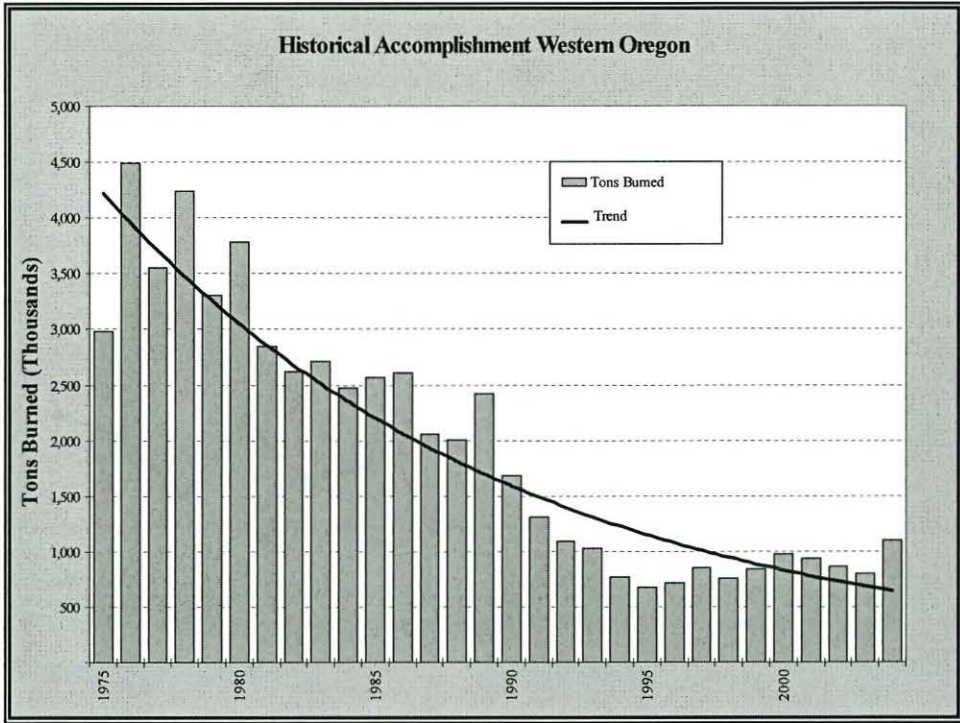
Final Decision to Burn:

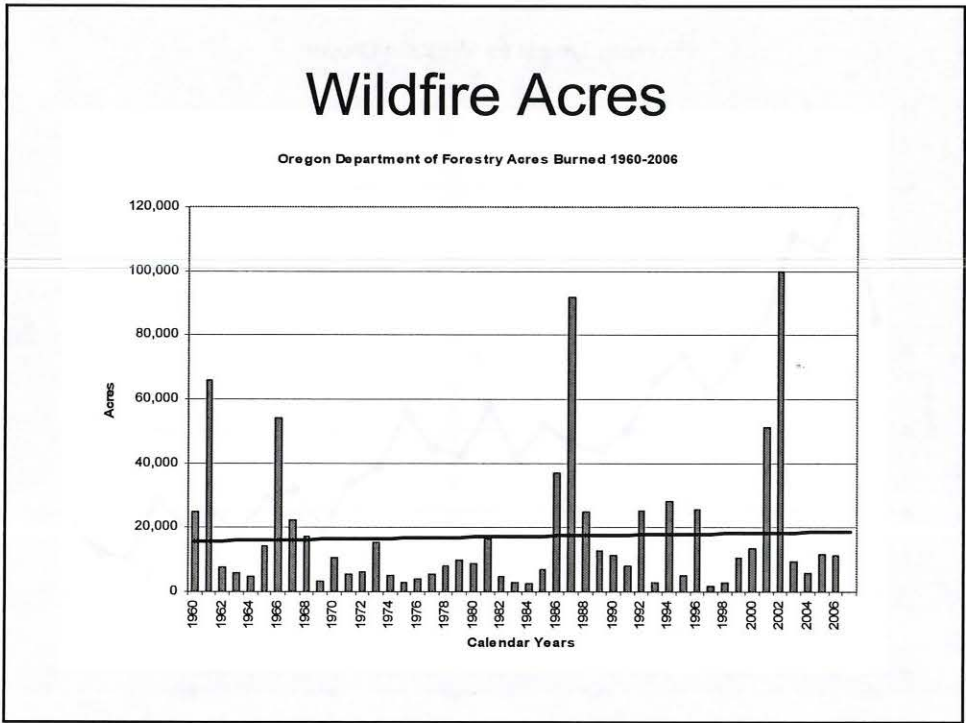
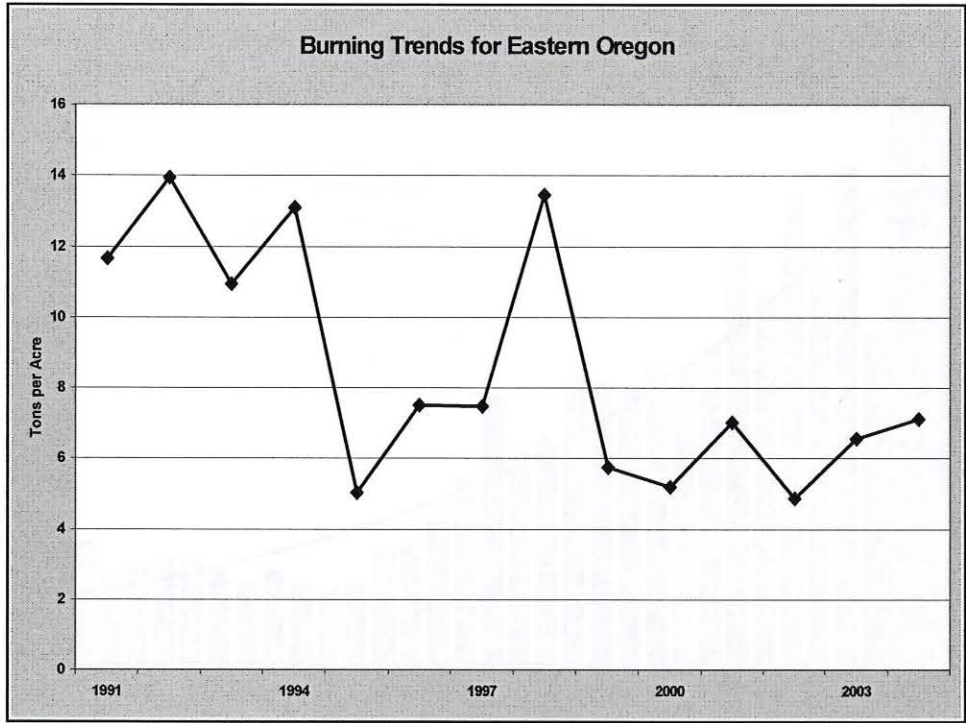
Considerations include –

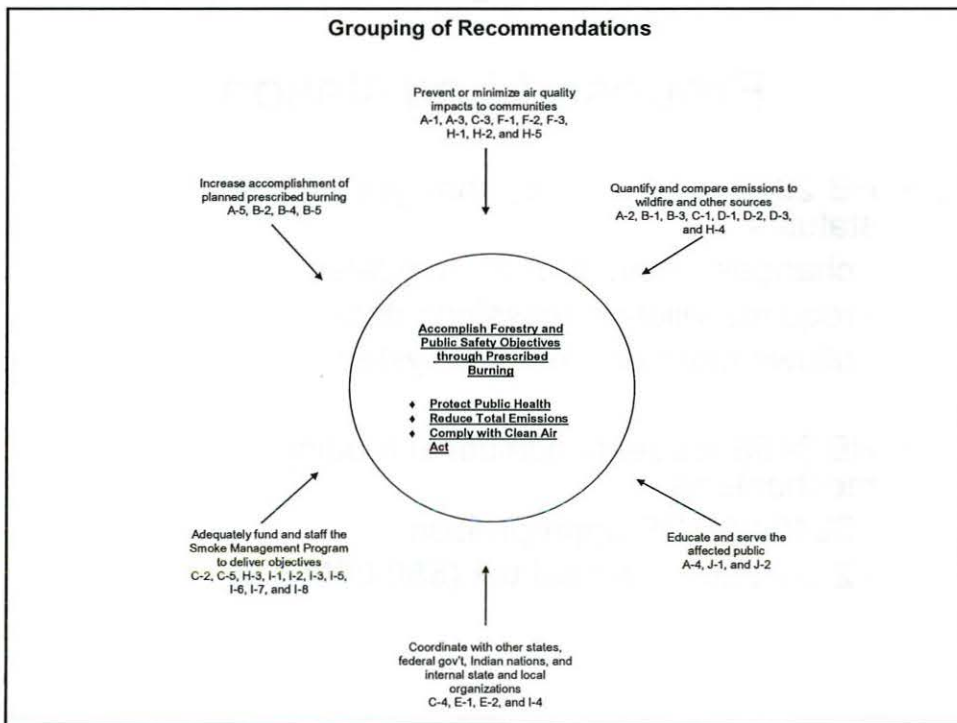
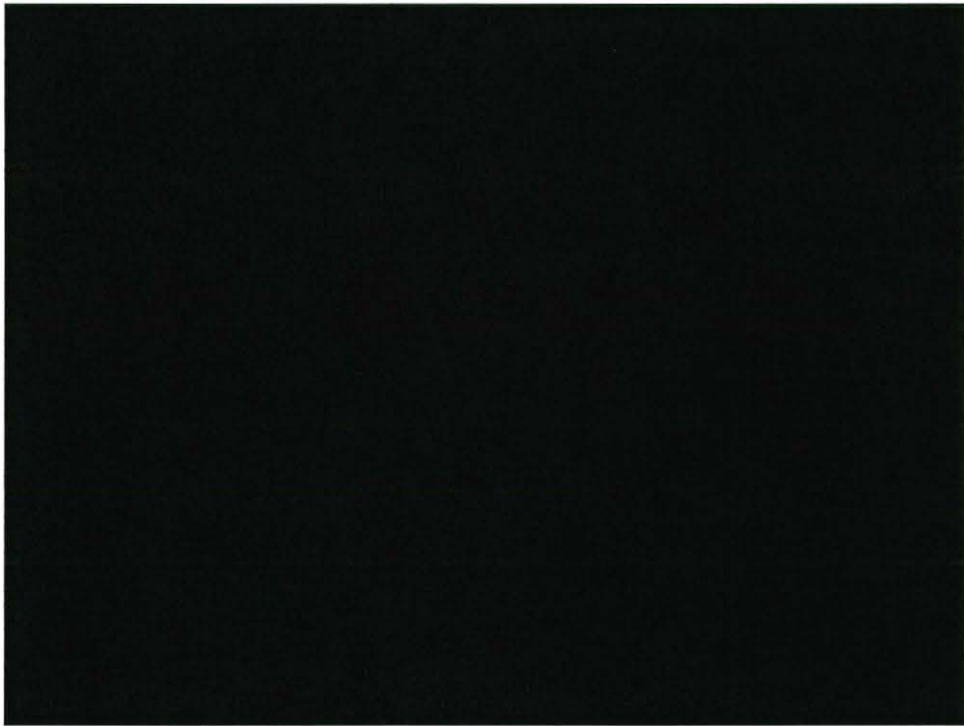
- Fire Control/Safety
- Satisfies Fuel Reduction Needs
- Complies with Smoke Instructions

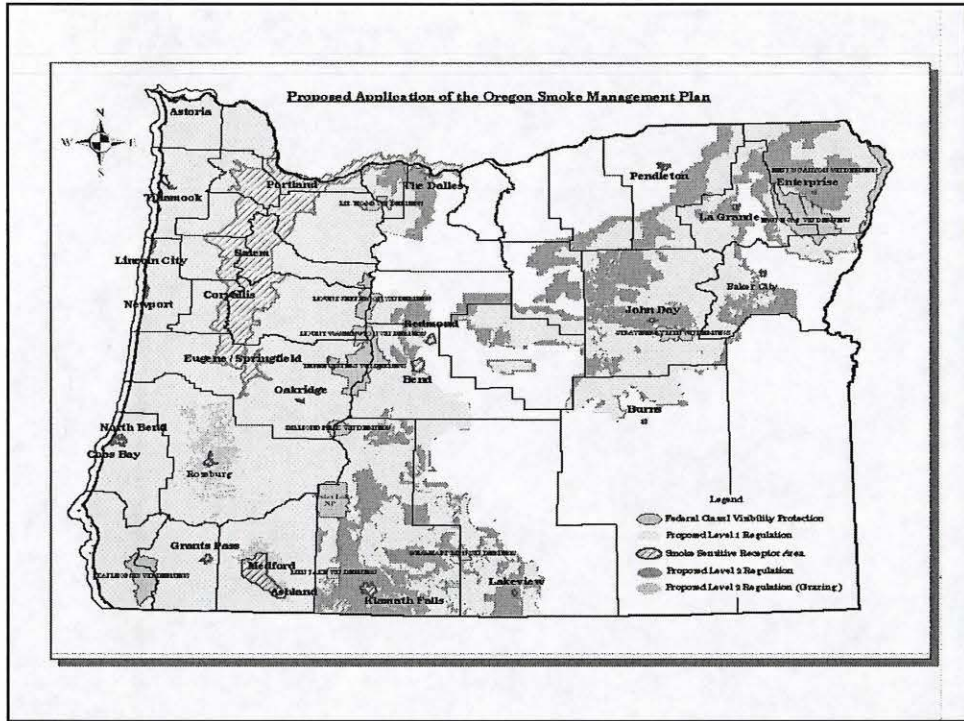
All considerations must equal “Yes” for burn to proceed.











Proposed Legislation

- HB 2973 makes policy changes to OSMP statutes
 - changes “restricted” to “regulated”
 - requires wildfire emissions data
 - allows more efficient fee system

- HB 3468 requests additional funding mechanisms
 - \$240,000 GF appropriation
 - 2 cent/MBF harvest tax (\$80,000/year)

“Capital Investments”

- Improved forecasting hardware & software
- Two upper air profilers
- Two portable RAWS
- Computer system upgrade
- Modeling support
- Educational materials
- Fuels specialist/field coordinator
- Additional meteorologist

Proposed Rule Package

- **AMEND**
OAR Chapter 629, Division 43 – Fire Prevention
- 629-043-0040
[Burning] Burn Permits
- **DELETE**
-629-043-0041
Burning in Restricted Areas
-629-043-0043
Smoke Management Plan

Proposed Rules (cont.)

- **ADOPT**

OAR Chapter 629, Division 48 – Smoke Management

-629-048-0001

Title and Scope

-629-048-0005

Definitions

-629-048-0010

Purpose

-629-048-0020

Necessity of Prescribed Burning

-629-048-0100

Regulated Areas

Proposed Rules (cont.)

-629-048-0110

Characterization of Smoke Incidents

-629-048-0120

Air Quality Maintenance Objectives

-629-048-0130

Visibility Objectives

-629-048-0140

Smoke Sensitive Receptor Areas

-629-048-0150

Criteria for Future Listing of Smoke Sensitive Receptor Areas

-629-048-0160

Bear Creek/Rogue River Valley SSRA

Proposed Rules (cont.)

-629-048-0200

Alternatives to Burning

-629-048-0210

Best Burn Practices; Emission Reduction Techniques

-629-048-0220

Forecast Procedures

-629-048-0230

Burn Procedures

-629-048-0300

Registration of Intent to Burn

-629-048-0310

Fee Structure

Proposed Rules (cont.)

-629-048-0320

Reporting of Accomplishments

-629-048-0330

Emission Inventories

-629-048-0400

**Coordination with Other Regulating Jurisdictions
and for Other Pollutants**

-629-048-0450

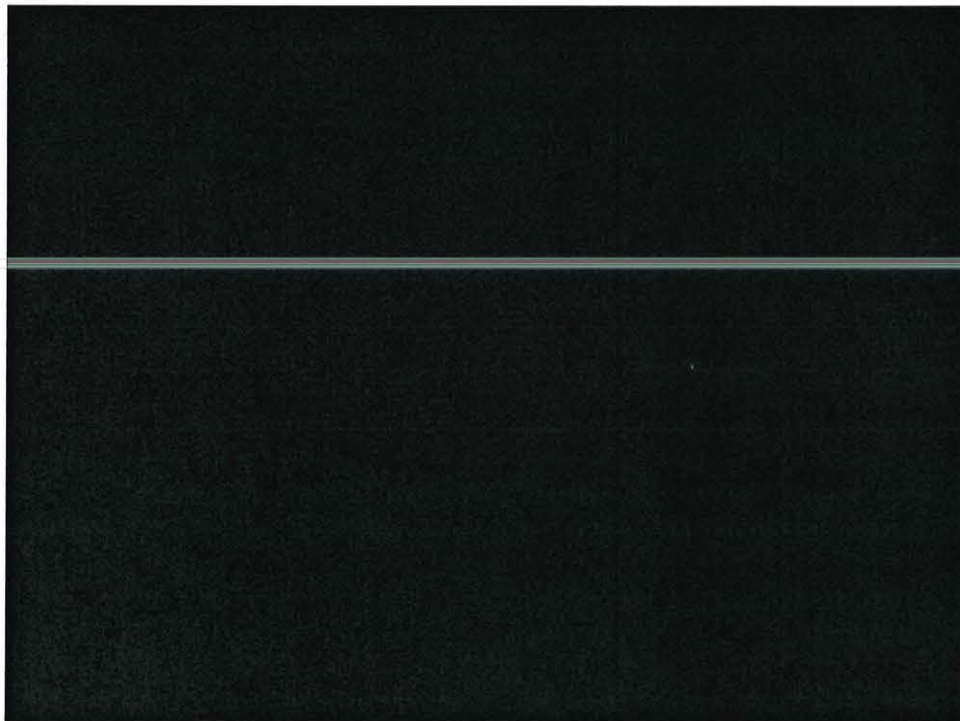
Periodic Evaluation and Adaptive Management

-629-048-0500

Enforcement

“What’s Next?”

- Request approval for formal rulemaking at Board of Forestry’s June 6 meeting
- Hold hearings around the state in late July and August
- Prepare report and final rule package
- Request Board to promulgate rules, Nov. 2
- Request DEQ approval – file w/Sec’y of State





Proposed AQ improvements

1. New section on AQ objectives:
 - Encourages use of alternatives, Emission Reduction Techniques (ERTs) and other voluntary actions at the burn site to minimize emissions.
 - Includes trying to avoid impacting nearby residences.



Proposed AQ improvements

2. New section on Visibility objectives:
 - Lists 9 ESMP criteria required under RHR
 - When burning inside Class I area, use best practices.
 - When burning outside, try to avoid direct plume impacts in Class I areas.



DEQ

Proposed AQ improvements

3. Changes to Smoke Protected Areas:

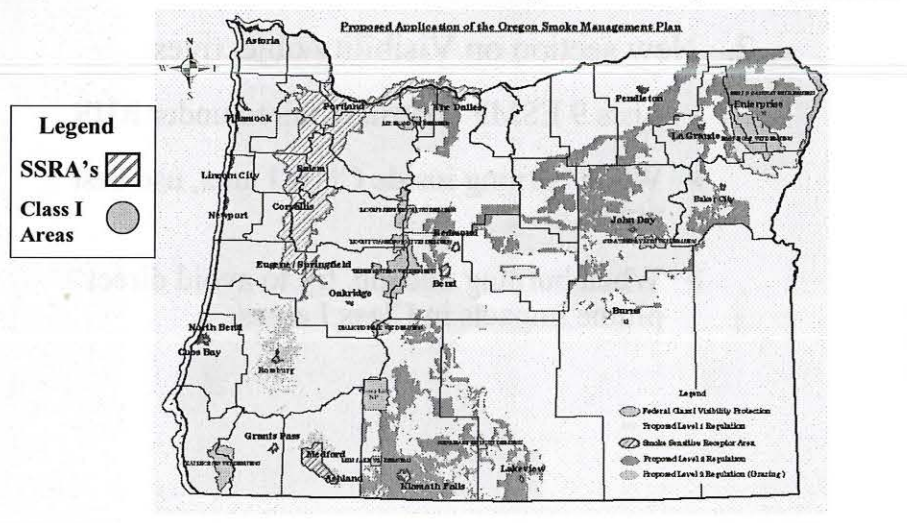
- New term “Smoke Sensitive Receptor Area” (SSRA) to cover all smoke protected areas.
- Three new SSRAs being proposed:
 - Columbia Gorge Scenic Area
 - City of The Dalles
 - City of Redmond



DEQ

Smoke Protected Areas

Smoke Sensitive Receptor Areas (SSRAs)





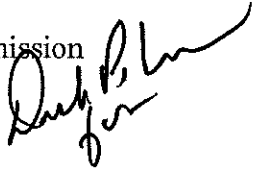
Proposed AQ improvements

4. New section on Alternatives to Burning:
 - Encourages alternatives, provides a detailed list of options
 - Recommends an 'Alternative to Burning' reference manual for identifying options.
5. New section summarizing "Best Burn Practices" and Emission Reduction Techniques:
 - Provides detailed list.



Proposed AQ improvements

6. New section on Smoke Management Coordination.
7. New section on Enforcement.
 - Detailed list of enforcement actions for violations of OSMP.

Date: April 19, 2007
To: Environmental Quality Commission
From: Stephanie Hallock, Director 
Subject: Agenda Item E, Informational Item: Mercury Strategy Update

Purpose of Item Provide the Environmental Quality Commission with an updated Mercury Reduction Strategy for 2007-2011.

Background At the August 10, 2006 EQC meeting, the Department discussed with the Commission the 2002 Mercury Reduction Strategy and activities that have occurred since 2002. At that time the Commission asked the Department to prepare an update of this strategy and discuss it with the Commission.

Key Issues Research over the past several years has shown that most of the mercury from atmospheric deposition in Oregon comes from sources outside the United States or Canada. However, reducing Oregon sources of mercury pollution will still have a positive impact on the state's environment. The updated strategy describes the specific activities being conducted by the Department and its partners in this effort.

Next Steps The Department will periodically update the Commission on progress implementing the 2007-2011 Mercury Reduction Strategy.

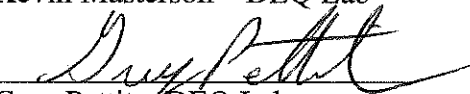
Attachments Attachment A: 2007-2011 Mercury Reduction Strategy

Approved:

Section:


Kevin Masterson – DEQ Lab

Division:


Greg Pettit / DEQ Lab

Report Prepared By: Kevin Masterson

Phone: (503) 229-5983 x260

2007-2011
**DEQ MERCURY REDUCTION
STRATEGY**

Department of Environmental Quality
March 28, 2007

Table of Contents

I. BACKGROUND AND PURPOSE	1
III. SUMMARY OF 2002-2006 DEQ MERCURY ACTIONS	3
IV. 2007-2011 DEQ MERCURY COMMITMENTS	8
V. CONCLUSIONS	13
APPENDIX A: FUNDING-DEPENDENT MERCURY ACTIONS	15
APPENDIX B: SOURCES OF MERCURY IN THE WILLAMETTE BASIN	16
APPENDIX C: MERCURY FISH ADVISORIES IN OREGON SURFACE WATERBODIES	17
APPENDIX D: COLLECTIONS OF WASTE MERCURY FROM DEQ PARTNERSHIP PROJECTS 2002-2006	20

I. BACKGROUND AND PURPOSE

What is Mercury and Why is it a Problem?

Mercury is a metallic element that, in pure form, is a heavy liquid. Elemental mercury can evaporate even at ambient temperatures, but especially when heated. In addition to this pure form (known as elemental mercury), mercury reacts with other substances to form organic and inorganic compounds. Mercury occurs naturally in ores and other geologic formations, and is also released into the environment through human activities. Mercury can be found at low levels throughout the environment and is carried across continents by upper atmospheric air currents.

Mercury can have significant public health and wildlife impacts, primarily from consumption of mercury-contaminated fish. Mercury is released into the environment primarily in an inorganic or elemental form. When in the environment, mercury is converted by bacteria to a methylated or organic form, which is the most toxic and bioaccumulative form. Once formed, methyl mercury can be readily passed through the food chain. Mercury's designation as a "persistent, bioaccumulative and toxic (PBT)" pollutant and its widespread prevalence in the environment has made it a high priority pollutant at both the state and national level.

Purpose of 2007 DEQ Mercury Strategy

The Oregon Department of Environmental Quality (DEQ) initially developed an agency-wide Mercury Strategy in 2002. This updated 2007 Mercury Strategy provides a summary of DEQ's mercury reduction and monitoring actions since 2002, and describes DEQ's continuing or new commitments. The overall goal of this Strategy is to protect human health and aquatic life by reducing exposure to potentially harmful levels of mercury. The actions that DEQ is planning over the next several years are specifically designed to:

- Limit mercury releases into the environment;
- Reduce the amount of mercury pollution already in the environment;
- Improve monitoring of mercury levels in the environment;
- As funding allows, identify where fish tissue concentrations present risks to public health and, in cooperation with the Oregon Department of Human Services (DHS), establish fish consumption advisories for those areas; and
- Improve public and business awareness of mercury issues.

The 2007 Strategy is intended to describe activities DEQ will implement over the next five years. New or changing needs, opportunities and agency priorities may arise prior to 2012 that result in modifications to this Strategy. Implementation of some existing opportunities to reduce or monitor mercury in Oregon's environment is dependent on additional resources becoming available. Although the focus of this Strategy is on definitive commitments that DEQ can make, additional activities dependent on supplementary funding are included in Appendix A. Other appendices to this document provide more detailed information on mercury in Oregon's environment and on DEQ's mercury activities and partnerships.

II. SOURCES OF MERCURY POLLUTION IN OREGON

Where Does the Mercury in Oregon's Environment Come From?

DEQ estimates that close to 48% of the contributions of mercury pollution in the Willamette River come from air deposition sources (either direct to water or overland runoff), and another 48% comes from the erosion of native soils with naturally-occurring mercury (see figure depicted in Appendix B). DEQ has determined that global sources account for most of the air deposition of mercury in the Willamette River. This is consistent with EPA's conclusion that approximately 89% of the mercury from atmospheric deposition in Oregon comes from sources outside the United States or Canada.¹

In contrast, local air deposition sources account for about 7% of the air deposition of mercury in the Willamette River. DEQ also estimates that local industrial or municipal wastewater discharges account for only about 4% of the total mercury pollution in the Willamette. Although a set of mercury pollution estimates has not been developed for the entire state, the major sources of mercury pollution to surface waters in other parts of the state are likely similar to those for the Willamette Basin.

Although DEQ's efforts to reduce Oregon sources of mercury pollution (outlined below) can make a positive impact on the state's environment, the significant contributions from global atmospheric and naturally occurring sources of mercury are not within the agency's direct control. If global atmospheric sources of mercury increase substantially, the total mercury pollution load in Oregon may increase despite major reductions in Oregon sources. Thus, the mercury reduction actions described in this Strategy should be coupled with efforts by state and local agencies to inform the public about ways to reduce exposure to mercury.

What are the Oregon Sources of Mercury Pollution?

Discharges of mercury pollution to the air, water or land from sources within Oregon include both "point" (regulated or permitted) sources and "nonpoint" sources. **Point sources** in Oregon include the following:

- Power generation and transmission;
- Cement kiln;
- Manufacturing facilities;
- Combustion of fuels in boilers;
- Crematoria;
- Municipal waste incinerators; and
- Municipal wastewater treatment plants (effluent and biosolids).

The two largest single point sources in Oregon are a cement kiln and a coal-fired power plant, both located in the northeastern region of the state. Two municipal solid waste incinerators are operating in Oregon that serve surrounding local communities. Most solid waste generated in Oregon that is not recycled is disposed in landfills. In addition, there are numerous municipal wastewater treatment plants, fuel boilers, and crematoria throughout the state, each of which is likely to discharge small quantities of mercury.

The possible **nonpoint** mercury pollution sources in Oregon include the following:

¹ EPA state-by-state mercury emissions and deposition spreadsheet (data were compiled from the emissions inventory and modeling used for the federal Clean Air Mercury Rule)

- Erosion of, and runoff from, native soils;
- Abandoned mercury mines;
- Abandoned gold mines;
- Air emissions from motor vehicles;
- Urban stormwater runoff;
- Environmental cleanup sites (not associated with mining); and
- Improper disposal of mercury-containing consumer and industrial products.

Accurate assessments of the total quantities of mercury pollution originating from each of these nonpoint sources are not available because of the difficulty in monitoring releases from these sources. As referenced above, DEQ did develop an estimate of the relative contribution of nonpoint land runoff and soil erosion when setting total maximum daily loads (TMDLs) for the Willamette Basin.

III. SUMMARY OF 2002-2006 DEQ MERCURY ACTIONS

DEQ has initiated and implemented a number of mercury reduction, monitoring, collection, cleanup and awareness activities since development of the original agency-wide Mercury Strategy in 2002. A summary of the activities undertaken by each of DEQ's environmental programs between 2002 and 2006 is provided below.

Water Quality

The primary focus of DEQ's Water Quality mercury-related work has been on the Willamette Basin Total Maximum Daily Load (TMDL). DEQ has also worked closely with the Oregon Department of Human Services' (DHS) Public Health Division in determining whether fish consumption advisories are needed for waterbodies in various parts of the state.

a. Willamette TMDL Development

The purpose of DEQ's TMDL program is to determine the amount of specific pollutants a waterway can receive and still not violate water quality standards, and then allocate pollutant load limits for each contributing source of those pollutants. Between 2002 and 2006, DEQ developed and completed the Willamette Basin TMDL, which was approved by EPA in September 2006. Included within this TMDL is the first phase of a mercury TMDL for the Willamette, designed to reduce mercury levels in the Willamette Basin to a point where fish are no longer unsafe to eat.

The mercury TMDL development process involved a comprehensive monitoring effort throughout the Basin that included 18 ambient river and lake sites, as well as some monitoring near point source discharges. DEQ collected and analyzed water, fish and sediment samples throughout the Basin to determine where elevated levels of mercury exist and identify potential local sources of mercury contributions to surface waters in the Basin. Several fish tissue samples contained mercury concentrations that were above the health-based fish consumption benchmark of 0.35 milligrams per kilogram (mg/kg or parts per million).

An analysis of the range of potential sources of mercury in the Willamette was conducted, and estimates were developed with the help of modeling tools. As summarized previously, DEQ concluded that the vast majority of mercury loading to the Willamette comes from runoff from lands receiving atmospheric deposition of mercury (via land runoff or direct deposition to water)

and erosion of native soils. Point sources in the Basin contribute a relatively small portion of the mercury loading.

DEQ established a water column guidance value for the concentration of total mercury in the Willamette River of 0.92 nanograms per liter (ng/L). In addition, DEQ's analysis suggests that a 27% reduction in total mercury pollution load is needed to reduce mercury concentrations in fish to a safe level. More specific mercury pollution load allocations for sources, or source categories, may be established upon the completion of Phase Two of the Mercury TMDL in 2011 as discussed in more detail in Section IV below. The TMDL mercury reduction strategies that will be implemented between 2007 and 2011 are also described in Section IV.

b. Fish Consumption Advisories

Fish consumption advisories are issued by DHS' Public Health Division when concentrations of particular toxic contaminants in fish caught in Oregon's rivers, lakes and reservoirs exceed specified thresholds. DEQ works closely with DHS' Environmental Public Health Division and the Oregon Department of Fish and Wildlife (ODFW) on these fish consumption advisories. Many fish consumption advisories are based on detection of elevated levels of mercury in fish. Advisories are issued when mercury concentrations in fish exceed 0.35 milligrams per kilogram (or parts per million). In 2004, DHS issued modified fish consumption advisories and guidelines for Cottage Grove and Dorena Lake Reservoirs, based on fish tissue monitoring conducted by DEQ. In addition, DEQ worked with DHS and ODFW in 2005 and 2006 to assess mercury fish tissue concentrations in three lakes southeast of Ashland. One of those lakes, Emigrant Lake, was found to contain fish with very high levels of mercury, which resulted in the issuance of a DHS fish consumption advisory in early 2006. A full listing of these fish consumption advisories can be found in Appendix C.

c. Coastal Environmental Monitoring and Assessment Program (CEMAP)

Between 1999 and 2006, DEQ's Laboratory has partnered with EPA to monitor for a range of toxic pollutants, including mercury, in Oregon's coastal and estuary waters. This Coastal Environmental Monitoring and Assessment Program (CEMAP) work involved the collection of sediment, fish tissue and water column samples in various locations, including the Lower Columbia River. The CEMAP work is part of a national EPA effort, but results from the monitoring can be used to assist with basin-specific TMDL activities in coastal areas. Analytical results from CEMAP monitoring will likely be generated in 2007 and 2008.

Land Quality

DEQ's Hazardous and Solid Waste programs have partnered with trade associations and non-profit organizations since 2002 to collect and properly manage waste mercury and waste products containing mercury. DEQ's Cleanup program has worked with EPA on assessment and remediation of mercury-contaminated abandoned mines.

a. Household and Small Business Mercury Waste Collection Activities

In addition to collecting mercury wastes at numerous one-day household hazardous waste events throughout Oregon, DEQ's Solid and Hazardous Waste programs have initiated and implemented multiple specialized collection and exchange projects for mercury-containing products. A summary of the quantities of mercury collected through these projects through 2006 can be found in Appendix D.

- **Thermometers** – A thermometer exchange program was initiated to reduce the amount of mercury in homes and ensure proper disposal of mercury thermometers. DEQ provided

- free digital thermometers at collection events to citizens turning in a mercury containing thermometer. DEQ also supplied local governments with free digital thermometers to encourage them to implement their own exchange programs.
- Thermostats – The Thermostat Recycling Incentive project was initiated by DEQ, Portland General Electric (PGE), the Thermostat Recycling Corporation (TRC) and the Product Stewardship Institute to encourage recycling of mercury containing thermostats. Contactors participating in the program receive \$4 rebate coupons for each mercury-containing thermostat they return to a participating wholesaler for recycling. The coupons can then be used toward the purchase of mercury-free Energy Star ® qualified thermostats.
 - Dairy Manometers – DEQ worked with dairy and agricultural organizations in 2005 and 2006 to replace mercury manometers (pressure-measuring devices) used in dairy farm milking operations with mercury-free digital vacuum gauges. The mercury-containing manometers were managed and disposed of properly by DEQ’s hazardous waste contractor. An EPA grant provided \$300 to each participant to cover most of the costs associated with supplying and installing the mercury-free replacement pressure device.
 - Dental Mercury Wastes – DEQ has been working with the Oregon Dental Association (ODA) and the Oregon Association of Clean Water Agencies (ACWA) since 2003 to improve the management of mercury-containing wastes, such as dental amalgam. DEQ, ODA and ACWA sponsor an annual mercury waste collection event held in conjunction with ODA’s annual conference. DEQ’s Solid Waste program funds the collection and disposal of the waste.
 - Mercury Auto Switches – The Northwest Auto Trades Association (NATA), the Oregon Environmental Council, local governments, and DEQ have worked together since late 2001 to replace mercury-containing automotive light switches in consumer automobiles with mercury-free ball-bearing switches free of charge. The Hazardous Waste program also developed and distributed a fact sheet on mercury switch removal for automobile dismantlers in Oregon.
 - Suction Dredge Mining Waste Mercury – DEQ worked with a hobby mining association in 2002 and 2003 on various activities including sponsoring two mercury waste collection events in Myrtle Creek.
 - Fluorescent Lamps – The DEQ Solid Waste program funded a fluorescent light take-back project in Eugene.

b. Household and Small Business Mercury Education and Reporting Activities

DEQ’s Solid and Hazardous Waste programs have partnered with various organizations, local governments and non-profits to educate households and businesses about proper management of mercury-containing products and alternatives. DEQ has also initiated an effort to collect better data on mercury waste generated by businesses. Specific activities implemented between 2002 and 2006 include the following:

- Educational Materials – DEQ has developed educational fact sheets on the proper management of mercury-containing products and wastes, including cleaning up mercury spills.
- Dental Offices – At the Oregon Dental Association’s annual conference DEQ staff assist with educational outreach to participating dentists. In addition, DEQ developed a simplified tax credit application and fact sheet for dentists installing amalgam separators.
- Fluorescent Lamps – The Hazardous Waste program participated in several lighting fairs sponsored by electric utilities to provide educational information on proper disposal of

mercury-containing fluorescent lamps. In addition, DEQ worked with the Oregon Environmental Council to develop a lamp fact sheet for property management companies.

- Suction Dredge Miners – DEQ developed printed educational information for miners on proper mercury management.
- Reporting on Mercury Containing Hazardous Waste –DEQ’s hazardous waste generation annual reporting form was modified to request specific information on the generation and management of mercury containing wastes from businesses and other entities required to submit these reporting forms.

c. Cleanup Program Activities

DEQ’s Environmental Cleanup program has been involved in various site investigation and clean up activities associated with inactive and abandoned mines contaminated by releases of mercury. Mercury, as a commodity, was commercially mined in Oregon from about 1882 through 1970, and the first five of the mines listed below comprised over 90% of the total production of mercury in Oregon². The Cleanup program has collaborated with responsible parties and EPA in conducting these activities, which include site investigations, evaluations of potential cleanup levels and actions (feasibility studies), and the removal or treatment of contaminated materials. The extent of cleanup actions has been limited due to reduced availability of funds, most notably the Orphan Site program fund. Below is a summary of the noteworthy accomplishments at the mercury contaminated mine sites between 2002 and 2006:

- Several years of site investigation at the **Horse Heaven Mine** in Jefferson County resulted in a final Record of Decision (selecting remedial actions to be implemented) being issued by DEQ in 2005. The first phase of site cleanup was implemented by Sunoco, the property owner, in October 2006. These actions focused on physical hazards represented by open mine portals.
- DEQ is working with EPA in planning for remedial actions at the **Black Butte Mine**, which is a contributing source of mercury pollution to the Coast Fork of the Willamette River and Cottage Grove Reservoir.
- After the Cleanup program designated the **Bonanza Mine**, near Sutherlin, as an “Orphan Site”, a removal action was performed in 2000 to prevent continued exposure of local residents to high levels of mercury and arsenic in soils.
- DEQ completed site investigation work at the **Opalite Mine** in southeast Oregon in 2004. This investigation identified physical hazards and mercury above human health and ecological action levels.
- A focused site investigation on the **Bretz Mine**, also located in southeast Oregon was completed by DEQ in 2004. As with the Opalite Mine, physical hazardous and mercury above human health and ecological actions levels were identified.
- Eastern Region Cleanup staff are currently conducting a “Phase 2” study of **Ochoco Mercury District** to establish basin-wide mercury levels, the connection to individual mine sites in the district, and the potential ecological impacts of the mercury contamination.

Air Quality

DEQ’s Air Quality program has focused recent mercury monitoring and reduction work on the development and adoption of the Clean Air Mercury Rule (CAMR) for coal-fired power generating facilities. Below is summary of the mercury air quality work DEQ has been involved with between 2002 and 2006.

² Quicksilver Deposits in Oregon, State of Oregon, Department of Geology and Mineral Industries, 1971

a. CAMR Rule

The Environmental Quality Commission (EQC) adopted the Oregon Utility Mercury Rule for coal-fired power generating facilities on December 15, 2006. Currently, only one such facility is operating in Oregon, but it is the second largest point source of mercury air emissions in the state. The newly adopted rule requires that coal-fired power plants achieve 90% mercury control or meet a mercury emission limitation of 0.60 pounds per trillion Btu by July 1, 2012. The current mercury emissions from the Boardman plant range from 137 to 281 pounds per year. DEQ estimates mercury emissions from the plant will range from 18 to 35 pounds per year after installing controls.

An alternative mercury emission limit may be approved by DEQ if a facility demonstrates that the 90% control limitation is not technically achievable. The rule also requires coal-fired power plants to install continuous mercury monitoring equipment by 2008, and submit a Mercury Reduction Plan to DEQ for approval by 2009. The rule allows coal-fired power plants in Oregon to trade mercury emissions credits with coal-fired power plants located in other states between 2010 and 2018, but disallows trading after that date.

b. Ambient Air and Wet Deposition Mercury Monitoring

DEQ has ambient air quality monitoring stations Portland, Eugene, Medford and LaGrande that routinely collect samples for mercury and other metals. However, ambient air sampling and analysis methods are not optimized for mercury, like they are for the less reactive metals. Therefore, the accuracy of the results from the mercury air monitoring is questionable. More accurate continuous ambient mercury air quality sampling equipment is now available, but is not available to DEQ at this time because of the cost.

The United States Geological Survey (USGS) installed two monitoring stations in Oregon to assess "wet" deposition³ of mercury. One of these stations is in Beaverton and the other is in the H.G. Andrews Experimental Forest east of Eugene. DEQ partnered with USGS through 2005 to support the operation and maintenance of these wet deposition monitoring stations, and the monitoring results were used in the development of the Willamette Basin Mercury TMDL pollutant load estimates. Operations and maintenance of the monitors was funded through an EPA grant. As of 2006, these grant funds are no longer available, and the monitoring has been discontinued in Oregon. DEQ is currently evaluating possible funding sources to re-establish the wet deposition monitoring stations (see Appendix A: Funding-Dependent Mercury Actions)

c. Boiler Energy Efficiency Project

DEQ funded and participated in an Oregon Environmental Council (OEC) project designed to improve the energy efficiency of industrial and institutional boilers. This project involved conducting boiler tune-ups for 11 institutional facilities and boiler efficiency audits to 6 industrial facilities in the state, which resulted in reductions in both mercury and carbon dioxide emissions. OEC developed a white paper on the project's findings and held workshops for facility managers to promote implementation of project recommendations. Additional mercury reductions may occur as a result of the boiler efficiency information and assistance provided to the 83 boiler managers participating in the workshops.

³ Wet deposition occurs when reactive gaseous mercury, dissolved in precipitation, is deposited on the surface of the Earth (Mercury Deposition in Pennsylvania: Status Report, Penn State University, January 2001)

d. Cement Plant Mercury Emissions

In 2006 a new mercury emissions estimate for the Ash Grove cement plant located in Durkee revealed that the plant was the single largest source of mercury air emissions in the state, with an estimated 1,500 pounds emitted in 2005. DEQ's current and planned actions in response to these emissions estimates are summarized in Section IV (see Air Quality Commitments).

IV. 2007-2011 DEQ MERCURY COMMITMENTS

DEQ's plans for mercury reduction, monitoring and awareness activities include continuation of existing projects and initiation of new mercury projects. Some of the new activities represent the next phase of a mercury regulatory program. Given possible changes in the availability of resources and policy priorities, DEQ's set of mercury commitments over the next 5 years may be modified over time. DEQ will update this Mercury Strategy to reflect these modifications as they occur. Mercury monitoring and reduction activities that may be initiated by DEQ if resources become available are outlined in Appendix A of this document.

Water Quality Commitments

Implementation of the mercury component of the recently-approved Willamette TMDL is a high priority for DEQ's Water Quality program. The two major elements of DEQ's Willamette Mercury TMDL in the next five years are implementation and enforcement of the first phase of the TMDL requirements for designated management agencies (DMAs) and industrial permittees, and continued monitoring of mercury in the Willamette Basin as part of the effort to complete the second phase of the Willamette Mercury TMDL.

a. Willamette Mercury TMDL Implementation and Refinement

Implementation and Enforcement of Mercury TMDL Requirements

The Willamette TMDL outlines mercury-related requirements for the following types of point sources:

- Municipal wastewater treatment plants classified as "major" permittees under DEQ's National Pollutant Discharge Elimination System (NPDES) permit program;
- Industrial NPDES "major" and "minor" permittees that have the potential to discharge mercury to surface waters; and
- "Phase 1" Municipal Separate Storm Sewer Systems (MS4s). These are municipal entities or areas with populations over 100,000 that have been issued NPDES permits by DEQ for storm water discharges to surface water.

These regulated entities will be required to monitor effluent discharges for mercury and methyl mercury. The major municipal wastewater and industrial permittees will also be required to monitor wastewater entering their system (i.e., "influent") prior to treatment. The specific level, frequency, and timing of monitoring will vary depending on the type of permittee. In addition, major point sources will be required to submit a mercury minimization plan, describing how they will reduce mercury discharges.

Department staff will be working with the regulated community to ensure that these measures are fully implemented. DEQ's implementation tasks will include mercury data and plan evaluations, technical assistance, and compliance and enforcement activities.

DEQ will also work with management agencies in the Basin (e.g., state Departments of Forestry and Agriculture and local governments) on implementation of nonpoint source mercury reduction activities. The primary focus of these nonpoint efforts will be to reduce erosion of native mercury-containing soils from agricultural, urban and forested lands.

DEQ plans to complete a second phase of the Willamette Mercury TMDL in 2011, based on an analysis of data generated through the additional monitoring activities described below. This Phase Two Mercury TMDL may establish more specific pollutant load allocations for particular sources or source categories.

Ambient Mercury Monitoring in the Willamette Basin

DEQ has an EPA grant to conduct additional mercury monitoring in the Willamette Basin in 2007. This monitoring effort will focus primarily on collection of water column samples at various ambient monitoring locations throughout the Basin, including Willamette tributaries. The samples will be analyzed by a private contract laboratory that has enhanced analytical equipment to detect mercury and methyl mercury at very low concentrations.

DEQ has recently created and filled a new position in the Laboratory to coordinate mercury monitoring efforts. The purpose of this position is to help characterize sources of mercury, understand how mercury moves through the Willamette Basin and other basins, how it bioaccumulates in fish, and determine if mercury control measures are effective. This position will coordinate the ambient mercury monitoring in the Willamette described above, analyze data from point sources, identify data gaps and outline specific monitoring needs for the agency.

b. Mercury Water Quality Commitments Beyond the Willamette Basin

DEQ's Water Quality program will be implementing activities to reduce toxics outside of the Willamette Basin with mercury as a component. These efforts include:

- The **Reasonable Potential Analysis (RPA) Internal Management Directive (IMD)** provides Department staff and the regulated community with information on how to determine whether discharges of toxics are causing or contributing to violations of water quality standards. If such an analysis results in a determination that a permitted source's mercury discharge violates standards, DEQ could place mercury monitoring and control requirements into that source's permit. DEQ will be reviewing and evaluating toxics RPAs, and will take appropriate regulatory action based on the findings.
- The Water Quality program is working with the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and EPA in 2007 and 2008 on a series of workshops leading to rulemaking on the **fish consumption rate** that DEQ established in development of water quality standards for toxics in 2004. After the workshops, DEQ then will conduct a formal rulemaking including the required public process, which will culminate in rule recommendations to the Commission regarding increasing the fish consumption rate.
- As funding allows, DEQ's Laboratory and Water Quality program will continue to work closely with the DHS and other agencies to identify waterbodies where fish tissue concentrations may pose risks to public health. When fish tissue test results show mercury concentrations at levels of concern, **fish consumption advisories** will be issued by DHS. DEQ will assist DHS in communicating information about these advisories to the public.

Land Quality Commitments

Land Quality programs will continue implementing several existing mercury collection, management and clean up activities in 2007 and beyond. Some mercury projects, such as the dairy monometer replacement project, were completed by or before the end of 2006.

a. Household and Small Business Mercury Waste Collection Commitments

DEQ's Solid Waste program will continue to sponsor periodic household hazardous waste collection events throughout the state, which help to increase the amount of mercury-containing wastes and other toxic materials diverted from Oregon's environment into safe management and recycling systems. In addition, the following mercury collection projects will be implemented:

- The Solid Waste program is working with Portland General Electric to determine how to proceed with the next phase of the thermostat collection and replacement program.
- DEQ will continue to offer free digital thermometers to residents in exchange for mercury thermometers brought to household hazardous waste collection events sponsored by DEQ or local governments.
- Participation in the mercury switch replacement project ("Switch-the-Switch") with the Northwest Auto Trades Association and commercial automotive repair businesses will continue over the next several years. DEQ's active involvement in the Eco-Logical Business Program, a recognition program for automotive shops demonstrating exemplary environmental performance, provides on-going opportunities to recruit new businesses to participate in the Switch-the-Switch program.
- Oregon is participating in the national End of Life Vehicle Solutions (ELVS) project, designed to ensure the removal of automotive mercury switches by vehicle dismantlers before scraped vehicles are crushed and smelted. The ELVS switch collection program is sponsored by auto manufacturers and the steel-making industry. DEQ will be coordinating Oregon's participation in the program in 2007 by obtaining participation of dismantlers in the state, and providing them with technical assistance. Dismantlers will fill collection buckets with switches removed from vehicles, and the ELVS program will pay dismantlers \$1.00 per switch that is recovered.
- DEQ's Solid Waste program will continue to fund a mercury waste collection program for conditionally exempt hazardous waste generators (CEGs) that allows these small businesses to dispose of mercury and mercury-containing wastes free of charge. The Solid Waste program will also, through a waste management contractor, provide pick up services for households that have over 3 pounds of elemental mercury and are unable to deliver the material to a designated facility.
- DEQ will continue to work with the Oregon Dental Association and the Association of Clean Water Agencies on the collection of dental amalgam and other mercury-containing wastes generated by dental offices. DEQ's Solid Waste program will continue to pay for the management and recycling of the collected mercury waste.
- DEQ will work with local government entities in Coos County to establish a household hazardous waste collection program in the county to divert mercury and other toxics away from the solid waste incinerator. Coos County has one of two municipal solid waste incinerators in the state. Although air emissions controls are installed and operating, small quantities of mercury and other toxic substances are still discharged from the incinerator⁴.

⁴ The second municipal waste incinerator in the state is located in Marion County. This facility has a operated a hazardous waste collection facility since 2004. The collection program is focused to collect and properly manage mercury before it gets into the municipal solid wastestream.

b. Household and Small Business Mercury Education Commitments

DEQ's Solid and Hazardous Waste programs provide information to the public and businesses on mercury waste management through regular phone and email interactions, as well as specialized outreach efforts. Education also occurs as part of the promotion of the mercury waste collection efforts described above. Some other specific education and technical assistance efforts planned for 2007-2011 include the following:

- Expanded energy efficiency initiatives by electric utilities in the state are promoting the use of compact fluorescent light bulbs as an energy saving alternative to standard incandescent bulbs for homeowners. To ensure that the future large quantities of mercury-containing compact fluorescent lights (CFLs) are managed properly at the end of their life, DEQ will be developing and implementing strategies and possible partnerships to effectively communicate proper management of waste CFLs to the public.
- The Hazardous Waste program will continue to review and evaluate mercury waste data submitted by regulated hazardous waste generators in annual hazardous waste report forms. This data will help DEQ determine the business technical assistance and regulatory needs of businesses submitting these reports.
- DEQ staff will also provide on-going technical assistance to businesses and institutional entities on the proper management of mercury-containing materials and wastes through site visits and periodic training sessions.
- In addition, DEQ will continue participation in the Oregon Dental Association's annual conference and other efforts to promote the use of best management practices for dental amalgam and other mercury wastes. These best practices are designed to prevent the discharge of mercury into the sanitary sewer.

c. Environmental Cleanup Program Commitments

DEQ's Environmental Cleanup program will continue to work with EPA and responsible parties on investigations and remedial actions of abandoned hard rock mines where mercury wastes have been generated and disposed. The extent of clean up work is dependent on the availability of funds, but the currently-planned efforts over the next few years include the following:

- Black Butte Mine - In the spring of 2007 EPA will conduct an interim soil removal which will entail excavating contaminated soil from the two furnace locations, and reducing the slopes of the tailings piles that are currently being eroded by the two creeks on site. DEQ will provide operations and maintenance (O&M) after the removal and will also conduct further evaluation of the responsibility of the current owner to conduct cleanup as well as potentially recovering costs from the current owner.
- Horse Heaven Mine - DEQ and Sunoco will be implementing the second phase of remedial action at the site in 2007. This phase of the remedy will address the remaining toxic hazard in a limited area around the D-tube furnace where mercury levels are slightly elevated. In addition, DEQ and Sunoco will address storm water retention and the institutional control components of the Record-of-Decision (ROD).
- Opalite and Bretz Mines – DEQ will explore joint funding options with the Vale District of the Bureau of Land Management (BLM) for the remedial actions recommended for these mine sites. No available funds currently exist in the Orphan Site Fund account.
- Ochoco Mercury District – DEQ's Eastern Region staff will complete the Phase 2 Abandoned Mine Lands study in 2007.

Air Quality Commitments

Air Quality's mercury-related actions for 2007-2011 will largely be focused on the coal-fired power plant in Boardman and the Ash Grove cement plant in Durkee – the two largest sources of mercury air emissions in the state. Other mercury air emissions projects could be initiated if new data or research warrants Department action.

a. Clean Air Mercury Rule (CAMR) Implementation

Implementation of the requirements of Oregon's recently-adopted Utility Mercury Rule by the Boardman coal-fired power plant operated by Portland General Electric (PGE) will begin in 2007. DEQ will oversee implementation of the requirements of the rule and ensure that compliance is achieved. Specifically, DEQ staff will review and evaluate the Boardman plant's mercury reduction plan, as well as mercury emissions data generated by the continuous emissions monitoring equipment installed and certified by 2009. Department evaluation and oversight of PGE's installation and operation of mercury emissions control technologies will also occur over the next five years to ensure that the Boardman plant is able to achieve emissions limitations mandated by the rule.

b. Cement Plant Regulatory Requirements

As mentioned in Section III, the 2005 mercury emissions estimate for the Ash Grove cement plant in Durkee was 1,500 pounds. This estimate is based on one short term stack test. DEQ's Air Quality program observed mercury emission stack testing at the plant in December 2006 with results available sometime in late March or early April 2007. The plant will also analyze its raw materials to get a better understanding on where the mercury comes from. Based on this information, DEQ will assess the need for developing state-mandated mercury emission limits and/or control requirements for the plant.

c. Municipal Waste Combustor Rules

In conformance with new EPA rules, DEQ will modify its air emissions rules for municipal solid waste combustors 2008. The new rules establish more stringent emissions limits for mercury and other air pollutants from these facilities.

Agency-Wide Mercury Commitments

DEQ is an active participant in the **Quicksilver Caucus**, a multi-state mercury issue work group coordinated by the Environmental Council of the States (ECOS). Participation in the Quicksilver Caucus has allowed DEQ to have input on national EPA mercury programs and policies, and to help develop multi-state approaches to mercury concerns when appropriate. Developing a unified consensus among several states on mercury issues is generally a more effective strategy than individual states providing input to EPA independently. DEQ plans to continue its involvement in the Quicksilver Caucus. In early 2007, the Caucus will complete its 2007-08 Mercury Action Plan, designed to outline the group's recommendations for strengthening states' capacity to reduce and manage mercury in the environment and for implementing EPA's Mercury Roadmap (issued in 2006).

One significant issue that individual states have little control over is whether the mercury waste collected throughout the country continues to be recycled and re-introduced into the global market, or whether the collected mercury is removed from the market and disposed. Currently,

no approved land disposal method exists for mercury. However, DEQ is working through the Quicksilver Caucus to advocate for the development of a method for locking up or stabilizing mercury in a form that prevents it from being used in new products, while ensuring that the collected mercury will not be released into the environment in the future. DEQ is also working through the Quicksilver Caucus to reduce the international use of mercury in processes and products where mercury-free substitutes are readily available. Although Oregon, by itself, has little influence over the global market for mercury, working with other states and EPA to develop comprehensive strategies can have a major impact on reducing the amount of mercury that is used and emitted globally, thereby reducing the most significant source of mercury pollution in the state.

V. CONCLUSIONS

Summary of Strategy Findings and Actions

Mercury pollution in Oregon's environment remains a threat to human health and wildlife, as evidenced by elevated levels of the toxic metal detected in fish found in the Willamette Basin and other areas of the state. The majority of mercury pollution contaminating Oregon's lands and waterways is the result of atmospheric deposition from sources outside of the state and from the disruption of natural sediments that contain mercury. Smaller mercury loadings originate from point and nonpoint pollution sources within the state.

DEQ is committed to reducing the amount of mercury entering Oregon's environment from Oregon-based sources, and to removing mercury pollution from the environment where feasible through a variety of strategies. In addition, DEQ will continue to work with other states and EPA to address policies and actions that can reduce mercury pollution coming from other parts of the nation or world.

Monitoring for mercury in the environment is a critical part of a comprehensive mercury strategy to better characterize the sources of mercury in Oregon's environment and to determine if mercury reduction strategies are effective. DEQ's Mercury Strategy involves continued and improved monitoring of mercury in the ambient environment, as well as monitoring of specific point sources of mercury.

Measuring Effectiveness

According to EPA, dietary intake is by far the dominant source of exposure to mercury for the general population, and fish and other seafood products are the main source of exposure of methylmercury in the diet.⁵ As a result, the primary performance measure for success of DEQ's Mercury Strategy is the average concentration of methyl mercury in fish tissue in various water basins throughout Oregon. Given that the majority of mercury pollution in Oregon's environment is coming from sources outside of the state, demonstrating reductions in fish tissue concentrations will be a significant challenge. A secondary set of performance measures are the quantities of air, water or land discharges of mercury into the environment from Oregon sources of mercury. Measuring the mercury discharges from the larger Oregon point sources will occur over the next five years.

Although direct measurement of all nonpoint source contributions of mercury is not feasible, a combination of ambient monitoring and modeling can help improve estimates of the loading from

⁵ Mercury Update: Impact on Fish Advisories, EPA Office of Water (EPA-823-F-01-011), June 2001

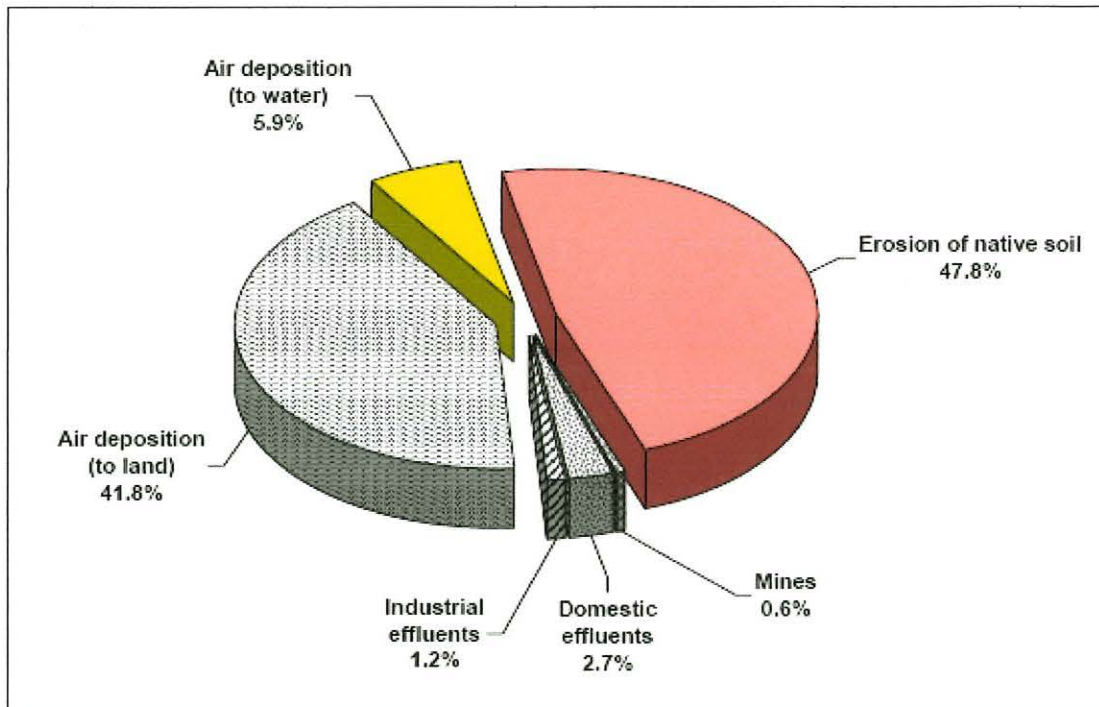
such sources. The quantity of mercury waste collected as the result of various DEQ initiatives is an important measure of agency mercury reduction activity and will continue over the next five years. However, without information about the total quantities of mercury products in commerce or mercury waste generated in the state, no conclusions can be made regarding the overall environmental impact reductions from these efforts.

APPENDIX A: FUNDING-DEPENDENT MERCURY ACTIONS

DEQ PROGRAM AREA	POTENTIAL ACTION
Water Quality	<ul style="list-style-type: none"> The 2007 DEQ legislative budget proposal will include establishing a comprehensive water quality toxics monitoring program that would begin in the Willamette basin and would be sequenced around the state over time. The program would be designed to identify toxic pollutants that are the greatest threat to human health and the environment through an assessment of existing data, land uses and pollution sources. DEQ would then evaluate the monitoring results to determine where the toxic pollutants were coming from and how best to direct resources towards solutions. Mercury is one of many toxics that may or may not be included in the monitoring plan for a particular water basin, depending on the results of DEQ's initial assessment.
	<ul style="list-style-type: none"> DEQ is coordinating with EPA, Washington State Department of Ecology, and other regional partners in developing a plan for monitoring toxics in the middle segment of the Columbia River within the next few years. Mercury will likely be one of a limited number of high priority toxics that will be included in the monitoring plan. This plan will be included in a proposal submitted to EPA for federal Environmental Monitoring and Assessment Program (EMAP) funds. EPA is expected to issue a request for proposal for these funds during the first half of 2007. At this time, this monitoring plan is dependent on federal funding.
	<ul style="list-style-type: none"> As part of TMDL development efforts in the Umqua Basin, DEQ is evaluating the need to monitor for mercury in the Basin. The agency may apply for an grant funding to support such monitoring.
Air Quality and Water Quality	<ul style="list-style-type: none"> USGS and DEQ have partnered to install, operate and maintain mercury "wet deposition" monitoring stations in two locations in the Willamette Basin. DEQ used EPA grant funds to support the operation of these stations, but these funds were depleted in 2006 and the operation of the stations was discontinued. DEQ will continue to look for potential funding sources to support getting these stations back on-line.
Land Quality	<ul style="list-style-type: none"> Clean up actions on several abandoned mercury mines, such as the Bonanza mine, have been held up because sufficient funds no longer exist in DEQ's "orphan site" clean up fund. DEQ, in partnership with EPA and other entities, will continue to evaluate alternative funding sources that will allow for completion of these clean up actions.

APPENDIX B: SOURCES OF MERCURY IN THE WILLAMETTE BASIN

Relative Load Contributions for the Mainstem Willamette River by Source Category



Source: Department of Environmental Quality, Willamette Basin Total Maximum Daily Load (TMDL)

APPENDIX C: MERCURY FISH ADVISORIES IN OREGON SURFACE WATERBODIES

Source: Oregon Department of Human Services, Public Health Division

WATERBODY	CONTAMINANT & GUIDELINES
Antelope Reservoir (SE Zone)	Very high mercury levels <ul style="list-style-type: none"> • Women of childbearing age, children under 6, and people with liver and kidney damage should avoid eating fish from these waters. • Healthy adults should eat no more than one 8-ounce meal per month. • <u>Sport-fishing & methylmercury.</u>
Cooper Creek Reservoir (Willamette Zone)	High mercury levels <ul style="list-style-type: none"> • Children under 6 should eat no more than one 4-ounce meal every two months. • Women of childbearing age should eat no more than one 8-ounce meal every month. • Healthy adults should eat no more than one 8-ounce meal every two weeks. • <u>Sport-fishing & methylmercury.</u>
Cottage Grove Reservoir (Willamette Zone)	Very high mercury levels <ul style="list-style-type: none"> • Women of childbearing age, children under 6, and people with liver and kidney damage should avoid eating fish from these waters. • Healthy adults should eat no more than one 8-ounce meal per month. • <u>Sport-fishing & methylmercury.</u>
Dorena Reservoir (Willamette Zone)	High mercury levels <ul style="list-style-type: none"> • Children under 6 should eat no more than one 4-ounce meal every two months. • Women of childbearing age should eat no more than one 8-ounce meal every month. • Healthy adults should eat no more than one 8-ounce meal every two weeks. • <u>Sport-fishing & methylmercury.</u>

<p>East Lake (Central Zone) Do not eat brown trout 16" or larger</p>	<p>High mercury levels</p> <ul style="list-style-type: none"> • Children under 6 should eat no more than one 4-ounce meal every two months. • Women of childbearing age should eat no more than one 8-ounce meal every month. • Healthy adults should eat no more than one 8-ounce meal every two weeks. • <u>Sport-fishing & methylmercury.</u>
<p>Emigrant Lake (SW Zone)</p>	<p>Very high mercury levels</p> <ul style="list-style-type: none"> • Women of childbearing age, children under 6, and people with liver and kidney damage should avoid eating fish from these waters. • Healthy adults should eat no more than one 8-ounce meal per month. • <u>Sport-fishing & methylmercury.</u>
<p>Galesville Reservoir (SW Zone)</p>	<p>High mercury levels</p> <ul style="list-style-type: none"> • Children under 6 should eat no more than one 4-ounce meal every two months. • Women of childbearing age should eat no more than one 8-ounce meal every month. • Healthy adults should eat no more than one 8-ounce meal every two weeks. • <u>Sport-fishing & methylmercury.</u>
<p>Jordan Creek (SE Zone)</p>	<p>Very high mercury levels</p> <ul style="list-style-type: none"> • Women of childbearing age, children under 6, and people with liver and kidney damage should avoid eating fish from these waters. • Healthy adults should eat no more than one 8-ounce meal per month. • <u>Sport-fishing & methylmercury.</u>
<p>Owhyee Reservoir (SE Zone)</p>	<p>Very high mercury levels</p> <ul style="list-style-type: none"> • Women of childbearing age, children under 6, and people with liver and kidney damage should avoid eating fish from these waters. • Healthy adults should eat no more than one 8-ounce meal per month. • <u>Sport-fishing & methylmercury.</u>

<p>Owhyee River upstream of the reservoir to Three Forks (SE Zone)</p>	<p>High mercury levels</p> <ul style="list-style-type: none"> • Children under 6 should eat no more than one 4-ounce meal every two months. • Women of childbearing age should eat no more than one 8-ounce meal every month. • Healthy adults should eat no more than one 8-ounce meal every two weeks. • <u>Sport-fishing & methylmercury.</u>
<p>Plat I Reservoir (SW Zone)</p>	<p>Moderate mercury levels</p> <ul style="list-style-type: none"> • Children under 6 should eat no more than one 4-ounce meal every month. • Women of childbearing age should eat no more than one 8-ounce meal every two weeks. • Healthy adults should eat no more than one 8-ounce meal every week. • <u>Sport-fishing & methylmercury.</u>
<p>Snake River, including Brownlee Reservoir (Snake River Zone)</p>	<p>Moderate mercury levels</p> <ul style="list-style-type: none"> • Children under 6 should eat no more than one 4-ounce meal every month. • Women of childbearing age should eat no more than one 8-ounce meal every two weeks. • Healthy adults should eat no more than one 8-ounce meal every week. • <u>Sport-fishing & methylmercury.</u>
<p>Willamette River and Coast Fork Willamette to Cottage Grove Reservoir</p>	<p>High mercury levels & PCB levels</p> <ul style="list-style-type: none"> • Children under 6 should eat no more than one 4-ounce meal every two months. • Women of childbearing age should eat no more than one 8-ounce meal every month. • Healthy adults should eat no more than one 8-ounce meal every two weeks. • <u>Sport-fishing & methylmercury.</u>

APPENDIX D: COLLECTIONS OF WASTE MERCURY FROM DEQ PARTNERSHIP PROJECTS 2002-2006

Collection Project	Partners	Estimated Pounds of Mercury Collected
Household Thermometer Exchange	<ul style="list-style-type: none"> • Local governments 	5
Thermostat Recycling Incentive Project	<ul style="list-style-type: none"> • Portland General Electric • Thermostat Recycling Corporation • Product Stewardship Institute 	54
Dairy Manometer Replacement	<ul style="list-style-type: none"> • US EPA 	82
Household Hazardous Waste Collection Events	<ul style="list-style-type: none"> • Local governments 	27
Conditionally Exempt Generator (CEG) Collection Program	<ul style="list-style-type: none"> • Local governments 	98
Automotive Switch-the-Switch Project	<ul style="list-style-type: none"> • Northwest Auto Trades Association • Local governments • Oregon Environmental Council • Port of Portland 	20
Dental Mercury Amalgam Collection Project	<ul style="list-style-type: none"> • Oregon Dental Association • Association of Clean Water Agencies 	210

THE NEWBERRY EAGLE

FREE

APRIL
2007

The Non-profit Local Newspaper of the Greater La Pine Basin

La Pine Expresses Groundwater Project Concerns

Compiled from several sources by
Newberry Eagle Staff Writers

On March 20th, for the second time in two weeks, citizens of La Pine packed the La Pine High School Auditorium to discuss the adoption of the Local Rule. The Rule, if adopted, would require retrofits and new septic systems for all Southern Deschutes County properties.

The first meeting, held on Tuesday March 13th focused on presentations by county staff with only written questions allowed. The second meeting started with answers to the left over questions from the week before and then gave the public an opportunity to comment on the Rule. Over 80 people signed up to speak, more than time would allow.

Retired Southern Deschutes County resident Conrad Ruel was one of the speakers that didn't make the cut. In a phone interview he had a chance to voice his opinion. "I support clean water and a clean environment, I don't challenge the science," said Ruel. He suggested a neutral third party verify the data and he was concerned about the uniform changes the Local Rule would implement. Ruel suggested staggering the implementation by first requiring

10,878 to 15,000+." The women also provided the county commissioners with written comments of their concerns.

Rounds was also concerned about the depth of the monitoring wells and the fact that there are no exemptions for medical issues in the current Local Rule. For instance, a person with diabetes may be on medication that negatively affects the chemical balance of the septic and filtration system. Skin conditions that require the daily use of bath oils or salves can cause extra and expensive maintenance requirements to keep the septic functioning properly.

"If someone is going to spend up to \$18,000 on a septic system they aren't going to want to curtail their day to day activities to such an extent," said Rounds. She had three recommenda-



Photo by Robert Otteni

The Citizens of La Pine insist on being heard and asking questions about the proposed Local Rule.

it's not in Orenco's financial interests to do so," said Churchill. "For the past 25 years, the owners and employees of Orenco have watched small communities all over the United States spend way too much money on wastewater systems and wastewater solutions."

Churchill wants the community to

the full range of possible solutions to groundwater nitrate issues.

(*Editor's Note: More of Jason Churchill's Testimony appears starting on page 6 in this paper under Community Opinions.)

"He was like an angel," said Linda Moore, volunteer with the La Pine

data and he was concerned about the uniform changes the Local Rule would implement. Ruel suggested staggering the implementation by first requiring new construction to install the systems. "They should mitigate the damage to single family homes," he said.

Sunni Rounds, a retired La Pine resident, along with her friends Gayla Hays and Judy Forsythe entertained the crowd with a skit and flip chart presentation documenting some of the conflicting statements issued by the county that are causing confusion. "There are differences in the figures that the county has been putting out there," said Rounds. "As an example platted lots, go from

\$18,000 on a septic system they aren't going to want to curtail their day to day activities to such an extent," said Rounds. She had three recommendations. All current systems be grandfathered; the nitrate model used by the county be revisited and the county takes the time to explore other areas of the country that have had similar problems.

Jason Churchill, a government relations representative and scientist for Orenco, got a standing ovation for his comments urging the county commissioners to slow down the Local Rule process. Orenco manufactures one of the nitrogen reducing systems.

"I'm here to offer facts, even though

too much money on wastewater systems and wastewater solutions."

Churchill wants the community to have accurate data based on sound science before decisions are made. At this point the county is not being threatened by any state or federal rules mandating a fix to the nitrate problem in La Pine. He also challenged the county staff's continued connection between Blue Baby Syndrome and nitrates.

He concluded by saying "because there is no imminent health risk to the citizens of south Deschutes County, I urge the county to slow down and provide citizens with clear, factual, science based information and carefully explore

nity Opinions.

"He was like an angel," said Linda Moore, volunteer with the La Pine Chamber of Commerce. "He encouraged the county to slow down and look at all sides." Moore, who attended both meetings with her husband Robert, thought the second meeting was better than the first. "It was run much smother and there were places to sit," she commented. The couple was forced to leave the first meeting after only an hour because there were no seats available.

Rounds agreed that the second meeting was better, "We came away feeling much more positive than last weeks meeting."



Photo by Robert Ottem

Once again the citizens of La Pine demonstrate their concern over the proposed Local Rule by filling the auditorium beyond capacity and offering testimony of their concerns and viewpoints.

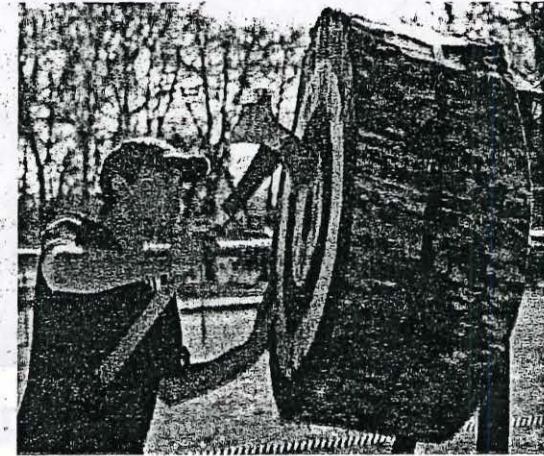


Photo Provided

Aaron Draper takes his axe out of a target in axe throw. See more information about La Pine High School Forestry on page 17

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LEARN ABOUT THE SCIENCE SUPPORTING THE LOCAL RULE FOR ONSITE SYSTEMS IN SOUTH DESCHUTES COUNTY

OPEN HOUSE:

The Deschutes County Community Development Department will hold an open house about the science supporting the proposed Local Rule.

Drop in on
December 20, 2006
between 4:00 and 6:00 PM
at the
CDD Office at
51340 S. Highway 97, La Pine

More information is
available upon request

DESCHUTES
COUNTY
COMMUNITY
DEVELOPMENT
DEPARTMENT



Project Contact: Barbara Rich
117 NW Lafayette Ave.
Bend OR 97701

Phone: 541-388-6575
Fax: 541-385-1764

E-mail: BarbaraR@co.deschutes.or.us

Quality Services Performed with Pride

Proposed Local Rule for South Deschutes County

Deschutes County Community Development Department proposes to adopt a Local Rule as a new chapter of the Deschutes County Code. This rule will require the use of onsite wastewater treatment systems that protect the drinking water source for the residents of south Deschutes County. The rule will require the use of systems that reduce nitrogen in addition to treating wastewater for bacteria and other common contaminants removed by conventional systems. The proposed rule will:

1. Require the development of bare land to use the best performing nitrogen reducing systems
2. Require existing development to meet at least 35% nitrogen reduction based on the Nitrate Loading Management Model
3. Require all existing systems to be upgraded within 10 years of the date the rule is adopted

Comments Needed

Written comments will be accepted through December 29, 2006.

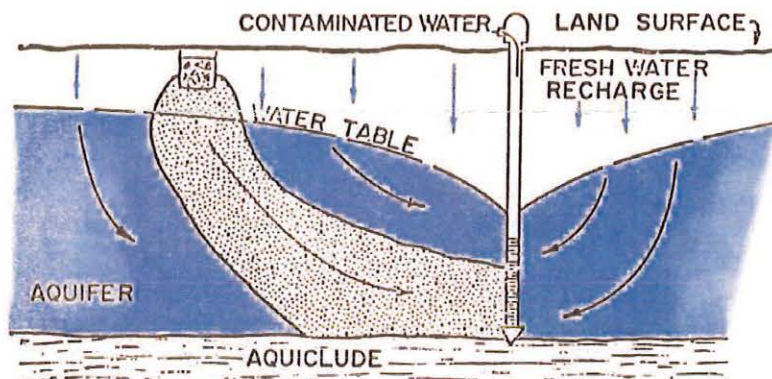


Figure 14: Effect of a Pumping Well on Contaminated Water Movement (Scaif, Dunlap and Kreissl, 1977)

(Figure taken from "Septic Tank System Effects on Ground Water Quality" by Larry W. Canter and Robert C. Knox, Lewis Publishers, Inc., 1985)

O R E N C O C A S E S T U D Y

Elkton, Oregon:

Effluent Sewer Provides Superior Treatment at Low Cost



This aerial view shows the community of Elkton, Oregon, with its 100 residences, stores, restaurants and schools. Orenco's highly efficient recirculating sand filter is in the lower right corner (circled).

"The river is a big part of our lives, so protecting it is a priority. Orenco's recirculating sand filter does an excellent job at a cost we can afford."

Linda Higgins
Elkton City Manager



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In the late eighties, individual onsite septic systems in Elkton, Oregon — along the beautiful Umpqua River — were failing, threatening the river's water quality. In addition the septic systems were limited in capacity, and merchants realized they couldn't expand their businesses without making improvements.

In 1989, Orenco installed a ProSTEP™ watertight effluent sewer system that conveys effluent from about 100 onsite septic systems — of which 1/3 are gravity (STEG) and 2/3 are pump (STEP) — to a 60' x 120' recirculating sand filter (RSF) designed to treat 30,000 gallons per day. Final disposal of the treated effluent is to a sequentially dosed drainfield consisting of 11,000 lineal feet, divided into 12 zones.

Effluent quality is outstanding. BOD and TSS from the ProSTEP collection system average 130 and 34 mg/L, respectively. After treatment by the RSF, effluent dosed to the drainfield averages 6 mg/L for both!

The cost to homeowners is minimal. After an initial \$400 connection charge, homeowners pay a low \$20 monthly fee that includes system payback and maintenance. That's because maintenance is also minimal, averaging less than an hour per day for routine maintenance to the collection system and for recording daily meter readings for the RSF and dosing pumps.

With a total system cost of \$897,800, the average installation was less than \$7,000 per connection. The community of Elkton found a cost-effective, environmentally sound solution to its wastewater treatment needs. And because only two-thirds of the systems' capacity is being used, Orenco's ProSTEP technology will serve Elkton long into the foreseeable future.

SUMMARY OF SPECIFICATIONS

Elkton, Oregon Effluent Sewer and Recirculating Sand Filter Using Orenco Systems' Equipment

INSTALLATION DATE
1989

TOTAL PROJECT COST
\$897,800

ON-SITE FACILITIES
135 EDU's, mostly residential
67 STEP Units, 34 STEG Units

TANKS

RESIDENTIAL
1,000 gal, 1-piece construction, single-compartment concrete tank fitted w/effluent filters or screened pump vaults.

COMMERCIAL
Larger than 1,000 gal and/or multiple tanks.

PUMPS
1/2 hp (10 gpm typical) effluent pumps.

COLLECTION SYSTEM
Main lines mostly 2" diameter, some 3".

TREATMENT SYSTEM
Recirculating gravel filter discharging to drainfield.

Q (Design) = 30,000 gpd
Q (Average) = 17,000 gpd
Actual RR = 3:2:1

29,500 gal recirculation tank, with four, 1 hp pumps.

Per DEQ, Media depth = 35", D10 = 3.5 mm; Cu = 1.8 (Current standards provide for media depth of 24" and media size of 1.2-2.5.)

Flow splitter tank divides 20% of return flow to drainfield. During low flows, motorized valve actuates, resulting in 100% recirculation.

DISPOSAL

3,000 gal dosing tank with three, 1/2 hp, 70 gpm pumps. Each pump doses to 4 valves that sequentially direct flow to hydrosplitter with 5 zones each.

127 (2") laterals with 1/8" orifices on 24" spacing, placed in 12" x 48" trenches.

11,000 LF drainfield is located within 6 acres.

EFFLUENT QUALITY

Influent BOD and TSS average 130 and 34 mg/L, respectively. Effluent averages 6 mg/L for both (see chart, below).

OPERATION/MAINTENANCE

ONSITE FACILITIES
Alarm calls average 3.7/yr. for first 7 yrs.
No residential tanks have needed pumping.

In 1996, a full audit was performed at each septic tank. Little maintenance was required.

COLLECTION SYSTEM
2 contract operators on-call.

TREATMENT SYSTEM
1 part-time operator; less than 1 hr/day, including daily meter readings (weekly would be adequate).

Per WPCF permit, effluent analysis performed quarterly.

RSF distribution laterals flushed annually (preventative maintenance).

FUNDING/FEES

71% grants, 29% loan

\$400 connection fee

\$20/mo/EDU for < 5,000 gpd flows (winter average)

Additional \$4/1,000 gpd for > 5,000 gpd flows

\$175/mo flat fee for 2" commercial meters

New gravity installations cost about \$2,000

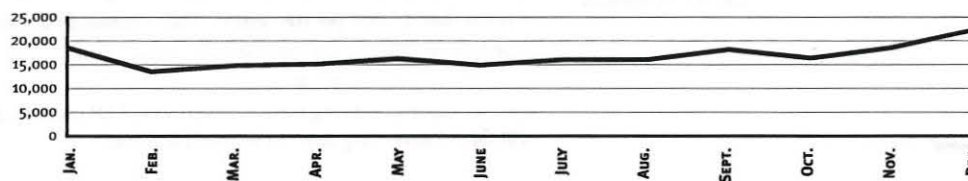
New pump system installations cost about \$3,000.

DATA COMPARING INFLUENT (I) TO EFFLUENT (E)

ANNUAL AVERAGE	BOD I/E	TSS I/E	NH3 I/E	NO3 I/E
1990	247/14	37/-	58/1	1/8
1991	116/7.5	25/4.0	33/3	1/11
1992	-/13	26/-	-/4	-/24
1993	134/4.3	40/5.1	56/11	3/26
1994	114/2.9	30/4.3	47/8	2/36
1995	122/3.9	40/11	50/9	1/30
1996	92/2.3	46/4.0	44/13	2/20
1997	128/5.5	38/7.7	41/8	3/14
1998	130/3.3	29/4.9	50/9	2/27
1999	146/5.9	33/5.1	45/5	1/23
2000	85/3.8	30/4.7	41/4	1/22
2001 (through July)	76/3.0	28/4.5	31/5	.4/28

BOD Biochemical Oxygen Demand **TSS** Total Suspended Solids **NH3** Ammonia **NO3** Nitrate

MONTHLY AVERAGE FLOW, GPD



ACS-SL-1
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To: Deschutes County Board of Commissioners

December 28, 2006

- Dennis Luke
- Mike Daily
- Bev Clarno
- Tammy Baney

Deschutes County Administrator – Dave Kanner

From: Steve Wert, Registered Oregon Wastewater Sanitarian, Soil Scientist, and land owner in South County

Subject: South Deschutes County Groundwater Protection Plan

It is my privilege to write to you about Deschutes County's Groundwater Protection Plan. My comments come from a background of designing wastewater systems for the last 34 years and being on Deschutes County's Technical Advisory Committee from 2005 to present. I hope some of my comments will be useful. Some will likely be unpopular. They are intended to be a nonpolitical opinion focused on protecting the groundwater. Your staff that is responsible for the plan will definitely have a hard time with some of my thoughts. Please understand there is nothing personal in my words. They are intended to point out deficiencies in the plan in an effort to find the best way to address South Counties groundwater concerns. The way I use the words "County" or "County Staff" refers to those County employees working on South County groundwater plan.

Many of my clients in the La Pine area have raised questions about the County's plan. I've prepared this letter to express some of their concerns as well as some of my own. It should be noted that I am retiring and am not using this letter to promote business for myself.

As you know, Deschutes County commissioned a study of the groundwater in LaPine. That study produced a computer model, which predicts widespread nitrate pollution as a result of onsite wastewater systems. There are a few wells with low nitrate levels now, but the model predicts the problem will manifest itself in 10 to 40 years. Based on the model, the County is preventing some property owners from developing their land and is calling for all existing and new systems from Sunriver south to the county line to be low nitrate producing individual systems.

I am in agreement with the County's desire to protect the groundwater and public health. I disagree with how they propose to do it. In my opinion, the plan is seriously flawed for the following reasons:

1. County plan does not treat all property owners fairly.

Besides the nitrate issue, there is a second motivation behind the County's plan. There is an expressed desire by the County to "correct" old subdivisions created in the 1960's and 1970's. County wants more open-space i.e. fewer houses, more riparian habitat and wildlife corridors in these subdivisions. The County has blocked 1000 to 1400 "red lot" owners from developing their lots. In the current real estate market, red lot owners will lose approximately \$70,000 to \$100,000 per lot if the County persists in their approach. There are wastewater solutions that will protect the groundwater and protect property rights at the same time. The County argues strongly that they cannot legally allow that. This is not true. State laws now exist to build safe systems on red lots that don't qualify as wetlands.

When the issue of using sewers to serve these lots is raised with the County, they respond by stating: 1) Goal 11 prevents it and 2) a study by KCM Engineers shows a sewer is too expensive.

The County's position that community or cluster systems are not allowed due to Goal 11 is a self serving argument. The County uses Goal 11 to prevent houses from being built in the old subdivisions. If the County wanted an exception to Goal 11, they could get one. The County turned BLM resource land into a subdivision, which is many times more difficult than an exception to Goal 11. The BLM land deal required an act of congress.

The County points to the KCM report they commissioned to study sewerage the LaPine area as saying the estimated cost to sewer the LaPine area would be \$19,000 to \$28,000 per lot. Those were 1997 costs. These numbers were and are incorrect. Oregon Water Wonderland (OWW2) just completed in 2006 a cluster sewer system for \$8,500 per lot. Cluster or community wastewater systems are done successfully all over the U.S. including River Meadows, Sunriver, La Pine, and Glide, Oregon.

OWW2 has 1000 lots and is a sewer district (exempt from Goal 11). OWW2 completed a community sewer system for all lots including 200 red lots. Without the interference of Goal 11, OWW2 treated all landowners the same, removed nitrates, and completed the project in a relatively short time by private engineers and DEQ at a price/lot that was under the cost of an individual sand filter. Gaining an exception to Goal 11 would not allow creation of more lots. It would simply allow the present subdivisions to be completed using cluster systems, which can range from 2 homes to whatever size makes economical sense.

The County also has blocked three DEQ rules that would allow individual systems to be placed on red lots. In other words, cluster systems are not the only way to make the lots buildable.

A plan approved by the people of South County should have provisions that make red lots viable, or else the County should purchase the red lots at fair market value. Until all property owners are treated fairly, I am suggesting that no plan be approved.

2. USGS ground water model has not been reviewed by disinterested third party.

The USGS developed the groundwater model. It has not been available to study in detail at the time of this letter. Although it has been explained by the USGS in public meetings, there is a real need to have other professional people familiar with hydrogeology to objectively review it. Are the assumptions correct? Is it being used within its limits of accuracy? Because the assumptions and the structure of the model has been used to launch the County's program, it should be reviewed by people not connected to the project and who are disinterested in County politics. The County should not be involved with selecting a firm to review the model.

A significant time has lapsed since the wells used in the model were tested. Perhaps it would be appropriate to test these wells again to determine if the predictions made by the model are accurate. There is a great deal of money riding on the use of this model. The citizens of South County could hire their own professional groundwater person to sample and test the wells. The cost to test for nitrate is about \$22 per sample. Doing 150 wells would cost about \$3300 for the lab work. Before any plan is approved, the model and the wells should be reviewed.

3. Nitrates are misleading.

The County assumes that nitrates propose a serious health hazard to humans. Old medical literature implicated nitrates in the cause of methemoglobinemia (MET) also called blue-baby syndrome. A recent literature search strongly suggests that nitrates in drinking water are not the cause of blue baby syndrome.

- The Center of Disease Control in Atlanta, GA no longer considers MET a reportable disease.
- J. L'hirondel and J.L. L'hirondel published in 2002 their review of nitrates in a book entitled "Nitrate and Man, Toxic, Harmless, or Beneficial?". Orfordshire, UK CABI Publishing. Their work shows nitrates have been wrongly implicated in causing MET. It appears that bacteria and possibly viruses are the real culprits. Recent efforts to understand MET point to microorganisms causing an upset in the chemistry of the stomachs of infants as being the main cause. Gastrointestinal disorders apparently cause a "spike" of nitrates, which are from cells from within the body (Endogenous nitrates).
- From 1979 to 1996 (last known survey) only 8 deaths were linked with MET in all of the U.S. Of the 8, only one mentions the possibility of water ingested nitrates being a possible cause. (See appendix A)
- The medical world understands MET and knows how to treat it effectively.

- There is strong evidence that gastrointestinal infections are much more important in explaining MET than ingested nitrates.
- High levels of nitrate in water were intentionally fed to infants in 1948. Levels of 70-140 mg/l in the water failed to produce MET. (See Churchill in Appendix A.)

Nitrates have been reported to cause cancer, abortions, and birth defects. There is conflicting evidence that links nitrates to these maladies. I have found no recent clinical studies that conclude nitrates are truly harmful. In fact, we need nitrogen everyday in our diet to build proteins and amino acids for a healthy body.

The County believes nitrates are the enemy. Their plan is a nitrate driven action. The County claims the EPA and the DEQ will enforce restrictions in growth of South County when the nitrate levels in groundwater approaches 10 mg/l N-NO₃. I don't believe the rules say that. It is my understanding that the 10 mg/l is a federal law that applies to community water systems.

Nitrates are only one kind of fish in the sea. Septic tank effluent also has viruses, bacteria, and can have a wide variety of chemicals depending on how a homeowner uses their system. By focusing on nitrates, other harmful constituents can be overlooked. It seems nitrates are being used to scare people into action. Any plan should look beyond the nitrates for real problems. Other pollutants must also be addressed.

The nitrate approach used by the County does not necessarily protect groundwater against serious pollution. With only one possible MET victim in the last 27 years in all of the United States, the County's claim that nitrates kill babies is much more about hype than a real health issue.

4. The Proposed plan does not allow for future upgrades.

The focus of the plan is nitrate reduction. At some point in the future, as we learn more, there may be additional treatment requirements. The County plan does not provide for a way to easily adjust treatment in the future. Cluster systems do allow for easier and cheaper upgrades than individual systems. Cluster systems are not the answer for every home. However, they do work for a large number in South County and should be an available tool.

5. County ordinance is an unnecessary layer of control.

The County is asking the public to endorse a special ordinance prepared by the County to govern onsite wastewater activities in South Deschutes County. A draft of the ordinance exists. We, the public, have been denied access to it. Obviously, no one can comment on it without reading it. Based on my experience in Washington and California, I can say that the approach is a poor one. The DEQ provides the laws and codes for all of Oregon with respect to onsite wastewater. Many of us in the State have labored throughout a 34-

year period to make those rules workable, fair to the public, protect public health, and protect the groundwater resource.

The County is arguing that DEQ is not doing enough to protect South County. DEQ has the authority to prepare a "Geographic Rule" to cover South County. A geographic rule has an advantage over a local ordinance. It can cross County lines. Northern Klamath County has the same issues as the La Pine area. A geographic rule could cover both. There are 6 Geographic areas in the DEQ rules to cover special conditions, some of which are very similar to those of South County. If Deschutes County is able to gain approval for a special ordinance, this will be a mistake. It will add confusion for the public and begin a weakening of a sound set of statewide rules.

Imagine if every county decides to write it's own rules. That is what California has. Every county has it's own requirements, which range from horrible to workable. California realized the inefficiency of their program and has begun to create one ordinance for the entire state. This approach allows new, superior, technology to be permitted more efficiently and treats everyone the same. As it is now, the technology has to be approved county by county. Rules in California range so widely that the general public has little faith in onsite regulations. It is my experience that one set of rules is the best approach. It works well in the rest of Oregon and it also works well in Deschutes County.

The County would be better served working hand in hand with DEQ and keeping Oregon unified. There have been nearly 2000 lots successfully corrected in South County under the direction of DEQ (La Pine Sewer District, River Meadows, OWW2).

The proposed plan is what the County staff wants, not what the people want. Other communities solve their problems more directly by using time proven methods. To me, the plan is not workable because it also tries to adjust the old subdivisions at the expense of the property owners.

As I mentioned, I served on the Deschutes County's South County Technical Advisory Committee in 2004-2005. I watched as the County staff tried to convince us we should approve their plan. They knew before the committee began what results they wanted. They ignored proven technology and workable solutions offered to them by the committee members. Only the County's "plan" survived the committee. We were not a real advisory committee. Few if any of our suggestions were taken seriously. Check the minutes of our meetings and you see they are nearly all about what the County said. I can assure you several of us provided serious input.

Conclusion

Some of the County staff wants control over all of the onsite activities in South County. For small flows, (less than 2500 gpd), the County sanitarians do an excellent job. However, for larger flows and solving broader issues, the County is not the one to do it.

It is a mistake to allow Deschutes County to split from DEQ and create another level of governmental control. DEQ and private engineers have done a good job of getting the La Pine Community, River Meadows, and Oregon Water Wonderland 2 sewered. The County should stand down, be supportive of that process by assisting in obtaining an exception to Goal 11 for all of South County and allow appropriate individual systems to be designed and built.

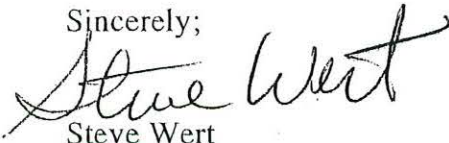
The County's plan is unfair to red lot owners. The old subdivisions were legally created. Real people own them and their inherent property rights. The County should respect that and not manipulate the lots to their own ends.

The County is passionate about their plan-so much so that they will not seriously consider other approaches that are simpler, fairer to all landowners, superior in removing nitrates, bacteria, and viruses, more easily updated in the future and more affordable.

I suggest you seek council from experienced wastewater professionals outside of the County staff. The County plan is flashy, but it is not in the best interest of South County citizens. Several of us are trying to organize a meeting where we can invite the Board to hear our concerns directly. It is my hope that you are interested in coming.

Thank you for considering my comments.

Sincerely;



Steve Wert
Wert & Associates, Inc.
2590 NE Courtney Drive, Suite 1
Bend, OR 97701 617-9100

CC:

Environmental Quality Commission

- Lynn Hampton
- Bill Blosser
- Donalda Dobson
- Judy Uherbelan
- Ken Williamson

Joni Hammond, DEQ

Mike Kucinski, DEQ

Eric Nigg, DEQ

Bob Baggett, DEQ

Dick Nichols-Groundwater Specialist

Kelli Hussani, Miller•Nash

John Neupert, Miller•Nash

Vic Russell

Allan Jones

Barbara Rich

Tom Anderson

Catherine Morrow

Chuck Overton

Elin Miller, EPA Region

Governor Kulongoski

Gail Shibley, Environmental Public Health

Daniel Peddycord, Deschutes County Human Services

Stephanie Hallock, Director of DEQ

Senator Ted Ferrioli

Representative Ben Westlund

Representative Gene Whisnant

Senator Gordon Smith

Senator Ron Wyden

Congressman Greg Walden

John Gibson

Technical Advisory Committee Members

Rick Upham

no diversity of
opinion

agreed.
Public
Warden who is
unopposed opinion
dissemination

KELLY Toneasha

From: LOTTRIDGE Helen [Helen.Lottridge@state.or.us]
Sent: Tuesday, April 24, 2007 2:50 PM
To: Kenneth J. Williamson; repjudyu@aol.com; Donalda Dodson (Central); Lynn Hampton; Bill Blosser
Cc: PEDERSEN Dick; HALLOCK Stephanie; GINSBURG Andy; LOTTRIDGE Helen; KELLY Toneasha
Subject: FW: Bend "Conversation with the DEQ"

Commissioners, here is another message from a citizen who was unable to attend the Town Hall. I am forwarding it to you, and to Andy Ginsburg, for your information, and we will include it in the record of the meeting.

Helen

-----Original Message-----

From: Dave Freitag [mailto:dfreitag@prinetime.net]
Sent: Wednesday, April 18, 2007 3:34 PM
To: LOTTRIDGE Helen
Cc: co@eaglenewspapers.com
Subject: Bend "Conversation with the DEQ"

Dear Ms. Lottridge:

The Bend Bulletin recently carried an invitation to attend an April 19th meeting in Bend to provide input on environmental priorities in my community. In reviewing your meeting schedule, I perceive that your April 19th meeting is as close as your Commission will be to Prineville in the foreseeable future. Thus, I assume you are also looking for input from Prineville residents.

I have a conflict that evening, hence this e-mail with my input for the Commission. I appreciate any help you could provide in getting my comments to the proper parties.

My largest environmental concern for Prineville - and hence my environmental priority - is air quality. Many housing developments - including mine - are located downwind of secondary wood manufacturing operations. We are breathing sawdust all day, five to six days per week. Of course, the sawdust fallout also creates a continual maintenance issue for our properties and vehicles, but that is more a nuisance than a health issue. I understand the DEQ issues permits for these emissions. My concern is the health impacts of sawdust on all age

groups of the population living downwind of these manufacturing operations. (The 20 hours of noise each day is another issue, but I realize that DEQ no longer investigates noise complaints.)

My priority/hope is Prineville wood manufacturing operations will be encouraged/forced to upgrade their primitive cyclone systems to electrostatic filtering to reduce adverse health impacts to their downwind neighbors. Other industries have implemented effective pollution controls (e.g., coal burning power plants). The City of Prineville approved housing downwind of these manufacturing operations;

it's time City officials and the DEQ step up to their responsibilities to protect public health.

Sincerely,

David B. Freitag
1082 NE Stoneridge Loop

Prineville, OR 97754
(541) 447-6810
(Crook County)

KELLY Toneasha

From: FUNK Brent on behalf of DEQINFO
Sent: Monday, April 16, 2007 4:44 PM
To: KELLY Toneasha
Subject: FW: April 19, 2007 Conversation with DEQ in Bend

Brent J. Funk

Oregon Department of Environmental Quality
811 SW Sixth Ave., 10th Floor
Portland, OR 97204
503-229-5630

-----Original Message-----

From: Margie Lussier [mailto:jmlussier@bendcable.com]
Sent: Monday, April 16, 2007 4:39 PM
To: DEQINFO
Subject: April 19, 2007 Conversation with DEQ in Bend

April 16, 2007

To: DEQ Deputy Director Dick Pedersen and the Environmental Quality Commission
From: Margie Lussier
21834 Boones Borough Drive
Bend OR 97701
541-389-4082

Subject: A conversation with the DEQ

Waste Treatment Concerns:

- 1) About 1/3 of the tax lots in the City of Bend are on aging septic systems and serving 35+ year old homes.
 - a. This is a disaster happening house by house, street by street, neighborhood by neighborhood. These are steel tanks (the operative word among the Septic Pumping businesses is "swiss cheese" condition) and most of Bend has a lava rock base upon which the drainfields sit.
 - b. Homeowners attempting to do something about their failing septic systems run into the City of Bend's LID system which is not only frustratingly cumbersome and fraught with delay and low priority, but also places all sewer line engineering/construction cost to homeowners at \$20,000 - 30,000 each plus hook-up costs.
 - i. The only saving grace in this is deferred financing, but it still adds a minimum of \$200 per month plus monthly sewer charges to every house in the LID (whether or not they connect their property at sewer line completion).
 - ii. Speaking of connecting to the sewer, there is currently no financial incentive to do so nor does the City require it - property owners are allowed to wait until their drainfield and septic system has totally failed and it's obvious to the property owner the fix must be made. How healthy is that for the neighborhood?
 - c. Even if a plan were made of which neighborhoods to build sewer connection to first, the

4/30/2007

current Bend sewage treatment system can't handle the septic system-served tax lots let alone the rapid new development and in-fill density.

- d. A good thing is that the City is not allowing new septic systems within the city limits – but are they taking care to assure annexed areas served by septic systems are planned for this time around?
- e. The City's master sewer plan improvements are years away from implementation and funding.
- f. When a Bend property is in need of a septic repair, they may come up against an inconsistency between City and DEQ rules. If you follow the City of Bend rule, you need to connect to sewer if you are 300' from it; DEQ requires the same if you are 100' from it. Couldn't it be the same #?

2) Deschutes County/City of Bend/DEQ lack of communication:

- a. I've had several conversations with DEQ, Deschutes County Sanitarians and City of Bend Public Works/Engineers – all of whom readily admit to me they have not sat down together (even over coffee) to discuss waste water treatment, aging septic systems, the inadvisability of annexation without planning for sewage treatment... Seems knowledge shared could be of benefit to the property owners these agencies are empowered to serve.
- b. I've also been told by DEQ they have no authority over septic system failures, a City or County's action or inaction in this regard. I hope that's not true, but it certainly seems to be the current practice.

Thank you for providing a means to testify without being present at the 4/19/07 meeting in Bend.

Margie Lussier

Margie Lussier
389-4082

Public Forum

GENE WHISNANT
State Representative
DISTRICT 53



RECEIVED

APR 26 2007

Oregon DEQ
Office of the Director

HOUSE OF REPRESENTATIVES
900 COURT ST NE
SALEM, OR 97301

April 23, 2007

Deschutes County Board of Commissioners
1300 NW Wall Street
Bend, OR 97701

Commissioners Baney, Daly, and Luke;

First, let me thank you for sending Tom Anderson and Barbara Rich from your Community Development Department to Salem to update me and my staff and Senator Westlund's staff on the South Deschutes County proposed local rule. Their presentation was very informative, and they were very responsive to our questions. Please extend my personal appreciation to them for traveling here to help inform me and others.

Since I first learned about the possible County mandate concerning the existing septic systems in South Deschutes County, I have spent a considerable amount of time listening, learning and reading about this issue. I received very good information and questions from South Deschutes County citizens at my Town Hall meeting in March in La Pine.

Since the Town Hall meeting, I have spoken to each of you at different times to assure you that I am not an expert on this issue and do not want to tell you how to manage the public health of Deschutes County. However, as Commissioner Luke stated I do have a valid interest because South Deschutes County and La Pine are in my district. Thus, I would appreciate being kept in the loop on your plans.

The South Deschutes County citizens are very concerned about the County's proposal and I believe their concern is justified. I understand the price tag for this project is uncertain and keeps rising. The new septic systems are expensive and even with the possible low-interest loans, the monthly payments and monthly monitoring charges may be out of reach of many South Deschutes County citizens.

I agree with the recommendations of the DEQ representative, Joni Hammond, at the recent meeting in Bend that "we should pause, look at where we've been and where we are going." Also, I salute the commissioners' action to form a citizens committee to be involved in the plan. I believe citizen involvement and buy-in will make it easier to implement the final plan. I also would hope that we can offer incentives and not have to mandate actions which the people do not believe in and may not be able to afford.

Thank you again for your work on this issue, and for all your work for the citizens of Deschutes County.

Respectfully,


Gene Whisnant

KELLY Toneasha

From: LOTTRIDGE Helen [Helen.Lottridge@state.or.us]
Sent: Tuesday, May 01, 2007 9:33 AM
To: Lynn Hampton; repjudyu@aol.com; Donalda Dodson (Central); Kenneth J. Williamson; Bill Blosser
Cc: HALLOCK Stephanie; PEDERSEN Dick; HAMMOND Joni; LOTTRIDGE Helen; KELLY Toneasha
Subject: Letter from Representative Whisnant to Deschutes County Board of Commissioners

We have received a copy of a letter from Representative Gene Whisnant to the Deschutes County Board of Commissioners supporting Joni's recommendation to pause in the process of adopting a local rule on septic systems. Toneasha is sending a copy of the letter to all of you today.

Helen

*Helen Lottridge
Special Assistant to the Director
Oregon Department of Environmental Quality
(503) 229-6725*

5/1/2007

Agenda Item H

Commissioners'
Reports

To: Environmental Quality Commission **Date:** April 20, 2007
From: Dick Pedersen, Deputy Director
Subject: Director's Dialogue

Supreme Court Ruling on CO²

On Monday April 2nd, the Supreme Court ruled that EPA has the authority to regulate CO² and other greenhouse gas emissions from new vehicles and that EPA is required under the federal Clean Air Act to adopt regulations when (in EPA's judgment) the science shows that vehicle emissions cause or contribute to air pollution (in this case, climate change) which may reasonably be anticipated to endanger public health or welfare. This Supreme Court ruling makes it much more likely that lawsuits challenging California's Low Emission Vehicle standards will fail and that California, Oregon, and the other states that have adopted California's standards will be allowed to implement requirements as planned. There may be some pressure for the EPA to develop tougher national standards as well.

Umpqua TMDL Approval and Petition

The EPA has now approved the Umpqua TMDL. The Umpqua is one of the most complex TMDLs, with so many water quality limited parameters and such a dynamic system.

A petition to reconsider the Umpqua Basin TMDL Order was sent on behalf of the Roseburg Urban Sanitary Authority (RUSA) and received by the Department on January 2, 2007. The Department denied the petition and sent the petitioner a letter to that effect the week of February 12th. The Department did acknowledge that there were some unresolved issues regarding implementation of the Umpqua Basin TMDL Order. We plan to address these issues through continuing discussions with RUSA. The petitioner has 60 days to file for judicial relief but, as yet, has not done so.

Reflections on Fish Consumption Meetings to Date

The Oregon Fish Consumption Rate Project drew about 120 participants to its first workshops in Portland and Coos Bay on March 13th and 14th, respectively. Commissioner Hampton and Water Quality Administrator Lauri Aunan attended both workshops. Commissioner Uherbelau and Director Hallock attended the Portland meeting. The workshops covered the background and scope of the project. All participants were respectful and engaged in a good dialogue about the purpose of this project and the process proposed to accomplish the project goals. The Agency received many constructive comments that we're integrating into future workshops. One of those comments was to continue to hold workshops around the state to accommodate people who cannot travel to Portland. The next workshop will be held at the Chinook Winds Casino in Lincoln City on May 16th. It will primarily cover the available information on fish consumption rates locally, regionally, and nationally. We will also discuss where people fish, and what kinds



of fish they eat. This meeting will be the day after the Oregon Tribal Environmental Forum in Lincoln City and is expected to draw representatives from all nine Oregon tribes.

If three or more Commissioners attend one of the workshops, we will need to issue a public notice in advance. According to the Department of Justice, under Oregon's Open Meetings Law, the Department is required to notice any public meeting where three or more Commissioners are present. The notice should include the time and place of the meeting and be sent to the media as well as anyone who has asked to be informed of Commission meetings. This notice can be combined with any other notices that were already planned for the meeting. Considering the next workshop is May 16th, the Department needs to know by Monday April 23rd if any of the Commissioners plan to attend. You can either tell us of your plans now, or you can notify Helen Lottridge by Monday.

Attached are all the presentations given at the March 13th and 14th Fish Consumption Rate Workshops, and also the meeting minutes. These reports can also be found at the following link: <http://www.deq.state.or.us/wq/standards/fish.htm>.

Here is the schedule for upcoming meetings:

- May 16, 2007
- July 10, 2007
- September 11, 2007
- November 13, 2007
- January 8, 2008
- March 11, 2008
- April 8, 2008
- June 3, 2008
- June 17, 2008
- July 8, 2008

Federal Budget Potential Effects on Oregon's Air Quality Program

We are half way through the 2007 federal fiscal year and still don't have a final federal funding allocation from EPA. In February, Congress passed a continuing resolution to fund EPA at fiscal year 2006 levels. We assumed that would translate into level funding for all programs. However, in mid-March, EPA issued its 2007 operating plan, and the proposed plan shifts approximately \$21 million from state and local air grants to the Underground Storage Tanks (UST) program. The reason for the shift is new Energy Act mandates for USTs beginning in 2007. The President's budget for 2007 included this shift and UST programs were counting on the funding but the continuing resolution wiped it out. Now the EPA operating plan puts the shift back in.

EPA's operating plan must be approved by Congress and state and local air quality agencies are lobbying Congress to restore air grant funding through supplemental appropriations funding. If not restored, the Department's Air Quality Program will lose about \$200,000 in federal funding for 2007.

EPA approves 2004/2006 303(d) list, 305(b) report

The Department has received EPA's letter approving Oregon's Final Integrated Report 2004/2006

(303(d) list and 305(b) report). EPA's letter states, "We recognize and appreciate the excellent work of staff and managers at ODEQ in developing the final 2004/2006 303(d) List". Karla Urbanowicz of our Water Quality Program led this important work.

The 2004-2006 Integrated Report includes an updated list of waters that do not meet Oregon's water quality standards. The report documents, 303(d) list and a searchable 2004/2006 database are available on the Department's web site at <http://www.deq.state.or.us/wq/assessment/rpt0406.htm>.

For waters that don't meet water quality standards and are placed on an "impaired waters" list under Section 303(d) of the federal Clean Water Act, the Department must develop clean water plans to reduce pollution from all sources in order to meet clean water standards. These plans are known as Total Maximum Daily Loads (TMDLs). The 303(d) list helps the Department establish priority rankings for water bodies with problems and assists the state in directing water quality resources to improve water quality throughout the state.

Out of approximately 37,600 water bodies in Oregon, about three percent are listed on the 303(d) list for at least one pollutant. The most common listing is for temperature, a pollutant that can broadly affect the health of salmon, steelhead and other aquatic species in streams and lakes. The second most common listing is for bacteria, specifically fecal coliform and E. coli. Bacterial pollutants can affect human health and use of Oregon's waters for recreation and shellfish harvesting. There are new listings for toxic substances such as iron, manganese, arsenic and beryllium. These metals are more commonly analyzed in ambient water quality monitoring, and the Department has been catching up with putting this data into its database so it is available for statewide assessment. There is less data available for other toxic substances such as pesticides, dioxins, and polychlorinated biphenyls (PCBs).

Update on Perchlorate Issues

In August 2006, EPA tested fifty watermelons for perchlorate. The watermelons were collected from fruit stands in the Hermiston area. Perchlorate was detected at levels ranging from less than 1 part per billion (ppb) to 22.9 ppb with an average concentration of 5.1 ppb. The detected concentrations seem consistent with national data on other produce and milk.

Although the watermelon data do not by themselves indicate a health concern, EPA is trying to understand the impact to health from potentially multiple sources such as drinking water, store-bought fruit and vegetables, milk, etc. EPA is developing plans for additional data collection.

EPA and its federal and state partners continue to recommend that people eat a balanced diet and test their private drinking water wells. In addition, people sensitive to perchlorate should ensure adequate iodide uptake, i.e., seafood and iodized salt.

An EPA fact sheet is attached.

Legislative Update

Greg Aldrich and Stephanie Hallock are now preparing for our budget hearings, which begin on April 23. The update on legislative and budget activity is attached.

Rigid Plastic Containers Update

At its February meeting, the Commission denied a petition that requested changing the rigid plastic container (RPC) recycling rules. Since that time, new information has come to the Department's attention, prompting us to revisit the recycling rate determination for RPCs for 2007.

As the law requires, in December 2006 the Department made a determination of the 2007 RPC recycling rate for compliance purposes. Based on data and trend information available to the Department at that time, we determined that the recycling rate for 2007 would be below 25%. The petition on behalf of RPC manufacturers presented to the Commission was in response to that determination.

Since the December determination and the Commission's action, we have received actual recycling data for 2006 that shows a significant increase in rigid plastic container recycling. This information was not reflected in the data and trending information available to the Department in December because companies couldn't compile the information until after the end of the calendar year. In addition, due in part to attention paid to this issue by the Commission, local governments have and will soon be expanding opportunities for curbside recycling of rigid plastic containers. This will clearly increase recycling tonnage.

Three recycling data experts - Jerry Powell, editor of Resource Recycling Magazine; Rich McConaghy, Solid Waste Manager for the City of Vancouver; and Meg Lynch, recycling manager for Metro - worked with Department staff to evaluate the additional information. All three participated when the Department developed the RPC rules and have extensive experience in the recycling field. The group concluded that the RPC recycling rate for 2007 will be above 25%. No further action is required by the Commission, but based on the new information, the Department will adjust the RPC recycling rate upward for 2007. This means that RPC manufacturers do not have to pursue alternative compliance measures to bring the rate up.

Going through this process has shown that the current law and administrative rules governing the rigid plastic container recycling requirements and the determination of compliance should be reviewed. We plan to begin that review after the end of this legislation session. Because of the importance of this issue, we will keep the Commission informed of our progress, particularly as any potential statute or rule changes are being discussed.

The Department is contacting individual stakeholders interested in all aspects of this issue and will hold a public meeting to present the additional information and answer questions about the revised determination.

Newest EcoBiz Certification

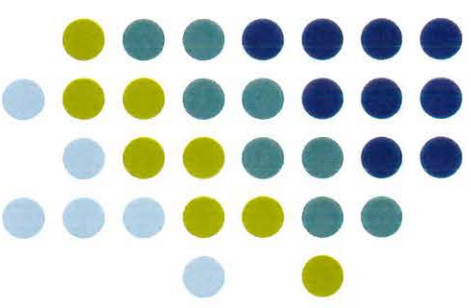
Bend Metro Parks & Recreation District is the first entity in the state, private or public, to undergo a successful EcoBiz Landscaper certification. The landscaper certification has a

rigorous set of criteria, including landscape design, installation and maintenance service, requiring contractors and operators to reach the highest standards in minimizing their environmental impact. The goal of the program is to prevent and minimize pollution and conserve resources. There is no other program quite like this in the country.

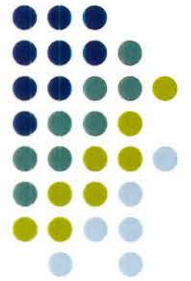
How are water quality standards used in Oregon?



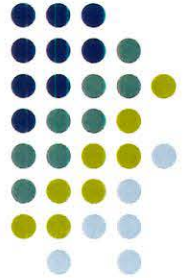
An overview



DEQ Programs applying water quality standards



- 1) National Pollutant Discharge Elimination System (NPDES)
- 2) Nonpoint source management
- 3) Listing of impaired waterbodies
- 4) Total Maximum Daily Loads (TMDL)
- 5) 401 water quality certifications
- 6) Cleanup activities



NPDES permitting

- Domestic wastewater treatment - *(individual permits)*
 - 63 major facilities (>1 million gallons per day)
 - 183 minor facilities (< 1 million gallons per day)
- Industrial Facilities - *(individual permits)*
 - Mining, sawmills, woodtreating, pulp and paper, smelting, etc...
 - 30 major facilities
 - 165 minor facilities
- Stormwater - *(individual and general permits)*
 - Industrial (mining, textile, lumber, metal, electronic, transportation)
 - Construction (over 1 acre of disturbance)
 - Municipal (MS4s) (Phase 1 and 2 communities)

Nonpoint Source Pollution Management



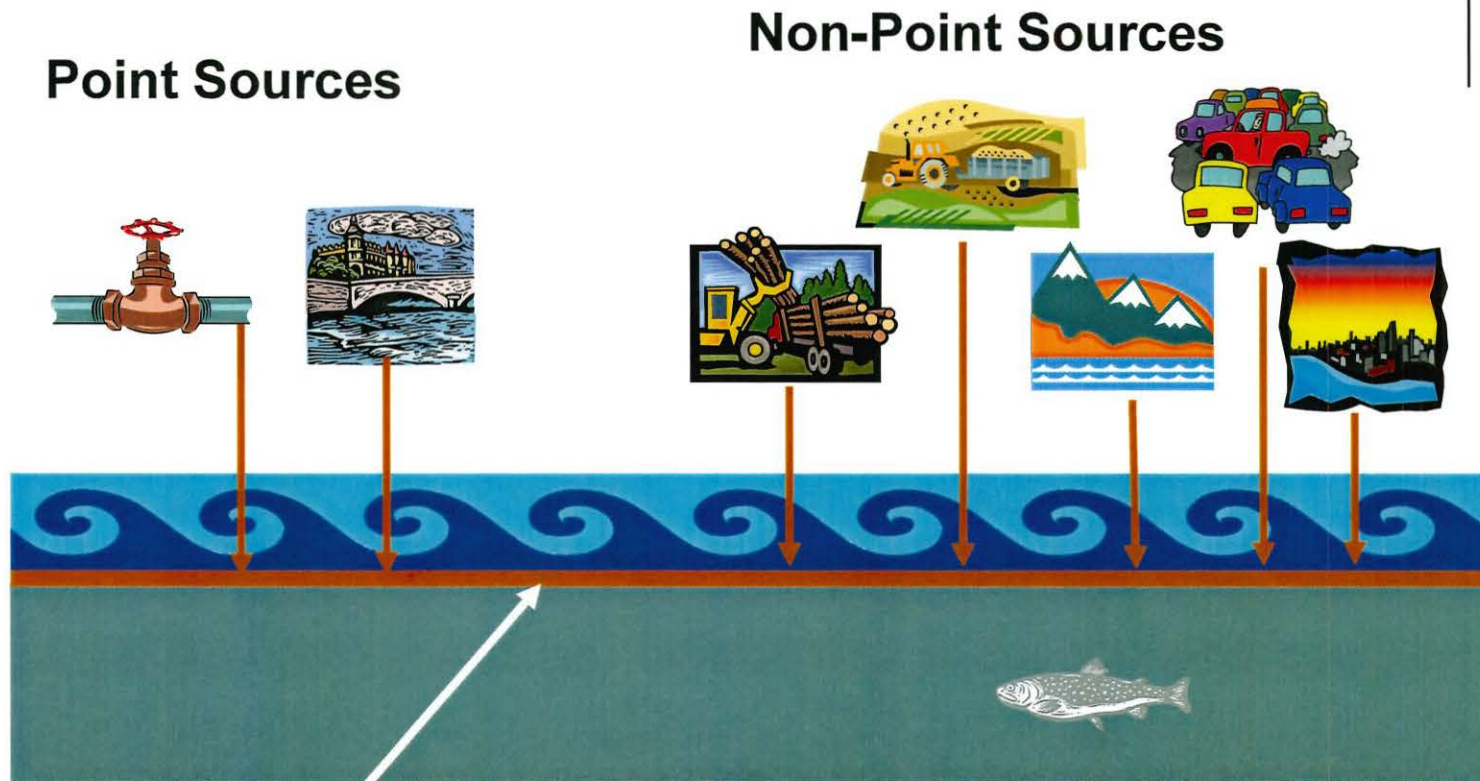
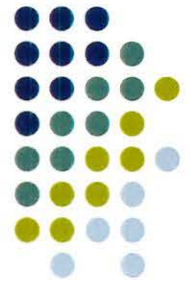
- Agriculture
 - Senate Bill 1010 (Agricultural Water Quality Management Plans)
- Forestry
 - Oregon Forest Practices Act (FPA)
- Urban environments
 - Managed through our stormwater permitting program
 - City and county ordinances



Listing impaired waters

- Every 2 years, DEQ reviews the available data for Oregon waters to determine if water quality standards are attained
 - If the data shows that toxic standards are not met, the waterbody is included on a list of impaired waters (303d list)
 - DEQ then must develop a TMDL for the waterbody, which is essentially a “plan of action” for bringing the waterbody back into compliance with water quality standards

Total Maximum Daily Loads



$$\text{TMDL} = \text{WLA} + \text{La}_{np} + \text{La}_{bs} + \text{MOS} + \text{RC}$$

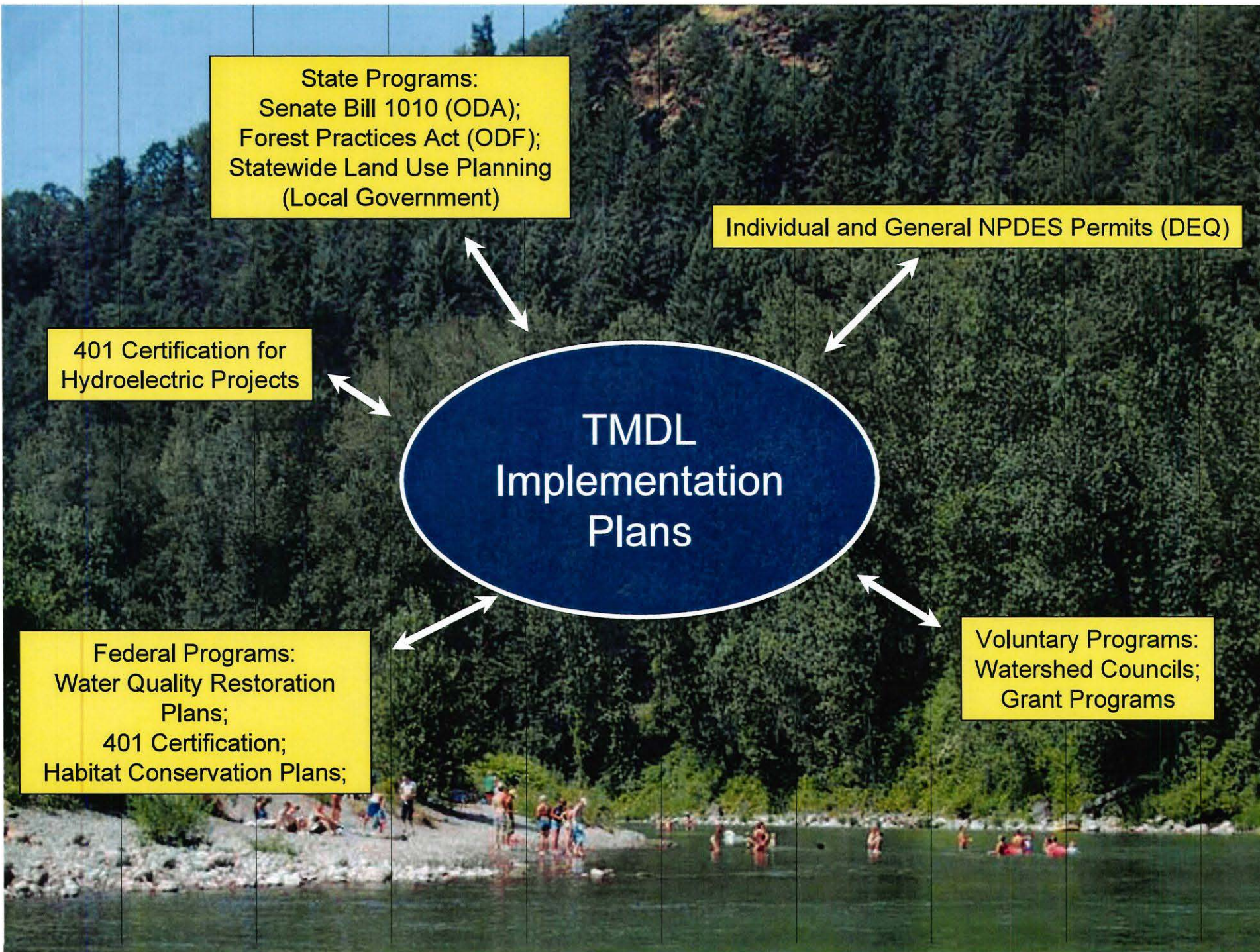
Waste Load
Allocation
(Point Source)

Load Allocation
Non-point Source

Background
Source

Margin of
Safety

Reserve
Capacity



State Programs:
Senate Bill 1010 (ODA);
Forest Practices Act (ODF);
Statewide Land Use Planning
(Local Government)

Individual and General NPDES Permits (DEQ)

401 Certification for
Hydroelectric Projects

TMDL
Implementation
Plans

Federal Programs:
Water Quality Restoration
Plans;
401 Certification;
Habitat Conservation Plans;

Voluntary Programs:
Watershed Councils;
Grant Programs

Water quality certifications

(section 401 of Clean Water Act)



- A state water quality certification is needed for any federally permitted activity that may result in a discharge to waters of the United States.
 - DEQ evaluates whether the activity meets water quality standards and approves, denies, or conditions the state certification.
- Types of projects that require a 401 certification include:
 - dredging, filling of wetlands for development, decommissioning of dams, hydroelectric projects, transportation projects and stream and wetland restoration projects.



Cleanup Activities

- DEQ's Environmental Cleanup program protects human health and the environment by identifying, investigating, and remediating sites contaminated with hazardous substances.
- Cleanup sites that may have an effect on water quality through stormwater, groundwater flow, overland flow, or bank sediments.
- The program has the ability to use Applicable or Relevant and Appropriate Requirements (ARARs) for the cleanup of hazardous materials
 - Water quality standards are ARARs, or rather, values that DEQ can use to set site specific cleanup levels for surface water

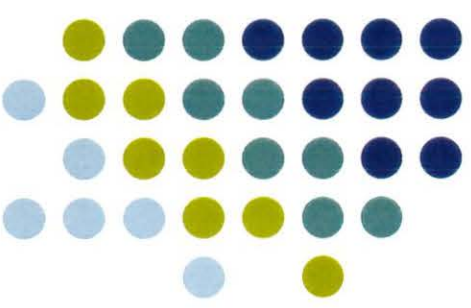


Summary

- Water quality standards are used in numerous DEQ programs
- A revision to the fish consumption rate will change Oregon's human health water quality criteria, which are a part of Oregon's water quality standards
- All programs will reflect any new criteria, but some programs may see more of a sudden change than others

Water Quality Standards Overview

The role of fish consumption rates in water quality criteria

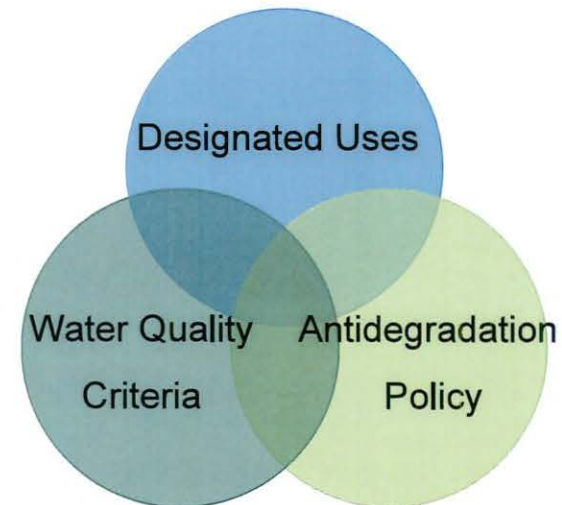


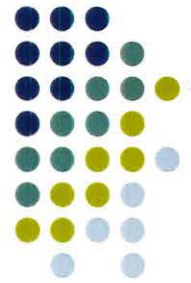
What are Water Quality Standards (WQS)?



- WQS are the foundation of state/tribal water quality-based pollution control programs under the Clean Water Act.
- WQS are to protect public health or welfare, enhance the quality of the water and serve the purposes of the Clean Water Act.

WQS are composed of:

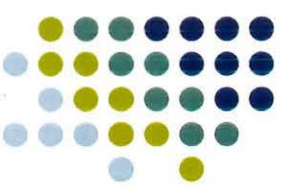




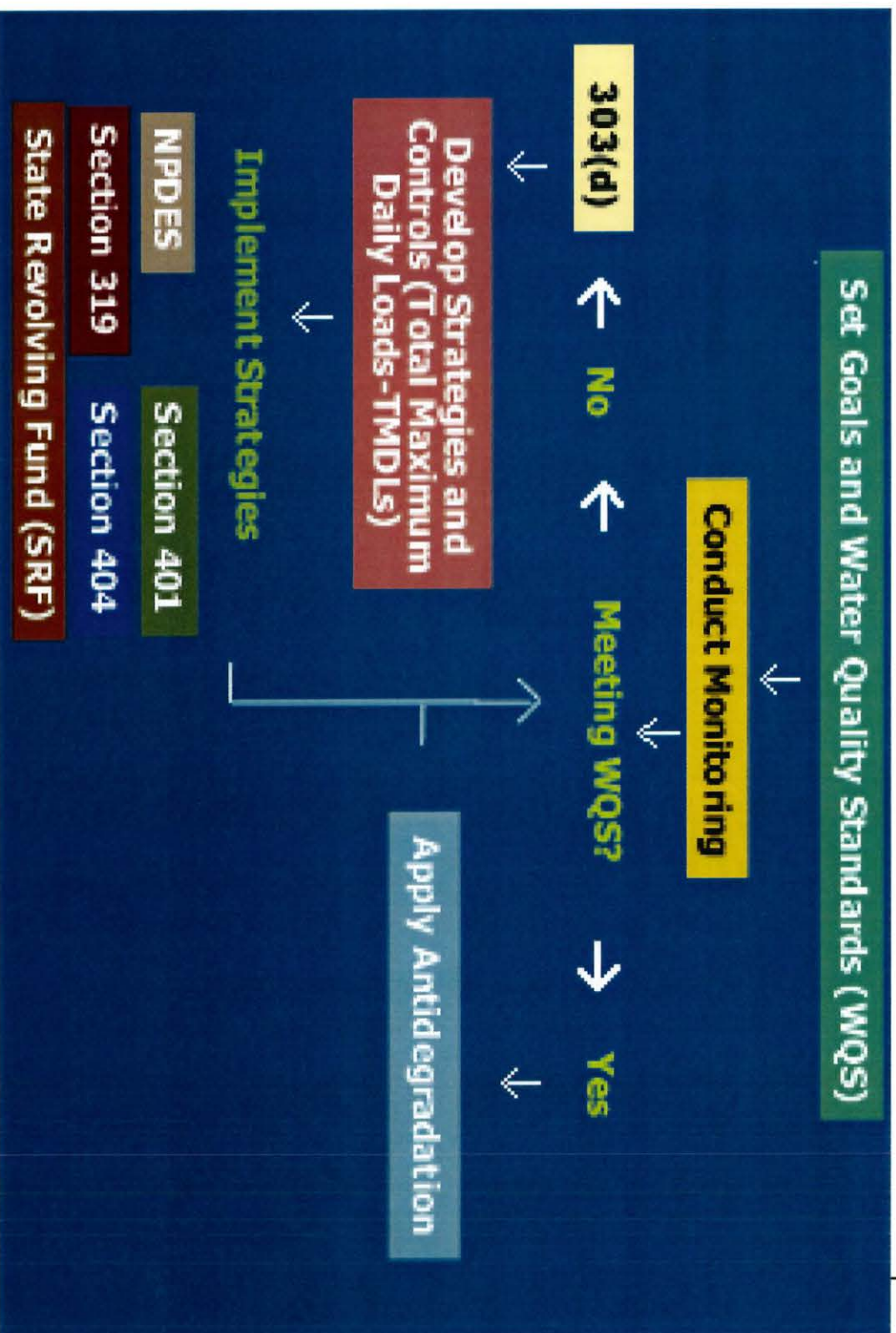
What Are WQS Not?

- WQS themselves are not a clean-up or remediation process;
 - When implemented, WQS are often used to set goals for restoring water quality to protect uses;
 - They can also be used in other regulatory programs, such as Superfund (CERCLA)





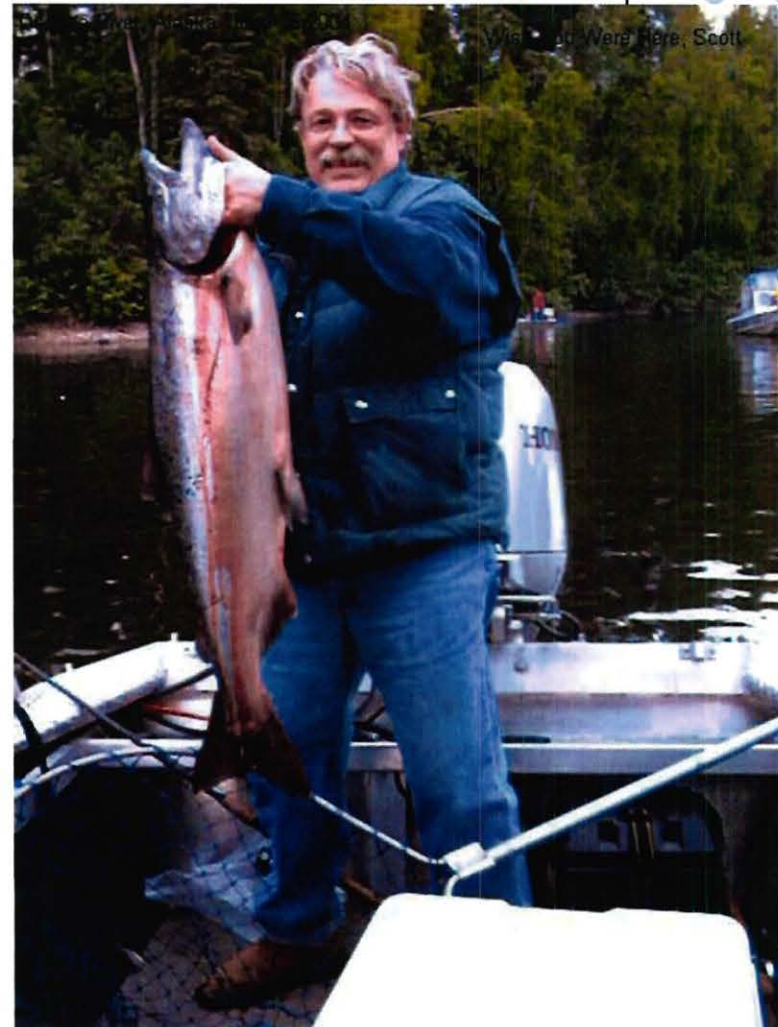
What function do WQS serve?



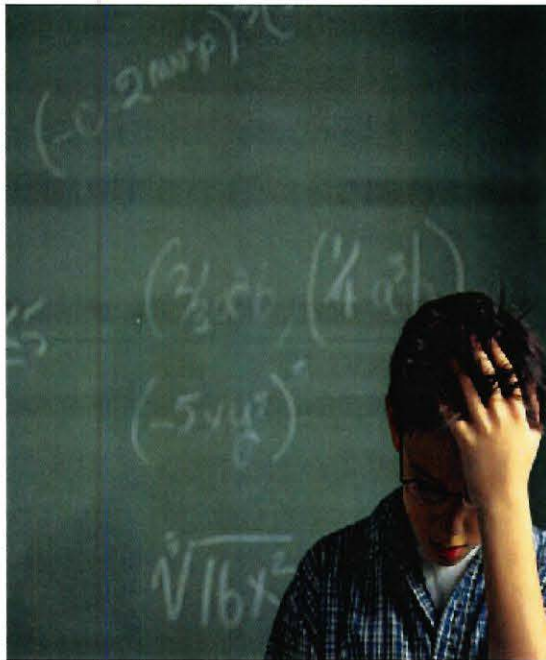
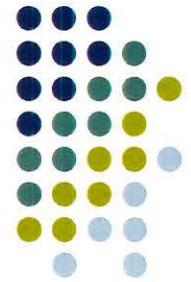


Water Quality Criteria

- EPA publishes guidance values for two types of numeric criteria:
 - Criteria to protect aquatic life; and
 - Criteria to protect human health.
- Human health criterion: the highest concentration of a pollutant in water that is not expected to pose a significant risk to human health.
- EPA publishes two types of human health guidance values:
 - Those to protect individuals consuming fish and water; and
 - Those to protect individuals consuming fish only.



Numeric Human Health Equations



Carcinogen Equation (General)

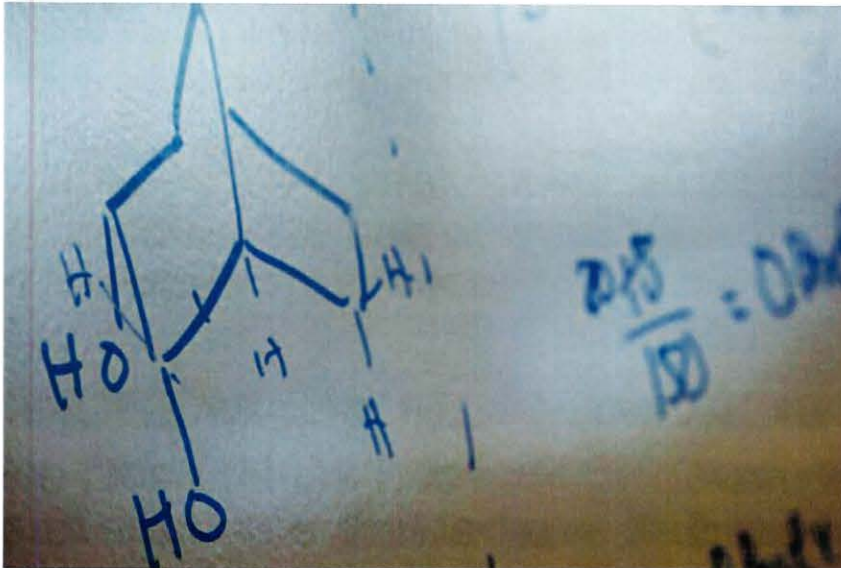
(Risk Factor/**Cancer Toxicity**) * Body Weight

Drinking Water + (**Fish Consumption Rate** /Bioconcentration Factor)

Non-Carcinogen Equation (General)

((**Non Cancer Toxicity**) X (Body Weight /Drinking Water Intake) + (**Fish Consumption Rate** *Bioconcentration Factor))

Human Health Criteria: Toxicity



- EPA's guidance criteria values consider **toxicity** and **exposure**.

CARCINOGENS:

- $q1^*$, the cancer potency factor, generally used for cancer health assessments.

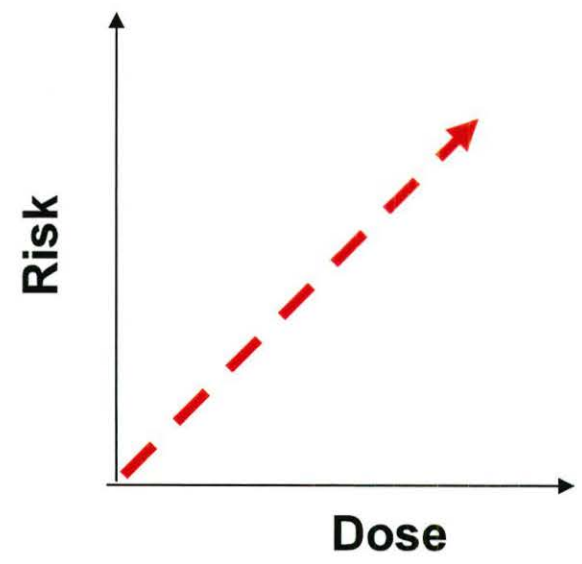
NONCARCINOGENS:

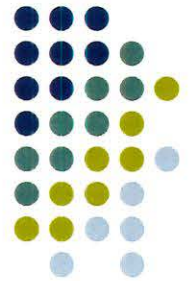
- Reference Dose (RfD)- Estimate of exposure that is likely to be without an appreciable risk of deleterious effects during a lifetime.



Non Threshold Effects

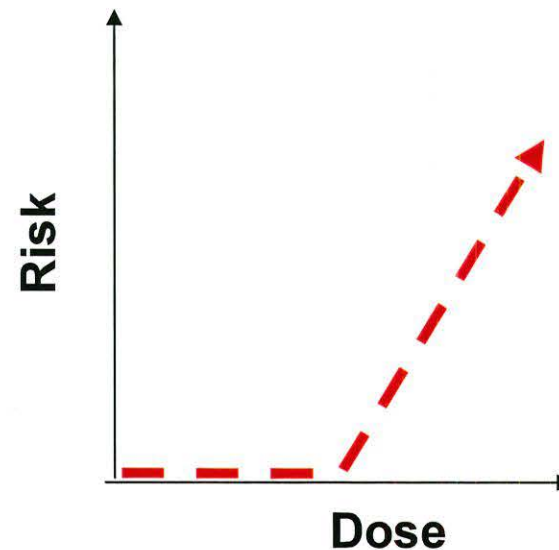
- Traditionally used for carcinogens in CWA Section 304(a) guidance.
- All levels of exposure pose some probability of an adverse response
- Incremental risk levels can be calculated
- EPA targets a risk level of one in one million (10^{-6})



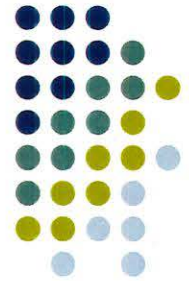


Threshold Effects

- Traditionally used for noncarcinogens in CWA Section 304(a) guidance.
- Exposures to some finite value are expected to be without adverse effect on human health

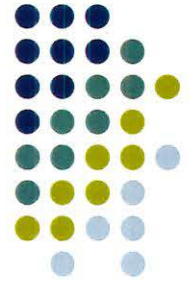


Exposure: Human Health Criteria Parameter and Protection Goals



- EPA generally assumes daily exposure over the course of a lifetime.
- EPA generally assigns a mix of average values and high end values (e.g., 90th percentile) for exposure parameters such as ingestion rates and body weight.
- EPA's criteria are derived to protect the majority of the general population.

Human Health Criteria: Exposure

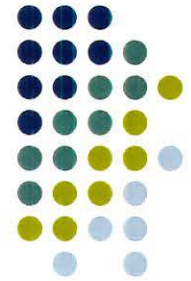


- To assess exposure, EPA uses default exposure assumptions based on national data:
 - A drinking water intake of 2 liters per day;
 - An average body weight of 70 kg;
 - A fish intake rate of 17.5 g/day
- Most recent guidance also includes Relative Source Contribution.

Average
Exposure =



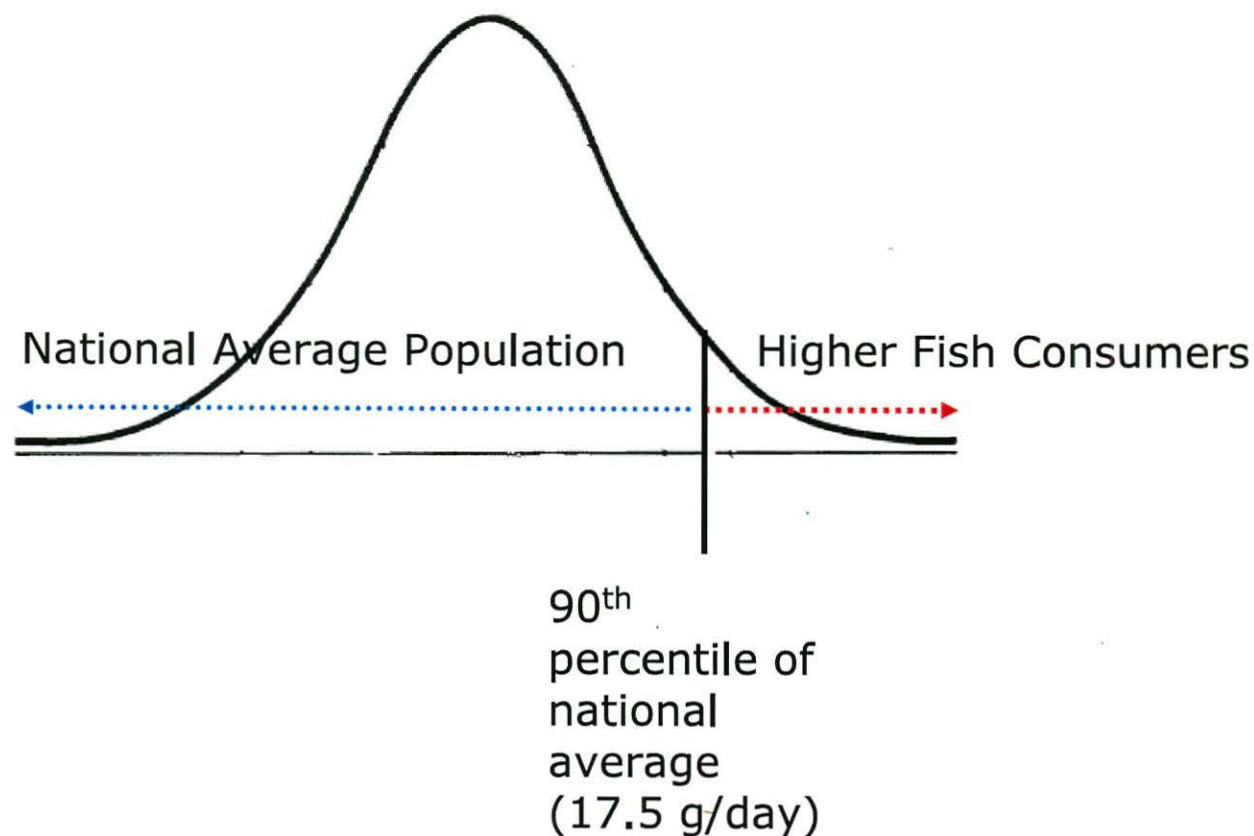
EPA's Default Fish Consumption Rates



- EPA's uses default fish consumption rate 17.5 g/day in national guidance criteria values.
- EPA also has a default subsistence fish consumption value of 142.4 g/day
- Default fish consumption rates are not intended to reflect a limit of consumption- instead used to reflect actual consumption rates



What does 'percentile' mean?





EPA's Preference Hierarchy

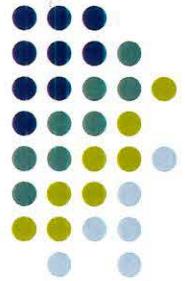
- As the level of fish intake varies with geographic location, EPA suggests a four preference hierarchy when deriving consumption rates to calculate water quality criteria:
 - (1) use of local data;
 - (2) use of data reflecting similar geography/population groups;
 - (3) use of data from national surveys; and
 - (4) use of EPA's default intake rates.
- OR adopted EPA's CWA Section 304(a) guidance values, which are based on EPA's default intake rate of 17.5 g/day.



Summary

- WQS are the foundation of state/tribal water quality-based pollution control programs under the Clean Water Act.
- Water quality criteria are not clean up levels, but represent the level at which a chemical can be discharged into a waterbody while still protecting the use(s).
- Human health criteria have two components: toxicity of a chemical and exposure to that chemical.
- One exposure variable is the fish consumption rate.
- EPA's current guidance criteria values are based on a national fish consumption rate of 17.5 g/day; which represents the 90th percentile of fish consumers based on national data.
- EPA's preference hierarchy for choosing a fish consumption rate is: 1) use of local data, 2) use of data reflecting similar geography/population groups; 3) use of data from national surveys; and 4) use of EPA's default intake rates.


Resources

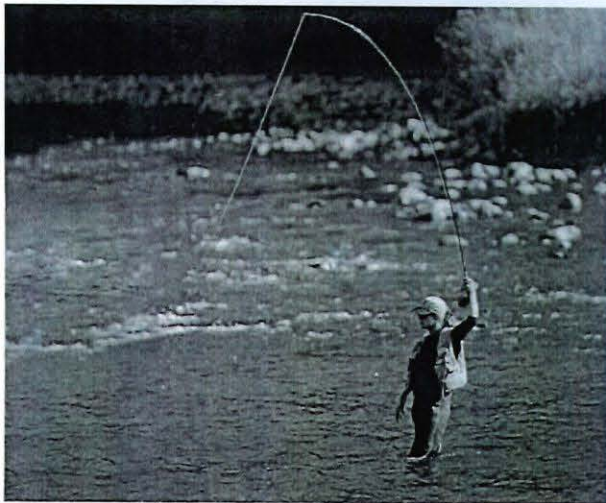


United States
Environmental Protection
Agency

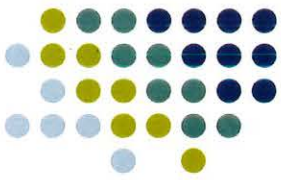
Office of Water
Office of Science and Technology
4304

EPA-822-B-00-004
October 2000

 **EPA** Methodology for Deriving Ambient
Water Quality Criteria for the
Protection of Human Health (2000)

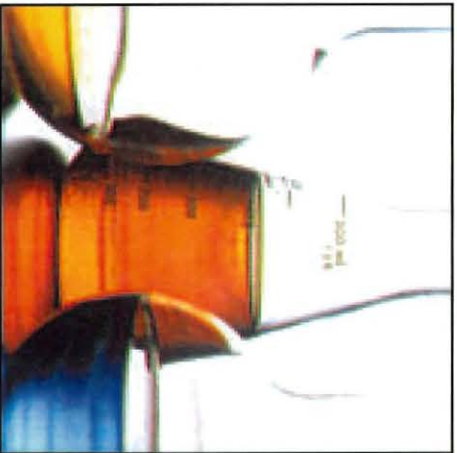


- EPA's Human Health Methodology:
<http://www.epa.gov/waterscience/criteria/humanhealth/method/method.html>
- EPA's Current CWA Section 304(a) Criteria Guidance Values:
<http://www.epa.gov/waterscience/criteria/nrwqe-2006.pdf>

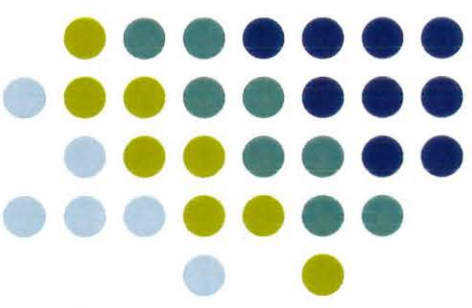


Questions?

2004 Toxics Criteria Triennial Review



An overview





What is a triennial review?

- The Clean Water Act requires that DEQ review its water quality standards regularly in order to use the latest scientific information and consider the state's needs
- DEQ initiated its last triennial review in 1999 and completed the review in 2003

How was the review conducted from 1999-2003?



- DEQ consulted advisory committees:
 - Technical Advisory Committee (TAC) made up of external experts for each topic (e.g. toxics)
 - Policy Advisory Committee (PAC) made up of external stakeholders for the overall process
- Both advisory committees were charged with making a recommendation to DEQ in regard to the adoption of new aquatic and human health water quality criteria

What did the Technical Advisory Committee (TAC) review?



● **Human Health Criteria**

- There were 219 individual criterion in need of review
- The TAC decided that the 2000 EPA Methodology was superior to the old EPA methodology for deriving human health criteria, but that there were data gaps to using the 2000 EPA Methodology.
- To fill data gaps, TAC focused its efforts on:
 - the availability of data on bioaccumulation factors
 - deriving a fish consumption rate appropriate for the protection of Oregon's population.

TAC review of Bioaccumulation Factors



$$\text{Water Quality Criteria} = \frac{(\text{Risk Factor/Cancer potency}) \times \text{Body Weight}}{\text{Drinking water intake} + (\text{Fish consumption rate} \times \text{Bioaccumulation Factor})}$$

• Bioaccumulation Factors (BAFs)

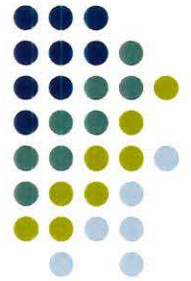
- Bioaccumulation factors (BAF) account for the uptake by a fish of a pollutant from all sources (including the surrounding water, food, and sediment).
- Previous methodology used Bioconcentration Factors (BCF), which accounts for the uptake by a fish of a pollutant from only the surrounding water
- DEQ asked EPA for information on nationally derived BAF, but EPA could not offer any advice at the time
- Due to resource constraints, DEQ could not develop Oregon specific BAF and therefore defaulted to BCF used in the national recommended criteria

TAC review of Fish Consumption Rates



- Fish Consumption Rates
 - Discussion centered on the availability of technically defensible values for Oregon's general population and other populations of concern within Oregon that are known to be high fish consumers.
 - The TAC agreed that there were no quantitative studies on fish consumption by the general Oregon population
 - 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

Defensible Fish Consumption Rates



- The TAC concluded that **17.5, 142.4, 63.5, and 389.0 g/day** were technically defensible fish consumption rates.
 - 17.5 g/day = 90th percentile from National USDA study
 - 142.4 g/day = 99th percentile from National USDA study
 - 63.2 g/day = mean of CRITFC study
 - 389 g/day = 99th percentile of CRITFC study

How do we use multiple rates?



- TAC indicated that the choice of which rate to employ was a policy decision to be made based on which population Oregon wished to protect
- The TAC also offered the option of using multiple rates on different waters in Oregon according to the intensity of fish consumption from specific waters of the State
- The TAC proposed that one of three fish consumption rates be used for deriving criteria that would be specific to waters within Oregon's designated subbasins:
 - 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



Where would different rates apply?

Basin	Specified Waters	Fish Consumption Rate (g/day)
North Coast – Lower Columbia Basin	Estuaries and Adjacent Marine Waters	389
	Columbia River: Mouth to RM 86	389
	All Other Streams & Tributaries Thereto	17.5
Mid Coast Basin	Estuaries and Adjacent Marine Waters	389
	Fresh Waters	17.5
Umpqua Basin	Umpqua R. Estuary to Head of Tidewater and Adjacent Marine Waters	389
	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

An excerpt from the TAC recommendations

What did the Policy Advisory Committee (PAC) review?



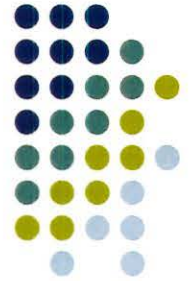
- The PAC faced the following policy decisions concerning human health criteria:
 1. Which population should the criteria target to protect (i.e. fish consumption rates from which populations)?
 2. Which percentage of the population should be protected?
 3. Which level of risk of increased incidence of cancer should the criteria for carcinogens be set?

PAC can't decide on Fish Consumption Rate



- PAC members questioned the TAC's three consumption rate approach for setting human health criteria
 - possible inequities because there would be different criteria for the same toxic compound on the same river
- Final decision:
 - No consensus from the PAC regarding whether a single or multiple fish consumption rates should be used
 - No consensus on which fish consumption rate should be used regardless of single or multiple rates

PAC debates population percentiles



- The PAC discussed the difficulty of deciding on the appropriate population percentile to target in order to derive a protective fish consumption rate.
 - EPA offered justification for the use of several different percentiles
 - PAC members struggled with the necessity of making a qualitative judgment on a quantitative variable.

PAC decision on Cancer Risk



- 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.

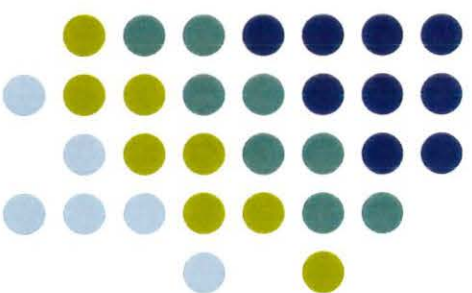
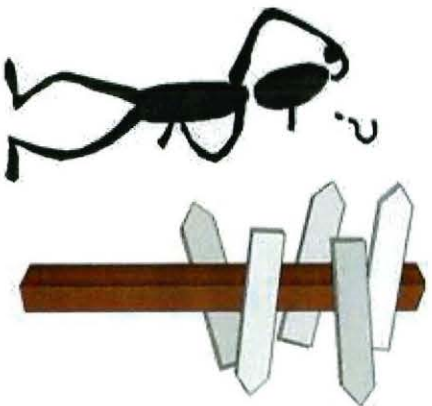
DEQ recommendation to the Environmental Quality Commission (EQC)



- In May of 2004, DEQ recommended human health criteria based on EPA's National Recommended minimum value of 17.5 grams/day
- The recommended approach was based on:
 - That 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
 - it provides greater protection to subsistence fisher subpopulations within the State than currently exists.
- The Environmental Quality Commission asked the Agency to revisit the issue at a later date and that ideally, an Oregon-specific survey of fish consumption will be available for similar calculations in the future

Where are we now?

A summary



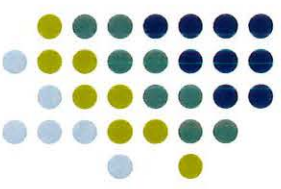
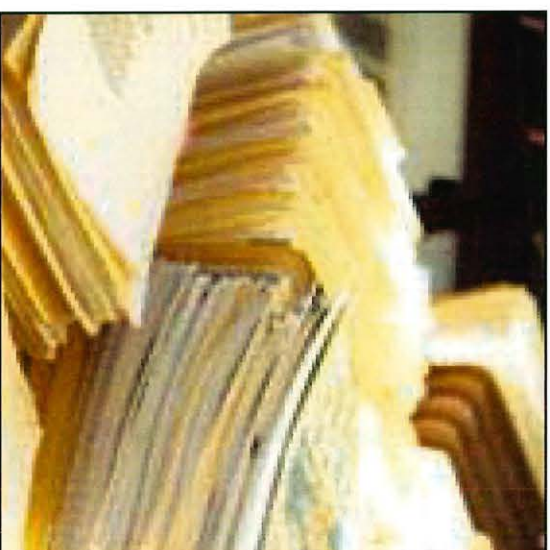
Result of the 2004 Triennial Review



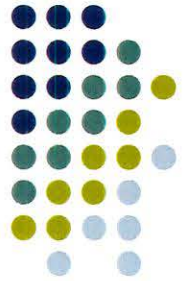
- In May 2004, the Environmental Quality Commission adopted toxics criteria based on EPA's 2000 Clean Water Act recommended toxics criteria.
- The human health criteria were calculated using a fish consumption rate of 17.5 grams per day, increased from the previous rate of 6.5 grams per day.
- Oregon submitted these revised criteria to EPA on July 8, 2004.
- EPA is still in the process of reviewing these criteria.

EPA review process

- Mike Gearheard provides update and current status of the review of Oregon's Water Quality Standards

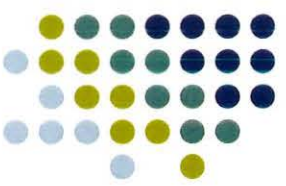
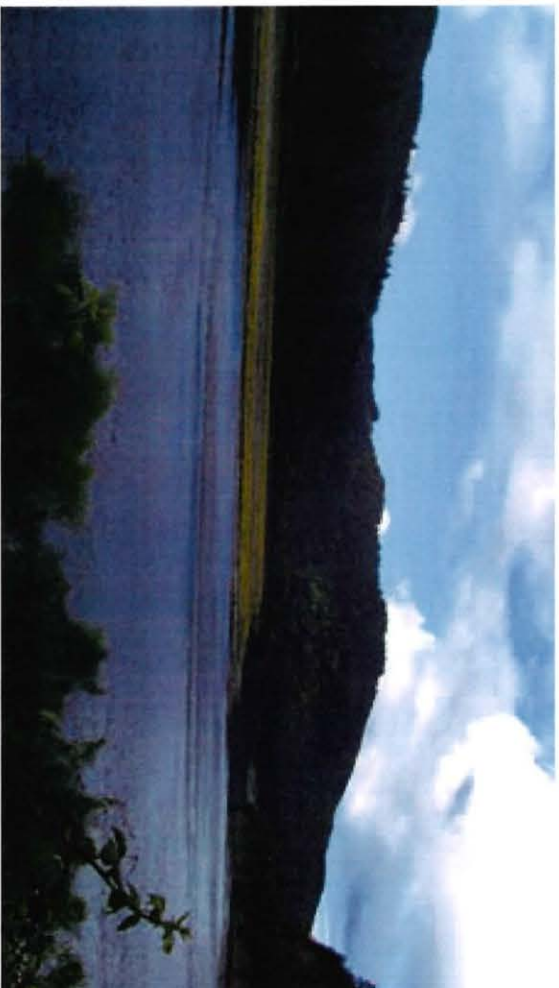


Why is Oregon reviewing the fish consumption rate?



- In its 2004 rule adoption, the EQC directed DEQ staff to review the rate in its next review of water quality standards. The EQC was concerned about whether EPA's national recommended rate was appropriate for Oregon.
- Goals for the workshops are:
 - Provide a forum for participants to identify critical issues, discuss implementation challenges and propose alternative actions.
 - Develop recommendations and supporting information to present the EQC with (1) a range of options to increase the fish consumption rate and (2) options for pollution control strategies that can help reduce the risks associated with consuming contaminated fish and decrease the toxics levels present in fish.

Questions?



**Oregon Fish Consumption Rate Project
Workshop One: Background and Scope
Tuesday, March 13, 2007 -- Portland
and Wednesday, March 14, 2007 -- Coos Bay**

Facilitator's Meeting Summary

NOTE: The following notes are a combined summary of the first two introductory workshops that set the stage for the Oregon Fish Consumption Rate Project co-hosted by the Environmental Protection Agency (EPA), Oregon Department of Environmental Quality (DEQ) and the Confederated Tribes of the Umatilla Indian Reservation (CTUIR). Each of the two workshops centered on presentations by policy and technical representatives from the three governments. As such, we provide the summary of those presentations with links to supporting Power Point presentations followed by the questions, comments and answers provided in both Portland and Coos Bay.

Questions or clarifications about these summary notes should be raised to the facilitation team. Clarifications will be noted on the website. Questions will be directed to the appropriate staff.

Welcome and Introductions:

Workshop facilitator Donna Silverberg welcomed everyone and noted that throughout the day participants would hear from both a policy and technical perspective why this issue is important to the three governments convening the workshops. She noted the goals of the workshops are to:

Engage the public, interested stakeholders and tribal governments in an exchange of information and ideas about: the fish consumption rate used in developing Oregon's human health criteria for water quality standards; the potential effects of a higher rate state-wide; implementation challenges; and alternative actions. These workshops will help DEQ, in partnership with EPA and CTUIR, to develop recommendations and supporting documentation to present the Environmental Quality Commission with a range of options to increase the fish consumption rate.

She also clarified that the outcomes for the day were to:

- Ground participants in the background and scope of this project
- Make introductions to those who will be working on this effort from each of the three governments
- Begin to meet those interested in this effort

Donna told the group that there would be time for Q and A after each agenda item and that the packet of materials included a comment sheet so that people could give their ideas and suggestions for future workshops. She stressed that the planning team is anxious to include ideas and suggestions from the groups present prior to finalizing agendas and the entire workshop outline. She then asked the group to say where they were from and what groups were represented at the workshop.

Armand Minthorn, Tribal leader for the Confederated Tribe of the Umatilla Indian Reservation, led the invocation in Portland. Don Gentry of the Klamath Tribe led the invocation in Coos Bay.

Leaders Welcome

Michael Gearheard, EPA Region 10's Director of the Office of Water and Watersheds noted that it was a pleasure and very gratifying to so many people engaged in this process. He welcomed everyone and challenged them to hang together in this process over next year or more to seek a forward moving path on the tough issue of fish consumption rates. He noted that Oregon is again at the forefront of an important national environmental issue.

Mr. Gearheard explained that water quality standards (WQS) are always a big challenge and, since the 1950's, have proved difficult coming to resolution on what water quality standards should be. Why? WQS embody what we see as our legacy for our children and what we see as attainable. The standards are aspirational goals that are value based. As such, they are not in themselves actions, but they do set actions in motion.

He noted EPA's role as a federal agency is mandated by the requirements of the Clean Water Act. The Clean Water Act was enacted in 1972 and set a national policy that all of the nations' waters should be "fishable and swimmable". Water quality standards are based on this national goal, with guidance established by EPA. However, the actual standards are developed and established through state/tribal rulemaking processes. This is translated into specific WQS with numeric criteria for EACH state to support fish, swimming and recreational uses. EPA has final approval authority to make certain that the national goals and EPA's guidance is supported by the states' actions.

EPA has been reviewing Oregon's proposed WQS for the past three years. At this point, he noted, EPA is very supportive of this process to review the fish consumption rate. The CRITFC and EPA joined together in the 90's to identify how much fish tribal fishers consume, where they fish, and the quality of the fish they consume. These studies were completed in 2000 and identified contaminate levels within fish. Mr. Gearheard said that this information brought us here today to talk about environmental health. What is the future for our waters? Our fish? Our children? Our children's children? This process will help answer those questions.

Lynn Hampton, chairwoman of Oregon's Environmental Quality Commission (EQC) since 2003, thanked EPA for providing resources to do these workshops. Ms. Hampton clarified that the EQC is a five member citizen commission appointed by the Governor. She noted that the EQC is charged with protecting Oregon's waters and environment from toxic pollutants and is very concerned with human health risks.

She reminded the group that in 2004, the EQC adopted new water quality toxics standards. The fish consumption rate was a part of that standard. In 2004 the EQC increased the fish consumption rate from 6.5 to 17.5 grams per day, the national default rate set by EPA in their guidance. At the time, the EQC directed the Department of

Environmental Quality (DEQ) to review this rate based on concerns that the rate was not adequately protective of Oregonians. She said, "we appreciate those that have kept this issue in front of us, particularly the tribes, with patience and persistence". Her hope for these workshops: to explicitly tackle policy issues and carry forth to discuss implementation issues. In 2008, when the EQC reviews the recommendations to move to rulemaking, we will want clear policy choices, with background information about how any changes will affect regulated industry, consumers, tribes, and the health of all Oregonians. To do this well, the EQC requires your participation to help them make an informed decision. Ms. Hampton said that she and the Commission are committed to listening to all who participate and "our hope at the conclusion is that we will have been talking to each other and, therefore, have greatly enhanced the quality of information available. I will participate in all workshops, if possible, and hope you can, too."

Antone Minthorn, Chairman of the Board of Trustees, Confederated Tribes of the Umatilla Indian Reservation, welcomed everyone as his friends and relatives. He said he was pleased to see such a large crowd for this issue. He began by recognizing fellow CTUIR board member Armand Minthorn, who is also the CTUIR Longhouse Leader. Chairman Minthorn noted that he has a basic reason for being here: "I and my people are fish people and fish eating people. For thousands of years, we have lived with, adapted with and eaten large quantities of fish. Fish are our food, economy and cultural staple of our lives." He noted the many tribes in Oregon and recognized them all as eating lots of fish. Those fish should be free of toxins.

Chairman Minthorn noted that we had many tribal representatives present and recognized them: Cheryl Kennedy, Confederated Tribes of Grand Ronde; Roy Spino, Confederated Tribes of the Warm Springs; Rawlin Richardson, Confederated Tribes of the Warm Springs; Jeff Baker, Grand Ronde Tribe; Moses Squeochs, Yakama Nation; Jason Fenton, Burns Paiute Tribe; Patti Howard, CRITFC; Sherri Groh, CTUIR; Jamie Donatoto, Swinomish Tribe. He went on to explain that the scientific studies show levels of toxics in fish dangerous to humans: dioxins, mercury, pcbs, arsenic--all from various sites. The Fish Consumption Rate set in 2004 excluded tribal people and others in Oregon who consume fish at a rate of more than 2 meals per month. "We expressed disapproval then and since, and appreciate the commitment of Director Hallock and the Commission to revise this rate to be more protective". Chairman Minthorn also recognized industry and municipalities, with whom tribes have been working to figure out how to effectively raise the rate. He hoped that the discussions about an increase in the rate will help to decrease toxins in fish, protect consumers, and increase knowledge gained about impacts to industries, municipalities and others. He also hoped that, from this work, the group could self-design a fish consumption rate and toxics reduction plan that supports our interests, is agreeable to all of us, that can then be carried forth to the EQC.

NOTE: In Coos Bay, Chairman Minthorn's remarks were delivered by Rick George, Natural Resources Manager for the CTUIR. He welcomed the tribal members present at the meeting: Don Gentry, Klamath Tribe, JR Herbst, CTCLUSI, Denise Hunter, Barb Gimlin and Clara Gardner, Coquille Indian Tribe, and Jack Giffen, Confederated Tribe of the Grand Ronde.

In addition to what Chairman Minthorn said above, Mr. George added: this issue is not just a tribal issue. Commercial and sports fisheries—everyone in Oregon, are impacted by fish consumption rates. Oregon is a fish state with the Columbia River being one of the largest salmon rivers in the world and a large coastal fishery. He noted that the chemicals in the water come from a variety of different sites: old factories, in sediments, from lands surrounding rivers and from active ‘sources’ with permits. We will all need to work together to solve a problem that exists for us all. That might include working together on a toxic reduction plan that goes outside of EPA’s and DEQ’s regulatory frameworks.

Questions:

- Who are the other EQC members?
- A: Donalda Donaldson, Salem; Ken Williamson, Corvallis; Bill Blosser, Portland; and Judy Uhrbelau, Ashland.

What Are We Trying to Achieve and How?

Stephanie Hallock, Director of Oregon’s Department of Environmental Quality (DEQ) welcomed the group, especially those who had traveled to the meeting and the tribal representatives. She clarified that DEQ and the EQC are aware that tribes beyond the CTUIR are engaged in this issue and appreciated the willingness of the CTUIR to take a leadership role in this effort. She also thanked EPA for funding these workshops and supporting this dialogue.

Director Hallock repeated the EQC’s strategic direction mentioned by Chairwoman Hampton: Protecting Oregonians and the environment from toxic pollutants. She also noted another strategic direction which is to engage Oregonians in helping to solve environmental problems. “We take this seriously”, she said, “and we want to use this process to achieve both of these goals”.

Director Hallock stressed the importance of water quality standards as a foundation for DEQ’s regulatory program. In these workshops, we will be just focused on toxics. Standards for water temperature and turbidity are addressed in other areas. She noted that there are disparate interests on these issues because it is very complex. Standards are set for a variety of issues and users. For example, they help DEQ assess water quality; set a ‘total maximum daily load’ (TMDL) of allowable pollutants in rivers, and set pollution limits that go into permits for municipalities and industry. The standards support fish safe for eating, water safe for drinking, healthy habitat for fish to live in, water safe for irrigation and water safe for recreation. The process affects many people and industries from agricultural users to forest industries to consumers.

The Clean Water Act reserved the right to set standards to the states, as Mr. Gearheard explained. Each state goes through a process for setting appropriate water quality standards. This is different from the Clean Air Act where the federal government set standards and states apply those standards. With water quality standards, the states have

to first do technical background work. This is done (as it was previously) with the help of technical and policy advisory committees or through workshops. These workshops will be used to gather the additional information that will enable staff to make an informed recommendation about what rate is appropriate in Oregon. In Oregon's case, this staff recommendation will go to the EQC. The EQC will consider the staff recommendation, in concert with all the dialogue and information gathering that occurs, and then they will make a rule that is subject to a formal rulemaking process.

In closing, Hallock noted that she made a commitment to the CTUIR in 2005 to review and increase the fish consumption rate. "To do this, we need to look at the facts, the gaps, the policy issues and choices, and identify actions that can be taken to reduce toxins in water". She noted that we won't have perfect science, but we can have a broad dialogue that provides an opportunity to hear and be heard from all perspectives. This will set the stage for the more formal rulemaking process. To that end, she thanked everyone for coming today and encouraged everyone to participate in this process.

NOTE: In Coos Bay, Director Hallock's remarks were delivered by Lauri Aunan, Water Quality Administrator for DEQ. In addition to the above, Ms. Aunan added the following: At the Portland workshop, there were a number of people present who were on the Policy Advisory Committee that informed the current fish consumption rate who added a good deal to the history of this effort. She invited any members at the Coos Bay meeting to share their perspectives as well (two were present). Ms. Aunan noted that she has come to realize that the FCR needs to increase. She recognized that there will never be the perfect rate – and that DEQ does not expect consensus to come from these workshops. Instead, the reason to have the workshops is to hear all the issues and let people be heard. She hoped that people would stay engaged, come to workshops if they can, use website if they can't come in person. She closed by saying that DEQ wants to hear how they may improve structure of the workshops to achieve all they need to prior to taking this issue to the EQC.

Questions/Comments

- How does DEQ monitor the water quality benchmarks?
 - A: DEQ has a monitoring network (as required by the Clean Water Act) – toxics are an emerging area in environmental quality so new monitoring is required. There is a funding bill at the legislature this year that would support targeted monitoring. If this sounds like a good idea, contact the legislature to say yes, we support continued monitoring. In the meantime, the group plans to look at all data from anyone who might have it. DEQ has suffered numbers of cuts to its monitoring program and so they need information from those who have it.
- There is skepticism that we'll go through process and, at end of day, the industry and others will lower the rate. If this is a scientific question, let's do the science and let the chips fall. Seems as though we are bargaining. What is the context? Is this a political process?
 - Dir. Hallock noted that the raised number and range was a suggestion and, yet, some tribal members have proposed much higher, so there is room for

discussion. Also, the science is not perfect but we believe we will get as much information as possible, through regional analysis. In the end, this is a policy discussion and decision for the EQC. The EQC wants to hear more than they have in the past about this issue.

- Mr. Gearheard: we have had good science to date, but it does not answer the question of what should be used for state water quality standards. That requires choice. The state will need to develop a curve and choose where you want to be on that curve – that’s the policy choice. It is one of many policy questions. Others include is this rate to be applied state-wide or just in a specific area.
- Dir. Hallock added: there is no debate that 17.5 grams/day does NOT represent what many tribal and other fish consumers eat. In absence of a formal regional analysis of the rate at which people actually eat fish, any decision about the rate will require a tough policy call.
- It looks as though this is going to be a good process. Question: state by state where does Columbia River come in? Washington is present, but what about other state’s?
 - WA has yet to go through a similar fish consumption rate process.. Special challenges exist in the Columbia River that we will not begin to address here, but Washington is paying attention. Idaho has raised its fish consumption rate to 17.5 g/day recently. WA has yet to tee up the issue. EPA rarely steps in to the standard setting process, so states and tribes set them at their own pace.
- Will this process focus on migratory fish only? Resident fish? Be clear.
 - This is a very good point and we will get into the details on this issue later.
 - At end of the day, this is a policy decision for the EQC. EQC member Uhrbelau asked the group to turn their attention to the human health risks as this issue is very important to the EQC. This is a big issue and all are encouraged to attend the July workshop to hear about it.

What are Water Quality Standards (WQS)? What are They Not? Why are they Important? Becky Lindgren, EPA

Becky Lindgren, Region 10 EPA in Seattle, shared that she has been working with Kathleen Feehan (CTUIR), Rick George (CTUIR) and Jordan Palmeri (DEQ) to plan the workshops for this process. She gave an overview via power point slides which will be linked to the following DEQ web page designated for this project:

<http://www.deq.state.or.us/wq/standards/toxics.htm> .

There are three components of WQS: designated uses, water quality criteria, and an anti-degradation policy. She noted that WQS do not provide clean up or remediation of polluted waters. Human health criteria, which are designed to protect people who are fishing and swimming within a water body, are generally more stringent than aquatic life criteria. Aquatic life criteria are associated with aquatic life uses, such as salmon spawning and rearing. In Oregon, all waters are designated for fishing and swimming uses, so the human health criteria apply to all of Oregon’s waters. The fish consumption rate is a component of the human health criteria, so any revision to the fish consumption rate in the WQS will affect all of Oregon’s waters.

EPA's has developed human health criteria guidance values, which states and tribes can follow when adopting/revising their own WQS. EPA has two human health criteria equations: one for cancer, and one for non-cancer. The main difference between these two equations is that, generally, the cancer equation utilizes a risk factor as there is no threshold for exposure to that pollutant. EPA's guidance values, for example, are based on a risk factor of one in one million. However, non-cancer effects are threshold effects, traditionally based on what is called a 'reference dose'. A reference dose represents the daily level of exposure that one can have to a chemical without appreciable risk of deleterious effects over a lifetime. The reference dose is an estimate, with uncertainty spanning approximately an order of magnitude. As non-cancer effects are based on threshold effects, they do not have a relative risk factor in the equation.

Both of these equations have a) a toxicity factor for the given pollutant and b) exposure factors to that pollutant. One of the exposure factors is the fish consumption rate, which is what the Oregon Fish Consumption Rate project is reviewing through this process. There are also other exposure factors within the equation, including: drinking water intake and body weight.

EPA's current default fish consumption rate for the general public is 17.5 grams/day. This rate is based on the '90th percentile' of those respondents to a national USDA survey (so 90% of those surveyed consume less than or equal to 17.5 grams of fish per day, and 10% of those surveyed eat more than 17.5 grams per day). 17.5 grams/day = .2 ounces, roughly 1/2 fish meal per week. EPA also has a default fish consumption rate for subsistence populations of 142.2 gram/day. 142.2 grams = 5.2 ounces, or four fish meals per week. These fish consumption rates are not intended to reflect limit to fish consumption by various populations, but to reflect actual consumption by these groups. Finally, Becky noted that in EPA's Human Health Methodology, there is a preference hierarchy for what data to base fish consumption rates on when developing human health criteria: 1) use of local data; 2) utilizing data reflecting similar populations and/or geography; 3) national surveys and 4) EPA's default fish consumption rates. For further information on EPA guidance, Becky provided links to Human Health Methodology and the current CWA Section 304(a) criteria guidance values.

Workshop Participant Questions and Comments:

Portland –

- Can you explain the difference between human health and aquatic life criteria?
 - Aquatic life criteria are based on toxicity studies performed on aquatic organisms, while human health criteria are based on toxicity studies designed to protect humans. They have different toxicity endpoints. If both human health and aquatic life criteria apply to the same waterbody, the more stringent is the applicable criterion.
- Explain human health criteria relative to non-cancer effects.
 - Non-cancer effects are threshold effects, traditionally based on what is called a 'reference dose'. A reference dose represents the daily level of exposure that one can have to a chemical without appreciable risk of deleterious effects over a lifetime. The reference dose is an estimate, with uncertainty spanning

approximately an order of magnitude. This is different than the human health criteria relative to cancer effects, which are traditionally not threshold, but instead based in incremental risk.

- Where do mixing zone issues fit into this discussion? A mixing zone is an area of initial dilution where water quality criteria can be exceeded. Water quality criteria must be met at the edge of the mixing zone. Lauri Aunan thanked the participant for the comment, and offered that this issue and others will be discussed in further detail during the coming workshops (e.g. permitting). She acknowledged that at the end of the day, clarity is needed on what a change means everywhere, including in mixing zones. Public comment was added: mixing zones need to be included in the discussion about fish consumption rates.

Coos Bay –

- How are the calculations done? The IRIS database, available on EPA's website, shows various cancer and non-cancer data.
- Are risk factors a policy decision for the state? Yes, and Oregon's cancer risk factor for the human health criteria is to be consistent with EPA guidance, which is one in one million (10^{-6}).
- Will any other factors in the human health equation (e.g. cancer risk factor, bioaccumulation factors) be reviewed in this process? The focus in these workshops will be on the fish consumption rate.
- It will be important for the Planning Team to be clear about what will be discussed at the workshops and in the focus groups so that the participants are able to prepare for workshops. Also the current schedule may be detrimental to the process, not allowing enough time to pull together relevant scientific information. As outlined, the process does not appear to allow enough room to talk about science.

Who Do Water Quality Standards Affect and How?

Jordan Palmeri, DEQ shared information about how water quality standards are used in Oregon. He emphasized that all water quality programs are affected by the fish consumption rate and DEQ will need to figure out how to implement a different fish consumption rate in each of these programs: NPDES, non-point source management, listing of impaired water bodies, Total Maximum Daily Loads (TMDL's), 401 water quality certifications, and clean up activities. Jordan went into further detail on each:

- NPDES – essentially these are toxics permits for point sources of pollution through one pipe into Oregon's waters. They include domestic, industrial and stormwater permits. For construction and industry permits, no exceedance of water quality standards is allowed. Municipalities are required to treat to the 'maximum extent practicable'.
- Non-point source pollution management – DEQ does not permit non-point sources but works in partnership with municipalities, state agencies and private landowners to shape policy and develop programs to manage pollution of non-point sources. Programs include Senate Bill 1010 (Dept. of Agriculture), Oregon Forest Practices Act, stormwater permitting and city and council ordinances.

- Listing impaired waters – DEQ determines whether water quality standards are actually being attained, via internal monitoring and information from others that is input to a database and reviewed every 2 years. If not up to standard, a water body goes on a 303(d) list and a TMDL is developed to bring it back to standard. A TMDL is a combination of point and non-point sources and is a plan that delegates responsibility to various sources of the toxic. The TMDL is implemented through a variety of ways (permits, voluntary and grant programs, federal, state and local programs).
- Water quality certifications – these are done for dredging, decommissioning dams, transportation projects, stream restoration projects, etc.
- Clean up activities – e.g. Portland harbor.

The overall message is that all DEQ programs will be affected by the outcome of this process.

Participant Questions and Comments

Coos Bay –

- How often is monitoring data calculated at facilities? Answer: It depends; information from two facilities are available and monthly monitoring reports are approved to DEQ for those facilities that have specific monitoring areas to watch. DEQ acknowledged the need for more monitoring. Public comment was added that monitoring needs to be a much higher priority. Restoration efforts will be for naught if there isn't better monitoring. DEQ noted it is trying to get closer to the type of monitoring it should be doing.
- How many bodies of water are on the 303(d) list? DEQ will need to pass along the specific numbers, but added that a high percentage are on the list for temperature.
- Does DEQ test where dredging occurs? Yes – an example of water quality standards in action was provided: monitoring of a dredged area caught leaks and actions were taken to address the problem.
- Becky and Jordan were complimented on their presentations, which stayed focus on the important elements of very complicated information.
- Why isn't EPA doing a regional fish consumption rate? EPA is attempting to take a regional approach, for example, with regional temperature guidance – but have not at this point been able to achieve a shared, multi-state commitment to this process. This Fish Consumption Rate process is precedent setting for the region and the nation in addressing fish consumption rate differences within a state. EPA hopes this will be 'local decision making at its best'. Regional conversations are happening but at this point the other Region 10 states are not in the same place as Oregon with revising fish consumption rates. It was noted that Washington and Idaho representatives are engaged in and observing this process.
- A comment was made that the notice for the Coos Bay meeting occurred too late to get into the Coquille Tribe's newspaper and it was suggested that notice of future meetings could be improved. Will all the meetings be in Portland? The planning group is discussing the possibility of holding future workshops around the state which at this time were scheduled to be held in Portland.

Portland –

- How do federal lands get regulated? Through its non-point source pollution prevention program, DEQ works with federal partners to develop plans to manage their lands that meet state water quality standards. If a point source, federal agencies would be required to obtain a permit. Specific to transportation projects, ODOT works with the 401 certification program and stormwater permits.

After the break, a few participants introduced themselves. Cheryl Niemi, Washington Department of Ecology, noted that she will stay on as an interested ‘silent’ observer of the process in Oregon as it will impact Washington. Glenn Spain, Pacific Coast Federation of Fishermen’s Association, shared that he participated on the last policy advisory committee. Ralph Saperstein, Oregon Water Quality Coalition, raised concerns that he heard the process is already on track to increase the fish consumption rate without full vetting of other issues. He was encouraged to look at the outline for all the workshops and provide input on which issues should be addressed that are not already on the schedule to be discussed.

The DS Consulting facilitation team (Donna Silverberg, Robin Harkless and Erin Halton) was also introduced. The firm focuses on facilitation, conflict management and public policy mediations. They were brought into the process to provide impartial facilitation, and do not work for any government agencies. Donna Silverberg requested that if at anytime a participant feels the team does not remain fair and balanced or impartial, to let them know so they can take steps to better serve the group’s needs.

Review of 2004 Toxics Criteria Triennial Review

As Jordan began his power point overview of the 2004 Toxics Criteria triennial review, he acknowledged those that were involved in the review on the Policy Advisory Committee (PAC) and the Technical Advisory Committee (TAC) and welcomed them to contribute to the presentation. The Clean Water Act requires the state to ‘regularly’ review the standards using the most current information. During 1999-2003, DEQ consulted advisory committees on toxics and other standards, and recommendations on human health water quality criteria (among other criteria) were discussed and developed.

The TAC reviewed 219 different criterions and attempted to: identify data gaps, look at the availability of bioaccumulation factors (the ‘uptake of pollution by fish’) and derive a fish consumption rate appropriate for Oregon. When the group could not develop these factors specific to Oregon due to resource constraints, DEQ defaulted to the national standard. (Note these different criterions were not well studied – this fact was discussed at PAC.)

Participant Questions and Comments:

- When reviewing the fish consumption rate, did DEQ focus on studies about the general Oregon population or high fish consuming populations? There was no quantitative study on the general population, but the CRITFC fish contaminant study had good information about the Columbia River tribes with a high fish consumption rate. Technically defensible fish consumption rates were agreed to by TAC: 17.5

grams/day was the 90th percentile for the national study, 142.4 grams/day was EPA's default subsistence value, 63.2 grams/day was the mean fish consumption rate of those respondents to the CRITFC survey, 389 grams/day was the 99th percentile of those respondents to the CRITFC survey. EPA noted that 105-113 grams/day, the rate they suggested in their letter, represented the 90th percentile of respondents to the CRITFC study. This illustrated a 22-fold increase from the lowest to the highest figure. TAC agreed a policy decision was needed to decide which rate to employ. They offered the option of using multiple rates, 17.5 g/day, 142.4 grams/day, and 389 grams/day as a low, medium and high intensity fish consumption. If one fish meal is 8 oz of fish, this translates to 2 fish meals per month; 18 per month and 48 per month, respectively.

Jordan provided an example of how the rates were applied with the three 'option' suggestion, and questions were raised about how conclusions were reached for specific areas – were they usual and accustomed fishing areas for tribes.

TAC identified a desire to include food and sediments – that they should be taken into account the next time around. Also, emphasized part of this process will be to get information from not only tribes, but all pops that eat fish – want to know all Oregonians considered. Also emphasized that the choice of multiple rates was a policy decision – and was made according to the intensity of fish consumption from specific waters of the state

The PAC was tasked with looking at: which population should the criteria target to protect, and of that population, which percentage should be protected? Also, at which level of risk of increased incidence of cancer should the criteria for carcinogens be set? Using this methodology, non-cancer risks were not addressed during this round. The PAC did not decide on which rate to recommend, and raised questions about the three rate approach for setting human health criteria in terms of inequities with multiple criteria for the same toxic compound on the same river. While Becky shared that upstream users would be required to use downstream standards when this occurs, a bigger challenge would be determining how to implement multiple rates. At that time, no consensus was reached on whether to use a single or multiple rate, what that rate should be, nor which population and percentiles to use. The final issue the PAC looked at was cancer risk rates, and they agreed to continue '10-6' which translates to 1 in 1 million. (Comment: Some participants on the PAC said it was not a recommendation but a gridlock that led to the DEQ defaulting to 10-6.)

As a result of this process, DEQ recommended human health criteria based on EPA's national recommended minimum value of 17.5 grams/day based on the likelihood that it would be approved by EPA, to avoid equity issues raised over multiple levels, and as an increase to the current standard. The EQC ordered DEQ to revisit the issue and perform an Oregon-specific fish consumption survey but due to resource constraints, the survey was not completed.

Through the current public process, the EQC hopes the region will examine its options, discuss how all will be impacted, and therefore allow an informed policy choice.

Participant Questions and Comments

Portland –

- There are many ways to look at ‘equity’ in this discussion, whether it is amount of fish consumption, water uses and responsibilities, etc. Every scenario has its own unfairness or ‘inequity’ and this idea was discussed at PAC. Inherent in the Clean Water Act is inequity between individual pollution sources. So there is no such thing as equanimity.
- Did not consider non-game fish, like lamprey, so this was an additional inequity. (It was noted that the CRITFC study did include lamprey.)

Coos Bay –

- Is the fish consumption rate different for shell fish? It is meant to include fresh water, fin fish, and salmon.
- Could the standards be more geographically applied? Recollect that DEQ did not feel that on the prior scale, it was appropriate.
- Several factors were involved during the public comment period of the last recommendation for fish consumption rate that kept consensus from happening: rising problems for subsistence fishing, a lawsuit, EPA and DEQ’s focus on temperature, ETC. The hope is that this time there will be a level playing field, but still see problem with having to determine the where/when issue. Can that be revisited? Have DEQ’s lawyers looked at the criteria needed to support the standard?
- A PAC member commented that the PAC endured many difficulties trying to sort through this issue last time around and it is disappointing that after three years nothing has changed by way of new data or decision-making. On a small river, it is difficult to determine where toxins come from, particularly in migratory fish. Recommendations to move on a regional level were not successful during the last round of discussions. DEQ acknowledged the difficulties of the last review process, and noted that there are a total of 2 FTE’s working on this issue. Agency-wide, DEQ has lost over 50% of their funding. Anyone is encouraged to contact Oregon’s Ways and Means Committee to push for more funding on this. DEQ would like to see that the policy choices are made very clear to EQC and that there is a focus on how to implement a new fish consumption rate.
- If the tribes moved toward a separate fish consumption rate, would it apply to waters in which tribal people fish? No, this rate would only apply to federally recognized tribal land. Still this option is worth exploring. Rick George, CTUIR, added that the tribes are dependent on other governments to regulate and protect water they use, and there may be great benefit in creating their own fish consumption rate – it is an important right to have. Kathleen Feehan, CTUIR, clarified that all federal trust lands could apply tribal standards, and all upstream jurisdictions have to meet downstream standards. So if, for example, Washington’s WQS were more stringent than Idaho’s, Idaho discharges would have to meet Washington’s WQS on a shared water body. The same concept would be applied to tribal land/standards.

Jordan clarified that the calculations for toxics factor in ‘relative source contributions’ and the default relative source contribution of fish consumption is 20%; 80% comes from

other sources. So the discussion around salmon needs to include the salmon themselves, not just the people who eat salmon.

- Does this mean that every fish we eat carries same level of risk? DEQ: In real life, no. But in the model we use to calculate risk to human health, we assume that the fish in the water are accumulating toxics at a certain rate. So, the equation does assume that every fish is contaminated to a certain extent. The issue was raised to keep in mind as we proceed.
- Did the DEQ study look at seasonal and other effects on different species, e.g. clams vs. fish? The issue is complex and there is much to look into. DEQ responded that the fish consumption rate is intended to accurately reflect the amount of fish people consume. Studies of fish tissue toxics and the risk they pose to people who eat the fish is a way to ground truth that YES, toxics do actually accumulate in fish and there is a risk to those that eat them. These studies, however, do not give us any more certainty on what the appropriate fish consumption rate should be for Oregon.
- Has there ever been a group effort to lobby for funds for fish consumption review? EPA and DEQ previously looked at the potential costs for performing a state-wide fish consumption rate survey. A suggestion was made to do a simple study, which EPA has looked in to in the past, and found were still costly.. DEQ added that the level of data available during the last review was not enough.
- Historically, the pulp and paper industry has stepped up to do studies on particular toxics, improved the plant process, and survived as an industry despite having to close many pulp and paper mills. As a participant on the PAC, I felt as though it was not worth our time and the decision was not ours to make. Hope the EQC is open to everyone's viewpoints as we attend these workshops. EQC Chair Lynn Hampton acknowledged the difficulty in making decisions and offered her commitment to be at every workshop during this process, if possible.

The facilitator added that this process is intended to be open and allow for more innovative ideas, enable the EQC to glean a better sense of the impacts of its decision and hear ideas for implementation. It is important for the group to be mindful that working collaboratively together will provide better information and will influence the final decision.

Where We Are Today

Mike Gearheard, EPA, shared perspective with the group on where we are today with Oregon's fish consumption rate. Three years after the EQC adopted a fish consumption rate of 17.5 grams/day and DEQ submitted those revisions to EPA, EPA has still not acted on those revisions.. Mike noted that EPA is currently in litigation over this fact, which constrains the candor around the issue. He added that EPA does regret not attending the EQC meeting in 2004 to express its concerns about the recommended fish consumption rate. EPA's guidance includes the 17.5 grams/day as the national default for the general population, but it also includes 142 g/day as the default for subsistence populations. EPA's guidance also guides states and tribes to set standards based on population-specific data where it is available. Approval or disapproval of Oregon's 2004 revisions to the WQS is difficult because the fish consumption rate (17.5 grams) is both

consistent and inconsistent with EPA's guidance. In addition, EPA's action on Oregon's 2004 revision will set a national precedence, which slows down decision-making within the bureaucratic system. He acknowledged that action is due from the federal government on this matter, and shared his preference for Oregonians to come up with the best answer and to share it with the nation, rather than EPA making the decision for Oregon.

Lauri Aunan, DEQ, added that the time allotted for this workshop process is needed so EQC can make the best decision possible based on the best knowledge and understanding of the issue. DEQ wants to be able to clearly articulate policy issues and implications for implementation of one or some rates in its recommendation. Human health is a very important issue to the agency.

Scope and Overview of the Workshops

Participants were directed to a handout that included proposed draft themes for the workshops. The planning team of Becky Lindgren (EPA), Jordan Palmeri (DEQ), and Rick George (CTUIR) developed a list of participants they felt should be engaged throughout the process that are identified as the 'Core Group'. They are key people identified to provide information and engage in a dialogue about the issues. In addition the planning group used key questions the EQC, EPA and CTUIR will need answered at the end of this process to put together the draft themes. The logic behind the sequencing of the workshops was partly due to being able to gather more information to bring to a workshop, e.g. human health toxicology and implementation issues. The Focus groups are intended to be a small group of technical experts on the topic, able and willing to give time to the process and do background work, able to review and articulate data and base their findings on experience and literature broader than their own interests. The focus groups will scope the issues and bring materials back to the large group, and the workshops are intended to allow for all viewpoints to be heard and considered at the end of the process. Participants are asked to submit comments via email or otherwise to help shape the workshops beyond what is already listed on the draft schedule.

Participant Questions and Comments

Coos Bay –

- Hope there can be a 'parking lot' for discussion of longer-term issues.
- The workshops run the risk of confusing an outcome if the stated goal and objective is a new fish consumption rate. Concern too that there is a misleading expectation that this increased rate will benefit and protect human health. There are better ways to get at lowering risks to human health. From the perspective of water quality standards, the most effective solution is pollution prevention/control. Legislative efforts (e.g. mercury in automobile production) are a good way to go. (Another participant shared that this might be more difficult to say decision makers on than a new fish consumption rate.)
- Local public health advisories incited change in the area.
- The Klamath Tribes have concerns for salmon restoration in the Klamath basin; need to put together necessary information to bring people up to speed on the fish consumption rate issue. Different Klamath tribes have different interests –not yet sure

how the Klamath fits into this picture. Klamath will participate in this process because they feel it is important.

- CTUIR was commended for taking the lead on this issue, which is important to all 9 tribes. Perceive some emphasis on the Columbia River and reminded the group to remember all tributaries in Oregon. It was noted that the best study we currently have on fish consumption is the CRITFC study.
- Tribal participation may be limited if the rest of the meetings are held in Portland. Is it possible to provide information on public access channels? DEQ has looked into teleconferencing possibilities for future workshops. Still public access channels might allow even more participation, which is important to DEQ and the other conveners.

Rick George shared CTUIR's role in this process. This is a very important issue to CTUIR, as CTUIR council members have an obligation to protect the treaty rights of their people, and this is a threat to cultural practices of the tribal people. Rick offered that he, Kathleen Feehan and Sherri Groh take this issue on with the same level of obligation, and suggested that this process needs to result in actions that reduce toxins in sediments, water, fish and ultimately the tribes' food. CTUIR will continue to provide resources needed for the process, through funding and time. CTUIR will help DEQ and EPA stay focused to complete the rulemaking process, and they will provide assistance to other tribes and other important groups that should be involved. Finally, CTUIR believes this process provides impetus to keep important players focused on working together to meet the objectives of a more protective fish consumption rate for all Oregonians. Rick added that this issue encompasses basins beyond Oregon that will need to support this effort to make it work. CTUIR will reach out to other tribes and industries to ensure this effort moves beyond the confines of the Clean Water Act. The tribes are contributing resources and working to partner with EPA, DEQ, industries, municipalities, and others to get all the work ahead of us done.

Becky Lindgren, EPA, shared EPA's role in the process, to: provide technical, legal and other guidance from a regional and national perspective; provide funding; be involved and supportive at the executive level; integrate Clean Water Act requirements; and to plan and attend the workshops.

Jordan Palmeri shared that DEQ's overall objective is to protect Oregonians and the environment from toxics. DEQ has committed one FTE to this process, Jordan, and will provide leadership in technical and policy issues. DEQ will take the lead on convening the focus groups, particularly on permitting issues and will lead efforts on an economic and engineering analysis. In addition, Jordan will take part in the planning effort, work closely with the facilitation team, focus on working toward consensus with EPA and CTUIR and bringing a fish consumption rate recommendation to the EQC.

Participant Questions and Comments

Portland—

- Policy issues need to be clearly articulated up front in this process and discussed over the long term rather than waiting until the end. Suggested list of policy issues for discussion:

- Should economic impacts be considered when making decisions about the fish consumption rate? It might be included as a threshold issue.
- How will risk to human health be weighed against cost?
- How substantial does data and analysis need to be in order to be used?
- If the “do the right thing” fish consumption rate adopted resulted in unintended consequences on certain pollution sources, will there be flexibility to make implementation adjustments to address that impact (e.g. mitigation).
- What is the minimum acceptable risk to a sub-population?

Armand Minthorn, CTUIR: Tribes have been gathering allies that share their concerns to work on this issue for years and these workshops will accomplish that. Still, the Tribes are concerned that this process will last until 2008, and have expressed to the EQC that they would like to look at ways to expedite the process. To the Tribes, salmon are a sacred part of our worship and cannot be separated from our tradition. The Tribes have been very patient to date, and are concerned that a failure to reach consensus will mean that the ‘majority’ will reflect a decision that the tribes will have to live with. EPA needs to maintain government to government consultation with the Tribes as its trust responsibility. The sovereignty of the Tribes also means a unique relationship with the state, and not a member of the public. Narrow the questions. Cancer rates on the reservations have gone up recently. Hope the tribes that have banded together will continue to, and hope to work with everyone here because our children and our environment are at risk. The Tribe needs to know firsthand from EPA and from the state that they will fully follow the letter of the law. We are exhausting ourselves to work on this effort. Our future generations need clean water. Thanks to all participants.

- There is a sense of urgency: we are at a tipping point for toxics. Want to expedite and move the process along. This process should seek an innovative and creative solution that does not carry us down the same path as before.
- ‘Best available science’ used to try to choose the best fish consumption rate? Instead look at the practical reality of toxic exposure in fish, as there are a myriad of contaminated surfaces beyond just water.
- Clean Water Services and ACWA are in charge of toxics reduction, and agree that reducing toxics in the environment is just as important as looking at the regulatory framework. Look at non point sources, legacy issues, etc. to help solve the problem. Focus on the bigger picture of toxics reduction as a whole.
- Apply a precautionary standard/principle carefully.
- Build in to this process a way to address questions not yet on the table. Re-evaluate decisions made earlier for lessons learned. Use assessment methods that account for variability. Allow flexibility to think critically about choices made in the past, and be open to changing down the road.
- Focus beyond just cancer risks when looking at human health criteria. Information is needed about how other health risk decisions made in other areas, e.g. the Oregon Health Plan.

- Reframe the either/or notion (industry suffers or tribal people fish at their own risk); change the word ‘impacts’ to ‘effects’ of a changed fish consumption rate to shift the connotation away from the negative.

Coos Bay –

- Why wouldn’t DEQ have more responsibility to fund monitoring? DEQ does fund monitoring efforts, and many permit recipients are required to do their own monitoring. (It was noted that a study shows that around 10% of toxics are point source, and the other 90% are from non-point sources so the EQC would likely be resistant to DEQ taking on more responsibility since they do permitting.)
- Who will be on the focus groups? Are they stakeholders? Ideally the focus groups are small groups made up of experts on a particular topic.
 - It will be difficult to prepare for these focus groups not knowing what to expect. The May meeting might be ambitious for getting information together. DEQ should know that some people schedule their vacations around DEQ’s meetings so requested that when dates are picked, they not be changed.
- It is good to hear the tribal perspective – during the last review there was not much of a tribal voice.
- The conveners were thanked for coming to Coos Bay and offering ideas for how to get involved in this process – this was a great step forward for attending tribal participants. It was noted that Rick George’s visit to one tribal council was very helpful for them to understand how they could participate. Other tribes may not know how to get involved, and it would be beneficial to do similar outreach to them by holding a workshop near them.
- This is truly a state issue. Appreciate the effort of CTUIR in supporting all other tribes. (Rick said he would pass this on to the tribal government.)

Donna summarized by saying that many people over the past two days had commented about wanting to find a creative solution to this issue by taking a different path than before. That falls in line with the agencies’ and tribes desire so we are off to a good start.

DEQ Director Stephanie Hallock and Water Administrator Lauri Aunan suggested that all water quality issues are very complex and require resources. DEQ is pushing for additional funds and are currently severely under-resourced. DEQ believes dialogue is important. For these two reasons, not lack of caring, this is taking a long time.

How Can You Participate?

There are three ways to track this process: Attend the workshops, go to DEQ’s website for all documents relating to this process, and/or sign up to receive information via email. The website is: <http://www.deq.state.or.us/wq/standards/toxics.htm>

EQC Chairwoman Lynn Hampton shared her appreciation to those that are willing to participate in this process, particularly those that were involved in the last review. She offered hope as many as possible will continue to participate and to encourage

participants to help get others involved. EQC is listening with an open mind and eager to find an answer to this problem.

Rick George thanked Chair Hampton, Director Hallock and Commissioner Judy Uhrbelau for attending the workshop, noting that it means a lot to the tribal governments. DEQ and the EQC have demonstrated commitment to this process and the issue. He also thanked the participants for being here and sharing their great ideas, and to the staff and facilitation team working to put the workshops together.

Socorro Rodriquez, director of Oregon's Operations Office for EPA also thanked the travelers for attending, and said EPA is very supportive of the work DEQ is doing and will be here to see it through and do what we can to help. EPA regrets they did not speak up sooner and are taking responsibility for their obligations now through this process.

Lauri Aunan also thanked everyone for attending the workshops and hoped for continued support as we continue our discussions.

These summary notes are submitted by the DS Consulting facilitation team. If you have questions or comments, they may be reached at robin76@cnw.net or 503-248-4703.

Fish Consumption Rate Workshop 1 Attendees (3/13&14/2007 – Portland/Coos Bay)

NAME	REPRESENTING
Carol Whitaker	Georgia-Pacific
Sherri Groh	CTUIR
Jeff Peterson	Maul Foster Alongi
Cheryl Niemi	Washington Department of Ecology
Catherine O'Neill	Seattle University
Gregg Humphrey	Center Water Advocacy
Ralph Saperstein	Oregon Water Quality Coalition
Rawlin Richardson	Confederated Tribes of Warm Springs
Brent Foster	Columbia River Keepers
Moses D. Squeochs	Yakima Nation
James M. Thomas	Yakima Nation
Dave Kliewer	City of Portland Bureau of Environmental Services
Richard Craig	Confederated Tribes of Warm Springs
J. Donatoto	Swinomish Tribe (WA)
N. DeConciui	DEQ
A. Burt	URS
Ray Kinney	Siuslaw Soil and Water Conservation District
Roy Spino	Confederated Tribes of Warm Springs
Brad Knotts	Oregon Department of Forestry
Liz Crosson	(none given)
Kathryn Van Natta	NW Pulp and Paper Association
Bob Baumgartner	Clean Water Services

NAME	REPRESENTING
Robert Anderson	NMFS
Nina Bell	NWEA
Janet Gillespie	ACWA
Charles Logue	Clean Water Services
Rick Kopler	ODFW
Aron Borok	Environment International
Bob Judkin	Oregon Bass and Panfish Club
Don Davis	Oregon Bass and Panfish Club
Bruce Buckmaster	Salmon for All
Taku Fuji	Kennedy Jenks
Mark Cullington	Kennedy Jenks
Cheyenne Chapman	Oregon Center for Environmental Health
Patrick O'Neill	The Oregonian
Amy Chomewicz	City of Portland Bureau of Environmental Services
Debbie Deetz Silva	Oregon Metals Industry Council
Armand Minthorn	CTUIR
Jeff Baker	Grande Ronde Tribe
J.D. Williams	CTUIR
Kate Toepel	Oregon Public Health Division
Cheryle Kennedy	Confederated Tribes of Grande Ronde
Mikkel O'Mealy	DEQ
Cy Jin	Confederated Tribes of Warm Springs
Aaron Courtney	City of Hermiston
Glen Spain	Pacific Coast Federation of Fishermen's Associations
Jason Fenton	Burns Paiute Tribe
Stan van de Wetering	Siletz Tribes
Sue Safford	Port of Portland
Gene Foster	DEQ
Sue Mac Millen	URS
Kathleen Feehan	CTUIR
Jordan Palmeri	DEQ
Becky Lindgren	EPA
Patty Howard	CTUIR
Lauri Aunan	DEQ
Michael Gearheard	EPA
Antone Minthorn	CTUIR
Stephanie Hallock	DEQ
Lynn Hampton	EQC
Judy Uhrbelau	EQC
Socorro Rodriguez	EPA
Amber Parara	EPA
Peter Ruffier	ACWA

NAME	REPRESENTING
Jack Giffen, Jr.	Confederated Tribes of Grande Ronde
Jack G.B. Christian	(none given)
Don Gentry	The Klamath Tribes
Barb Gimlin	Coquille Indian Tribe
Clara Gardner	Coquille Indian Tribe
J.R. Herbst	CTCLUSI
Denise Hunter	Coquille Indian Tribe
Paul Heberling	DEQ
Kathryn Van Natta	NW Pulp and Paper Association
Donna Silverberg	DS Consulting
Robin Harkless	DS Consulting
Erin Halton	DS Consulting

ENVIRONMENTAL Fact Sheet



Sampling for Perchlorate, N Morrow & NW Umatilla Counties, Oregon

U.S. Environmental Protection Agency, Region 10

March 2007

This fact sheet summarizes the results of watermelon sampling by the U.S. Environmental Protection Agency (EPA) in 2006. EPA collected watermelons at several locations in northern Morrow and northwestern Umatilla Counties in Oregon as part of an ongoing effort to learn more about the presence of perchlorate in the local environment and the potential for health concerns from exposure to perchlorate in water and food crops.

In recent months, perchlorate contamination has been of high local interest. EPA is working with several other state and federal agencies, both locally and nationally, to learn more about exposure to perchlorate.

What information was gathered about perchlorate in food and crops?

In August 2006, EPA sampled watermelons as a focused follow-up to limited sampling of food crops done by the Oregon Department of Human Services (ODHS) in 2005. Watermelons were selected in 2006 because there were some discrepancies in the ODHS watermelon data, watermelons were readily available for collection and local melon producers were interested in making sure the important watermelon crop is safe.

Perchlorate was detected at levels ranging from less than 1 part per billion to 22.9 ppb. The average value for these samples was 5.1 ppb. These levels are consistently higher than the watermelon data used by ODHS in their health assessment. Investigations in other locations have sometimes shown much higher values in various produce, although watermelon has not often been sampled.

Additional watermelons were collected in September 2006 and tested for perchlorate, in partnership with local farmers and the Oregon State University Hermiston Agricultural Research and Experiment Center (OSU-HAREC). However, the data from these samples were discarded because the data did not meet quality assurance standards. EPA's need to discard these data underscores the complexity of this work and the challenges of producing high quality data.

Although a number of unanswered questions remain, these watermelon data do not by themselves indicate a health concern. Nonetheless, the results along with available ground water data suggest that additional work may be appropriate to help EPA understand the potential overall dietary exposure, the extent to which perchlorate is getting into other foods, and ways that such uptake may be reduced.

ODHS will release the findings of their 2005 sampling in a separate Exposure Investigation in the near future.

What are the next steps for EPA?

EPA will continue to work with ODHS, Oregon Department of Environmental Quality, Oregon Department of Agriculture, U.S. Agency for Toxic Substances and Disease Registry, the Food and Drug Administration, OSU-HAREC and local farmers to better understand perchlorate in the local area.

In addition to helping EPA identify other commodities that could be candidates for sampling, OSU

continued

What are the next steps for EPA? *continued*

HAREC is also helping EPA understand various agricultural practices and how these practices might be adjusted if levels of perchlorate are found to be of concern.

Is perchlorate being studied in other places?

There is ongoing national debate about what level of perchlorate is acceptable in drinking water. Many places around the nation and world are doing similar work to evaluate perchlorate exposure, but there currently is no federal or Oregon drinking water standard for perchlorate. The State of Massachusetts has already adopted a State drinking water standard of 2 ppb, and the States of California and New Jersey are proposing drinking water standards of 6 ppb and 5 ppb, respectively.

On January 10, 2005, the National Academy of Sciences (NAS) released their report on the health effects of perchlorate exposure. The NAS report estimates that more than 11 million people, in 35 states, have perchlorate in their drinking water at concentrations of 4 ppb or higher.

The NAS report recommended limits for total dietary perchlorate exposure. Based on the NAS recommendation, if drinking water is the sole source of perchlorate exposure, the level in drinking water should not exceed 24.5 ppb. However, if exposure includes multiple sources such as water, milk, produce, and vitamins, the level in drinking water recommended by the NAS could be as low as 4.9 ppb.

EPA and the U.S. Food and Drug Administration are presently sampling foods nationally to determine how much human exposure may be coming from foods. In addition, the Centers for Disease Control (CDC) has conducted bio-monitoring studies to evaluate total dietary perchlorate exposure, regardless of whether from water or food or other sources.

All of these efforts are increasing EPA's overall understanding of perchlorate and are helping EPA determine next steps for the local area.

What is perchlorate?

Perchlorate is a manufactured salt that is found in rocket fuels, explosives, flares, fireworks, some bleach products, and some herbicides. It also occurs naturally in arid environments and has been found in natural fertilizers imported from Chile.

Perchlorate readily dissolves in water and can easily infiltrate into soil and ground water. In fall 2003, ground-water testing found perchlorate in over half of the 133 wells sampled in the lower Umatilla basin. Similar results were found in follow-up well testing in 2004 and 2005. Because studies elsewhere found perchlorate in some crops and milk, EPA also needs to find out if food crops in the project area contained perchlorate.

What are the health risks from perchlorate?

Perchlorate can impair thyroid function. Prolonged exposure may lead to hypo-thyroidism, which affects growth and development in the fetus, infant and child, as well as metabolism in all age groups. Pregnant women, fetuses, infants, children and people with hypothyroidism are considered the most sensitive to perchlorate exposure.

Do I need to make changes to ensure a healthy diet?

State and federal officials continue to recommend a balanced diet that includes a variety of fruits and vegetables. People sensitive to perchlorate should ensure adequate iodide uptake. Seafood and iodized salt are two good dietary sources of iodide.

Residents with shallow private drinking water wells are encouraged to regularly test their drinking water for both perchlorate and nitrate. Before paying a lab to test for perchlorate, verify that the lab can reliably detect perchlorate values to 1 ppb, and specify that approved EPA Drinking Water Methods and all associated quality assurance procedures be used. A list of labs approved for perchlorate testing is available on the web at: <http://www.epa.gov/safewater/ucmr/ucmr1/labs.html>

For more information, please contact:

General information:

Judy Smith, EPA Community Outreach 503-326-6994 smith.judy@epa.gov
Christine Kelly, EPA Project Manager 541-962-7218 kelly.christine@epa.gov

Food sampling:

Sylvia Kawabata, EPA 206-553-1078 (800-424-4372) kawabata.sylvia@epa.gov
Ken Marcy, EPA 206-553-2782 (800-424-4372) marcy.ken@epa.gov

Ground water testing:

Ken Marcy, EPA 206-553-2782 (800-424-4372) marcy.ken@epa.gov
Sheila Monroe, ODEQ, 541-298-7255, Ext. 29 monroe.sheila@deq.state.or

Health concerns:

Dr. Kate Toepel, ODHS, 503-731-4504 Kathryn.toepel@state.or.us
Julius Nwosu, EPA 206-553-7121 (800-424-4372) nwosu.julius@epa.gov

Produce and food crops:

Chris Kirby, ODA, 503-986-4638 ckirby@oda.state.or.us
Phil Hamm, OSU HAREC 541-567-8321 Philip.b.hamm@oregonstate.edu

Links to information on the internet:

- <http://yosemite.epa.gov/r10/CLEANUP.NSF/sites/oregon-perchlorate>
- EPA National Perchlorate Questions and Answers:
<http://www.epa.gov/safewater/contaminants/unregulated/perchlorate.html>
- Resources for testing perchlorate in groundwater: <http://www.epa.gov/safewater/ucmr/ucmr1/labs.html>
- Integrated Risk Information System: <http://www.epa.gov/iris/subst/1007.htm>
- ODEQ Perchlorate web page: <http://www.deq.state.or.us/er/PerchlorateSites.htm>
- ODHS SHINE Perchlorate web page: <http://www.oregon.gov/DHS/ph/shine/pasite.shtml>
- ATSDR ToxFAQs Information: <http://www.atsdr.cdc.gov/tfacts162.html>
- FDA Perchlorate information: <http://www.cfsan.fda.gov/~dms/clo4qa.html>

Salem/Leg Update – April 16, 2007

Ways and Means is now scheduled to start April 24. It is anticipated to last for 6 days including a public hearing on May 2. There are ongoing discussions regarding support for the various budget policy packages. These include/have included meetings with stakeholders and various legislators.

Fee Bills

Three DEQ fee bills will be heard by the Joint Committee on Ways and Means Natural Resources Subcommittee on April 19. They include:

- SB 104 – Underground Storage Tanks – there is general stakeholder support for this bill.
- SB 107 – Title V – DEQ has developed a revised fee table and federal consistency language that has garnered industry support.
- HB 2118 – UIC – stakeholders are supportive and there is no known opposition to the establishment of this fee program. This bill is the result of stakeholders asking the EQC to seek stable funding instead of giving the program back to EPA.

Once these bills pass out of the W&M subcommittee, they go to the full Ways and Means Committee, then to the Senate and House floors for votes.

The other three DEQ fee bills are:

- SB 103 – Hazardous Waste
- SB 105 – Marine Spill
- SB 106 – Heating Oil Tanks

These three bills passed out of the Senate and are now headed for House floor votes. SB 103 and SB 106 passed without comment and are on the way to the Governor. SB 105 is anticipated to go to the House floor within the next week. All three are expected to receive passing votes. They will go to the Governor for signing after the House floor votes.

DEQ Non-Fee Bills

SB 235 – agricultural air quality: The Senate Environment and Natural Resources Committee heard this bill on April 10. The original bill was a joint Oregon Department of Agriculture (ODA)/DEQ bill developed with stakeholder input. A portion of the environmental community is not supporting the bill as originally drafted and submitted an amendment with more stringency, particularly relating to air emissions in the Gorge and controlling none Clean Air Act emissions such as ammonia and hydrogen sulfide. This amendment was adopted by the Committee. However, the amendment has a significant fiscal impact for both ODA and DEQ since it requires setting new air quality regulations. Both agencies are currently working to determine the fiscal impact and to figure out the next steps on SB 235.

SB 338 – Heat Smart (woodstoves): The Senate Environment and Natural Resources Committee voted to send this bill to the Senate floor with a “Do Pass” recommendation. After the Senate floor vote, it is anticipated to go to the House Energy and the Environment Committee.

HB 2172 – Clean Diesel: This bill passed out of House Energy and the Environment Committee on March 5 and is now at House Revenue. A second and final hearing in House Revenue is anticipated for the last week of April.

HB 2272 – OR LEV vehicle registration denial: This bill passed out of the House and next stop will be the Senate Environment and Natural Resources Committee. No hearing date has been set but it should heard in May.

Significant Non-DEQ Bills

SB 317 – Mixing Zone Buoy Bill – has not been heard and it not likely to have a hearing.

SB 644 – ballast water bill; This bill would add one General Funded FTE to DEQ to implement ballast water reporting and regulations; a hearing date at the Ways and Means Natural Resources Subcommittee is anticipated in early May.

SB 737 – Mixing Zones – prohibition to discharge bioaccumulative toxins in amounts that are harmful. The Senate Environment and Natural Resources Committee is scheduled to have a hearing on this bill on April 24.

HB 3000 – Field Burning – statewide prohibition on field burning. The House Health Care Committee took action on April 13 and sent it to the House Agriculture and Natural Resources Committee; no hearing date has been set.

HB 2626 - E-Waste – this bill was passed out of the House Energy and the Environment Committee and anticipated to be heard by the Ways and Mean Natural Resources Subcommittee on April 23.

SB 707 - Bottle Bill – This bill passed out of the Senate Environment and Natural Resources Committee and should be scheduled for a Senate floor vote soon. Afterwards, it should go to the House Committee on Energy and the Environment.

HB 3500 - Pollution Control Tax Credits (PCTC) – This updated version of the PCTC is scheduled for a hearing in the House Energy and the Environment Committee on April 27. The bill is currently being drafted to reflect a consensus bill of the Oregon Business Association and Associated Industries of Oregon. It includes a beyond compliance aspect and is likely to include a special fee to help fund nonpoint source work at DEQ – specifically groundwater protection.

Our company specializes in researching and marketing *green* products. We are supremely confident that we can assist the State in meeting some its goals regarding emission reductions and fuel conservation at a lower operating cost. Visit our online presentation by going to www.TheGreenCause.com today.

We want to introduce you and the legislature through this committee to our flagship product; *USA FR*, a fuel reformulator, manufactured by Ethos Environmental, Inc., a publicly-traded company in San Diego. We are not going to sell you on our product in this venue, but rather to tell you about this exciting new technology that has now been perfected to significantly reduce emissions (average 30%) in combustible engines.

Various ester-based applications have been in existence for decades, but the formula for enhancing efficacy in this specific regard has been refined and we now have real world results to discuss. A quick review of chemistry 101 reminds us that esters are a group of compounds basically formed by the reaction of acids and alcohols where H₂O is removed. Esters can be organic or synthetic. Common esters are found in beer, soap, and polyester clothing.

When specific esters are blended with high-grade mineral oil, one can create a fuel reformulator that can be added to gasoline, diesel, bio-diesel, and other common fuels to change their chemistry. We have included more detail in our written materials for your review, but suffice to say, this reformulation allows the fuel to burn more efficiently thus increasing gas mileage per gallon and reducing emissions through the exhaust. We have also provided copies of the product fact, frequently asked questions, and the MSDS sheets for our formula.

Case study information is included in our materials for a long-haul luxury car transport company in Michigan (Precision Motor Transport Group). Their experience and results using this technology are compelling; average 12% reduced fuel consumption. Also, we have included opacity test results from various users and locations, both here in the U.S. and abroad.

In conclusion, the action we are recommending for your consideration is that the State of Oregon issues an RFQ or RFP if more timely action is desired, for any and all interested parties to submit their data and results with the ultimate goal of adopting this proven technology for the use in all State-owned vehicles. This would allow the State to lead by example in the area of emission reductions in Oregon and save millions of dollars in fuel costs annually. For additional details please visit our website at www.TheGreenCause.com this website co-sponsored by USA E and 4E, our business affiliate.

Sincerely,

Bob Bevins
USA E, LLC
(541) 504-0318

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EQC Tour Agenda Thursday, April 19, 2007 Bend, Oregon

The Oregon Environmental Quality Commission (EQC) is a five-member citizen panel appointed by the governor for four-year terms to serve as policy and rulemaking board for the Oregon Dept. of Environmental Quality (DEQ). In addition to adopting rules, the EQC also establishes policies, issues orders, judges appeals of fines or other department actions, and appoints the DEQ director. For more information about the EQC, visit <http://www.deq.state.or.us/about/eqc/eqc.htm>. For more information about Commission members, visit <http://www.deq.state.or.us/about/eqc/EQCmembers.htm>.

DEQ and the Oregon Dept. of Forestry (DOF) are currently updating the Oregon Smoke Management Plan. **The objective of the tour is to help Commissioners understand forest health issues, the role of prescribed burning in ecosystem management, forest management practices including smoke management, and alternatives to burning that encourage biomass utilization.**

DEQ will reserve a bus that will seat at least 25 people; bus should have microphone system and, if possible, bathroom.

**Thursday, April 19—EQC Regular Meeting 8:30 am; Tour 10:30 am, Town Hall 6:00 pm
(note: tour times are approximate)**

Time	Topic	Presenter	Notes
10:00 am	Tour Leaders meet in the Riverhouse Lobby	Marianne, Greg, Rick, Amy, Cindy, Larry, Jim, Darren	Prepare for weather
10:30 am	Tour participants meet in the Riverhouse Lobby, load onto bus Box Lunches on bus	See participant list below	Prepare for weather
10:30-11:30	Travel time to Mt. Washington Viewpoint Area on Highway 20	Rick, Amy, others	Background info on Forest Health, Forest Ecology
11:30-11:50	Mt. Washington Viewpoint	Rick, Amy, others	Discuss effects of catastrophic wildfire on ecosystem
11:50-12:15	Travel time to Metolius area		
12:15-12:35	Camp Sherman Road logging site	Rick, Amy, others	Discuss Logging Practices, Prescribed Burning, Biomass Utilization
12:45-2:00	Metolius Heritage Demonstration Area (2 stops about a mile apart)	Greg, others	Discuss treatment methods for achieving healthy forest ecosystems
2:00-3:00	Travel time back to Bend Riverhouse		
3:00	EQC break before Town Hall		Rest, eat.
~3 hours			
6:00 – 7:30	Town Hall Meeting At Riverhouse.	EQC, Stephanie Hallock	Open to the public. Joni Hammond is inviting local officials.

Friday, April 20—EQC Meeting, 9:00 am-3:00 pm

Time	Item	Topic	Presenter/Status
9:00 2+ hours	F	Smoke Management informational item	Brian Finneran (DEQ) and Paul Bell (ODF) are organizing session
~12:00		DEQ/ODF Staff and others may return to offices	
~12:00		EQC continues its meeting, including Public Forum	

Websites with background information for the tour (FYI):

- Friends of the Metolius: <http://www.metoliusfriends.org/activities.html>
- Oregon Dept. of Forestry Forest Protection Division: http://www.oregon.gov/ODF/FIRE/fire_protection.shtml
- DEQ Air Quality Division: <http://www.deq.state.or.us/aq/burning/index.htm>
- Oregon Dept. of Energy Biomass Energy: <http://www.oregon.gov/ENERGY/RENEW/Biomass/BiomassHome.shtml>
- Others?

Tour Leaders (8)

Marianne Fitzgerald, DEQ Air Quality Planning staff, (503) 229-5946
Greg McClarren, Friends of the Metolius, (541) 923-6670
Rick Wagner, ODF, (541) 963-3168
Amy Waltz, The Nature Conservancy, (541) 388-3020 x304
Cindy Glick, USDA Forest Service, (541) 549-7749
Darren Mahr (not confirmed), ODF, (541) 267-1763
Larry Calkins, DEQ Eastern Region Air Quality staff, (541) 567-8297 x25
Jim Trost, ODF Meteorologist, (503) 945-7448

Tour Participants (16+)

4 EQC Members (Bill Blosser, Donald Dodson, Judy Uherbelau, Ken Williamson)
Dick Pedersen, DEQ Deputy Director
Joni Hammond, DEQ Eastern Region Administrator
Andy Ginsburg, DEQ Air Quality Division Administrator
David Collier, DEQ Air Quality Planning Manager
Linda Hayes-Gorman, DEQ Eastern Region Air Quality Manager
Barbara Craig, Board of Forestry member
Paul Bell, ODF
Charlie Stone, ODF
Other staff (Helen Lottridge, Toneasha Kelley, Larry Knudsen, DEQ water quality staff)
Public (three members of the Oregon Forest Industries Council have asked if they may attend)

Demonstration of Biomass Utilization as an Alternative to Slash Burning

Oregon Environmental Quality Commission (EQC) Tour – April 19, 2007

Location: Black Butte Unit #25

Participants: USFS Deschutes National Forest, Sisters Ranger District
Melcher Logging
T2, Inc.
Roseburg Forest Products

Project: This project was initiated to beneficially utilize biomass resources that would normally be burned as slash at the completion of a logging project. After the marketable timber had been removed from the site, the USFS had the logging contractor consolidate the tops and limbs in an area that was accessible to a tub grinder. This material would usually be placed in smaller piles spread throughout the project area to be burned at a later date.

T2, Inc. mobilized a tub grinder, excavator, and loader to the location of the consolidated biomass. The attached photographs show the material being placed into the tub grinder and ground into “hog fuel.” The ground biomass material was loaded onto chip trailers and transported off-site to fuel a co-generation (steam and electricity) boiler at the Roseburg Forest Products facility in Dillard, Oregon.

The project resulted in the production of 301 green tons of ground wood biomass that contained approximately 35% moisture. The quality of the material for use as a bio-fuel was acceptable to the end user. This indicates that biomass utilization can technically be implemented as an alternative to slash burning at forest sites that can provide centralized processing areas that are close to roads.

The economics of this project required subsidies in the form of provided labor and equipment by the participants to collect and consolidate the slash materials at a single location, to mobilize the equipment required to grind and load the material, to process the material, to transport the biomass to the end user, and to oversee the project.

The benefits of this project include the utilization of the biomass material for electricity and steam generation at a facility with air pollution controls and the reduction in uncontrolled air pollution (i.e., smoke) from slash burning activities. Further evaluation of these types of projects is required to determine the economic viability of biomass utilization and the benefits to the environment.

T2, Inc. is a resource recovery firm that specializes in the recovery, processing, and transportation of wood residue from forestry and land clearing operations, yard debris cleanup, and construction and demolition (C&D) activities throughout the northwest. Questions regarding biomass utilization can be forwarded to Stephen Lawn, Business Operations Manager: e-mail T2_slawn@msn.com or 541-913-8681.

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T2, Inc. mobilized a tub grinder, excavator, and loader to the location of the consolidated biomass. The attached photographs show the material being placed into the tub grinder and ground into “hog fuel.” The ground biomass material was loaded onto chip trailers and transported off-site to fuel a co-generation (steam and electricity) boiler at the Roseburg Forest Products facility in Dillard, Oregon.

The project resulted in the production of 301 green tons of ground wood biomass that contained approximately 35% moisture. The quality of the material for use as a bio-fuel was acceptable to the end user. This indicates that biomass utilization can technically be implemented as an alternative to slash burning at forest sites that can provide centralized processing areas that are close to roads.

The economics of this project required subsidies in the form of provided labor and equipment by the participants to collect and consolidate the slash materials at a single location, to mobilize the equipment required to grind and load the material, to process the material, to transport the biomass to the end user, and to oversee the project.

The benefits of this project include the utilization of the biomass material for electricity and steam generation at a facility with air pollution controls and the reduction in uncontrolled air pollution (i.e., smoke) from slash burning activities. Further evaluation of these types of projects is required to determine the economic viability of biomass utilization and the benefits to the environment.

T2, Inc. is a resource recovery firm that specializes in the recovery, processing, and transportation of wood residue from forestry and land clearing operations, yard debris cleanup, and construction and demolition (C&D) activities throughout the northwest. Questions regarding biomass utilization can be forwarded to Stephen Lawn, Business Operations Manager: e-mail T2_slawn@msn.com or 541-913-8681.





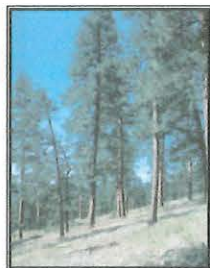
Wildland Fire: A Natural Process



WILDLAND FIRE EDUCATION WORKING TEAM

Wildland fire management agencies and organizations share common goals: to enhance personal safety and reduce loss of life while preserving and enhancing the health of forests, rangelands, prairies, and wetlands.

ROLE OF WILDLAND FIRE



Wildland fire is an essential, natural process. Fire has helped shape our wildlands for thousands of years and is important for the survival of many plants and animals. Fire reduces accumulation of vegetation that can inhibit plant growth, and some plants and animals depend on fire for survival. In fact, periodic fire stimulates growth, reproduction of plants, and provides wildlife habitat. For example, lodgepole pines need fire to warm their cones, allowing them to open and drop seed. Fire behaves differently throughout the country. In addition to fuels, such as vegetation, fire behavior is affected by weather and terrain. Virtually all vegetation types in the United States can experience wildland fire.

CURRENT CONDITIONS

Society's influence has altered historic fire cycles, leading to a dangerous and difficult buildup of vegetation in our wildlands. Social and cultural approaches to wildland fire over the past century have focused on preventing and suppressing all wildland fire. We continue to learn and now have a more complete understanding of the essential role fire plays in our environment. When paired with the right terrain and weather conditions, dense buildup of vegetation leads to fires that burn hotter, last longer, and spread faster. As a result, these fires become difficult to manage and can threaten areas of residential development. In addition, excess vegetation and lack of fire in some areas is threatening plant and animal life.



WILDLAND FIRE MANAGEMENT

Land management agencies are committed to a balanced fire program that will reduce risks and realize benefits of fire. The safety of firefighters and the public is the No. 1 priority of land management agencies.

Land management agencies' fire management programs are customized for specific wildland areas to restore the land to more natural conditions, maintain already healthy ecosystems, and protect neighboring communities. Fire management programs are designed based on a balance of needs, including fire suppression, prevention, and fire use. There will always be a need for prevention and suppression to protect people and communities.

Fire is a management tool used to accomplish specific objectives in a plan such as removal of excess vegetation or stimulating plant growth and regeneration. Fire use is a managed process with comprehensive guidelines that prioritize safety and direct the planning and operations of the activity.

- **Naturally occurring fires**, such as those caused by lightning, are either suppressed or allowed to burn in a closely monitored and confined area, based on the fire plan for the area.
- Sometimes it may be necessary and/or beneficial for land managers to start fires in a closely monitored and confined area. These fires are referred to as "prescribed fires."
- A fire program also may include **non-fire treatments** to prepare the land before natural or prescribed fire can be applied safely and effectively.

PARTNERSHIPS FOR WILDLAND FIRE

Improving the health of the land and reducing risks to communities requires partnerships among federal and state agencies, tribal governments, fire departments, communities, and landowners. Fire burns where conditions are right. Fire does not acknowledge jurisdictional boundaries of federal, state, or local agencies or tribes or private landowners. Agencies, tribes, and communities are working together to understand and accept what it means to live in a fire-prone area and to realize the benefits of managing fire in the wildlands.

- Agencies and tribes are managing public and tribal lands through comprehensive fire management plans and programs.
- Agencies and tribes also are working to educate local governments and property owners on ways to make their land and property more defensible against wildfire.



People who live and recreate in fire-prone lands assume a certain level of risk and responsibility due to the condition of the surrounding environment. People can live compatibly with fire, if they take action to be aware of — and prepared for — local fire conditions.

- Landowners and land users are encouraged to mitigate fire hazards on private property, use recreational fire safely, and support fire management efforts so land management agencies, tribes, and firefighters can focus on public lands. This will ultimately reduce loss of life, property, and natural resources.
- Contact your local, state, or federal agencies or tribal fire management organization to determine your community's fire conditions and discover tips to reduce your community's fire vulnerability — before a fire starts. Information is also available at www.firewise.org.
- The more populated and closer a community is to fire-prone areas, the greater the need for proactive fire management.
- Smoke from prescribed fire is a sign that steps are being taken to reduce risks and realize benefits of fire. The more land management agencies can plan and manage fire, the more they can reduce smoke impacts.

PARTNER ORGANIZATIONS

The National Wildfire Coordinating Group (NWCG) was chartered in 1976 to provide a means for agencies to coordinate programs, constructively work together and avoid duplication of efforts. NWCG is a unifying force behind wildland fire management in the United States. It helps ensure member agency efforts are consistent and coordinated while working collaboratively toward common goals.



For more information about the NWCG, go to: <http://www.nwcg.gov>.

For additional wildland fire information, go to:

- National Interagency Fire Center – <http://www.nifc.gov>
- USDA Forest Service – <http://www.fs.fed.us/fire/>
- U.S. Department of the Interior agencies, including:
 - Bureau of Indian Affairs – <http://www.bianifc.org/>
 - Bureau of Land Management – <http://www.fire.blm.gov/index.htm>
 - National Park Service – <http://www.nps.gov/fire/>
 - US Fish and Wildlife Service – <http://fire.r9.fws.gov/>
- National Association of State Foresters – <http://www.stateforesters.org>
- The Nature Conservancy – <http://www.tncfire.org>

NWCG utilizes working teams, which designate specific task groups to address projects, issues and concerns relevant to wildland fire management. The Wildland Fire Education Working Team (WFEWT) develops and provides effective, interagency education programs and products to communicate about and for wildland fire management. This document was developed by the WFEWT Fire Messaging Task Group.



Fire Ecology Quick Facts

- Wildland fire is an essential, natural process.
- What's natural? How fire burns across the landscape, ranging from low intensity underburns to high intensity, stand-killing events, really depends on the rainfall, elevation and corresponding vegetation. These are called Fire Regimes.
- Fire, at both low and high severities, has helped shape our wildlands for thousands of years, and is important for the survival of many plants and animals:
- Fire reduces accumulation of vegetation that inhibits plant growth.
 - Peck's penstemon is only found in the Sisters area; fire promotes this plants flowering and growth by reducing competition and creating seed sites.
- Plants and animals depend on fire for survival. Periodic fire stimulates growth, reproduction of plants, and provides wildlife habitat.
 - White-headed woodpeckers rely on the open forests and snags created by fire.
- Smoke enhances germination of native plants:
 - Smoke germinated native tobacco plants.
- Land management, including grazing, logging and active fire suppression can and has altered how fire burns across the landscape.
- Wildlands that evolved with frequent fire (every 10 years) have missed many fire cycles - as a result, they burn at much higher intensities than they are adapted to.
- Land management agencies are committed to a balanced fire program that will reduce risks and realize benefits of fire.

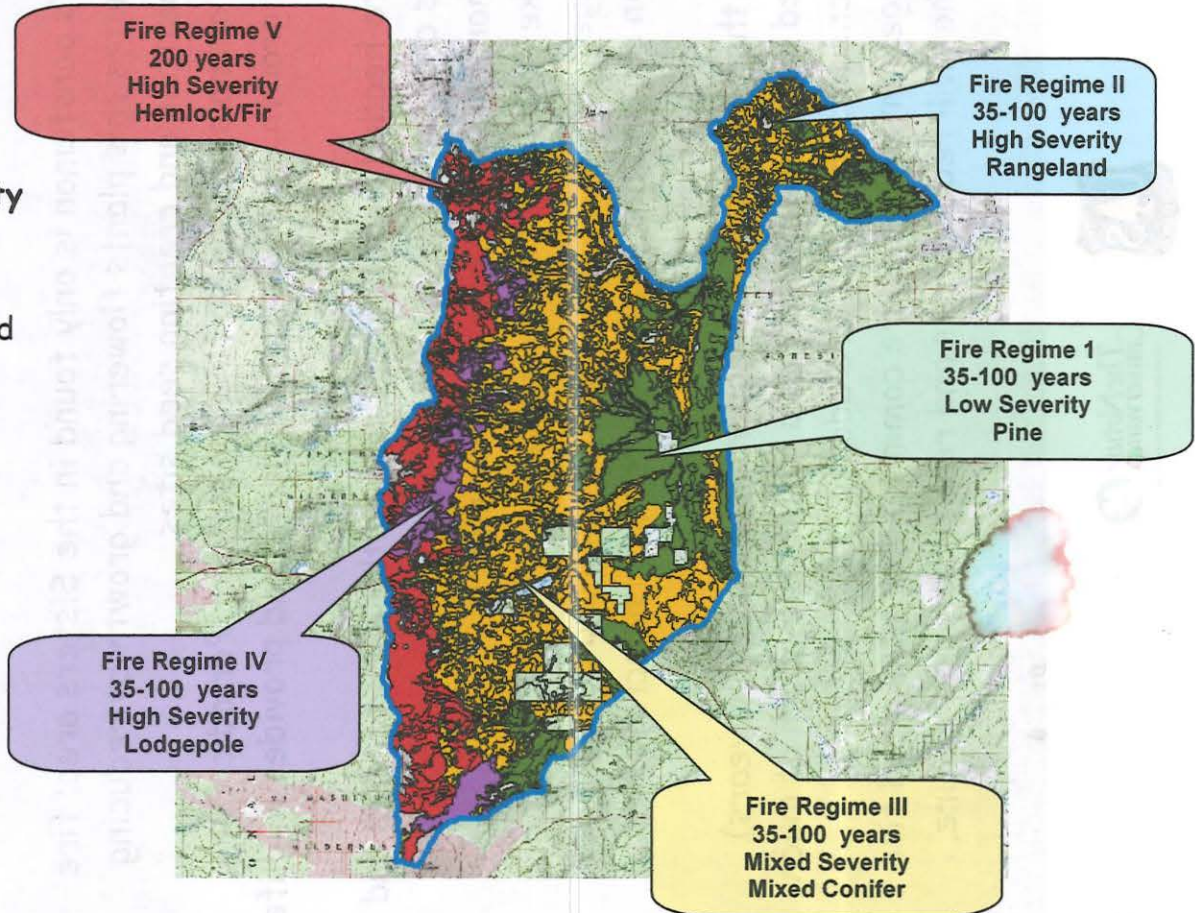


Fire Regimes

- A generalized description of the role fire plays in an ecosystem
- 5 groups based on fire components...
 - fire frequency - how often does fire return
 - fire severity - how intense does fire burn

Regime	Frequency	Severity
I	0-35 Years	Low
II	0-35 Years	High
III	35-100+ Years	Mixed
IV	35-100+ Years	High
V	>200 Years	High

in the Metolius Watershed



HOW CAN WE GET GREEN POWER FROM OVERCROWDED FORESTS?



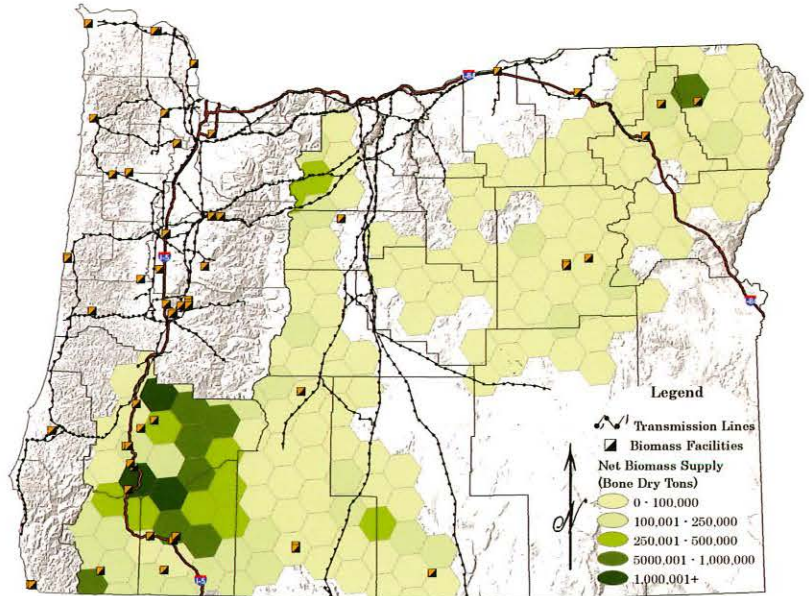
An estimated 4.25 million acres (about 15% of Oregon's forestland) have the potential to provide useful woody biomass through thinning to reduce the risk of uncharacteristic forest fires. Most of these overly dense forests are federally owned and managed.

SHORT-TERM USE

The best short-term use for woody biomass might be as a fuel for generating electricity and heat used in wood products manufacturing.

LONG-TERM USE

A potential long-term use is converting woody biomass to biofuels and bioproducts to replace fossil fuels.



This map shows the net woody biomass supply in Oregon – mostly in the eastern and interior southwestern regions of the state – that can be recovered by thinning overly dense, fire-prone forests. Each hexagon represents 160,000 acres. Existing biomass energy facilities and major electrical lines are also shown.

THE WOODY BIOMASS TRIPLE WIN:

- **Restore forest health, fire resiliency and wildlife habitat.**
- **Help meet Oregon's renewable energy goals.**
- **Provide hundreds of jobs and help revitalize rural economies.**

OREGON'S GROWING ENERGY NEEDS

Thinning these forests over 20 years would provide enough woody biomass per year to generate about 150 megawatts of electricity. To put that in perspective, the use of electricity in Oregon currently is growing at a rate of about 100 megawatts per year.

Other sources of woody biomass include wood waste generated at wood products plants as well as juniper woodlands, logging slash and discarded wood and yard debris that often ends up in landfills.

Source: *Biomass Energy and Biofuels from Oregon's Forests*, a 2006 study commissioned by and available from the Oregon Forest Resources Institute.



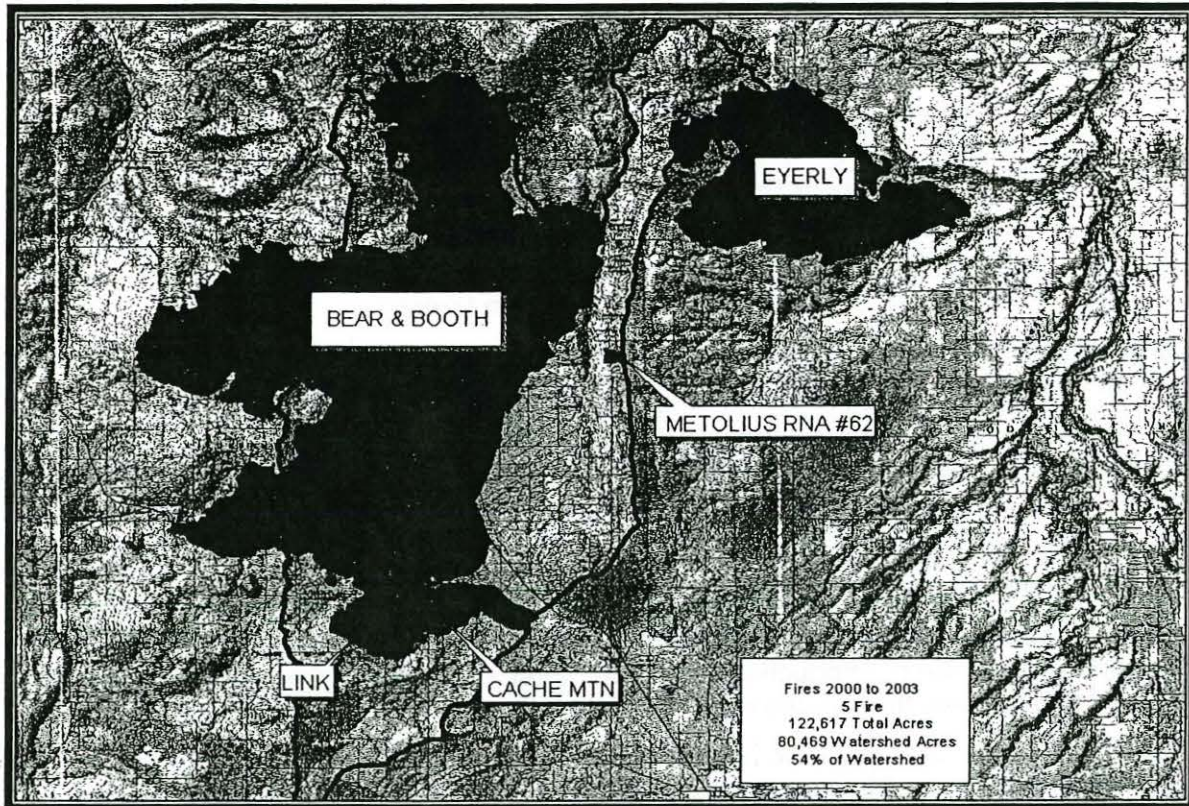
OREGON FOREST
RESOURCES INSTITUTE

Oregon's Legislature created the Oregon Forest Resources Institute to improve public understanding of Oregon's forest resources and to encourage sound forest practices

Learn more at www.oregonforests.org

Toupe

The B&B Wildfire- Fire Effects and Post-Fire Work August 2005



BACKGROUND:

- The B&B Complex Fires started on August 19, 2003 and were controlled in November. The fires covered approximately 91,000 acres on two National Forests, the Confederated Tribes of Warm Springs Reservation, State of Oregon, and private lands.
- Suppression Costs for B&B- \$38 million.
- B&B Fire was the largest wildfire in Deschutes National Forest history.
- The Link Fire burned about 3589 acres on July 5, 2003 and threatened Black Butte Ranch.
- Nearly 56% of the 149,000-acre Metolius Watershed has been affected by 8 major fires since 1996. In 2002 and 2003, four times as many acres burned than in the previous 100 years.
- Roughly half of this key watershed is within late-successional reserves (LSR's).

FIRE EFFECTS:

- **Tree Mortality** (Fire severity) in the B&B Fire Area on Sisters Ranger District:
 - ❖ High (more than 75% mortality) = 46%
 - ❖ Moderate (25-75% mortality) = 19%
 - ❖ Low (less than 25% mortality) = 34%

** BIG TREES- Approximately 17% of trees over 21" dbh in the Metolius watershed were lost (~113,000 big trees)

- **Fire Characteristics-** There are 5 different Fire Regimes in the area.
 - ❖ Lower elevations –Fire was *uncharacteristic in size and intensity* compared to historic fires (frequent low severity to mixed severity fires were common historically in low elevation forests).
 - ❖ Higher elevations -Fire in wilderness was *normal/characteristic in its intensity but fire size was likely larger than historic fires* (stand replacement fires were historically common in the high elevation forests).
- **Fire Risk-** Decreased fire risk for 5 years until shrubs recover, increasing risk over next 5-60 years as snags fall.
- **Soil** – Less than 2% of the area showed detrimental soil damage from the fire. However, there is increased risk of sediment from loss of soil cover, increased water flows, and existing roads. Increased risk of debris flows (landslides).
- **Water-**Increased flows in streams from loss of trees (loss of evapotranspiration). Risk of higher stream temperatures from loss of stream shade. Nutrient increases in water for 4-6 years.
- **Aquatic Habitats and Fish-** Metolius River is a Bull trout stronghold and important fishery for Redband trout and the reintroduction of salmon. First, Candle, and Canyon Creeks are important fish streams that are the most at risk from sediment and channel changes.
- **Wildlife-** Lost 43% of spotted owl habitat within the watershed. Only 11 of 21 owl pairs are still potentially viable on the District following habitat loss from 2002/2003 wildfires.
- **Noxious Weeds and Plants-** Increased spread of weeds into fire areas. Some areas of spectacular wildflower displays stimulated by fire.
- **Social-** Loss and/or change in scenic values. Fire, smoke, multiple evacuations, and the highway closures impacted local businesses during suppression efforts.

POST-FIRE WORK AND ASSESSMENTS:

- **Suppression rehabilitation completed** (closing firelines, safety zones and drop points).
- **Changed condition assessments required for two fire-affected projects:** Portions of both the McCahee Vegetation Management Project (5,000 acres) and Metolius Basin Forest Management Project (12,500 acres) were burned by the fires and reassessments of fire effects were completed. Both projects were appealed and litigated, however the USFS decisions on these projects were upheld on both lawsuits.
- **Roadside and Ongoing Timber sales Salvage-** Suppression-related timber created by firelines was sold. Healthy Forest Initiative categorical exclusions were used for salvage of pre-existing timber sales affected by the fires. Hazard trees along 120 miles of primary roads were also removed.
- **BAER Road Treatments-** Critical burned area emergency restoration work for about \$2.3 million stabilized roads.: 12 small culverts replaced, road drainage improved (70 water bars, 30 drain dips, 7 rock fords), and 7 large culvert replacements.
 - **Culvert Replacements-** Undersized road culverts are being replaced with open bottom culverts or bridges to increase capacity to handle water and debris flows. These

new structures are also fish friendly with natural stream bottoms instead of pipes. They protect roads from washouts which can fill streams with sediment.

- **BAER Noxious Weeds** - Burned Area Emergency Rehab work continues on noxious weed control and surveys. Inmates and youth crews are hand pulling weeds.
- **BAER Riparian Rehab**- Cottonwood stands at the top of drainages such as First Creek were fenced to speed reestablishment and protect from elk grazing. Some replanting of streamside forests.
- **BAER Trail Work/Recreation Hazards**- 33 miles of trails received drainage improvements, and hazard signing was installed at many popular sites.
- **Area Closures for Safety and to prevent resource damage**- The fire area is open on designated roads only to protect the public from fire damaged trees and protect soils and prevent noxious weed spread by off road travel.
- **Mushroom Harvest Boom**- 2004 saw the largest Mushroom Program in 10 years- 55,000 lbs of morels sold to buyers for over \$275,000 in sales, for 5000 pickers.

PROJECT DESCRIPTION: B&B Fire Recovery Project

- The B&B project area includes 40,000 acres of Forest Service lands outside of wilderness on the Sisters Ranger District.
- Due to the complexity and controversy associated with fire salvage, the project was analyzed as an EIS (Environment Impact Statement).
- The B&B Fire Recovery Project proposed active management on up to 6,823 acres of the B&B Fire and Link Fire on the Sister Ranger District. This is about 7% of the 94,281 acres encompassed by the fires or 17% of the burned area outside of wilderness.
- Goals of the project are to:
 - Harvest fire-killed timber that has economic value;
 - Reduce fuels within salvage areas to desired levels more consistent with frequent fire regimes and improve ability to both reintroduce prescribed fire and effectively suppress wildfire in the future;
 - Accelerate forest recovery by reforestation with desired tree species where seed sources are lacking;
 - Improve public, administrative and operational safety by removing dangerous trees along haul routes and areas of concentrated use, and
 - Reduce open road densities, particularly within the LSR to protect and improve watershed conditions.
- Approximately 41,000 acres of the fire recovery area could be entered after wilderness, research natural areas, roadless areas, spotted owl habitat, landslide prone areas, long fire interval high elevation forests, underburned areas with few dead trees, and most streamside riparian reserves were excluded. Areas where salvage is not economically viable were also excluded. The document analyzed five alternatives for managing burned areas within those 41,000 acres.
- Over 600 people attended 22 tours to observe the aftermath of the wildfires and discuss post-fire management options. About 200 people or groups sent comments on the Draft EIS which was released in March 2005. The majority of public comments were concerns about the effects of salvage logging to wildlife habitat, LSR's, and uninventoried roadless areas.

- To ensure the best possible science was used for the environmental analysis an oversight group of scientists provided guidance to the project. This group included scientists such as: Stephen Hobbs, Chair of the Oregon Board of Forestry, of the Forest Science Department at Oregon State University, Jamie Barbour, Program Manager of the Focused Science Delivery Program at the US Forest Service Pacific Northwest Research Station (PNW), Nancy Gilbert of the U.S. Fish and Wildlife Service, and Forest Service leaders.
- In March and April 2005, 7 scientists were invited to review the DEIS. The group included Jerry Franklin, Paul Hessburg, Pete Bisson, Mark Harmon, Kermit Cromack, Stephen Schoenholtz, and Paul Adams. The group has expertise in research on soil compaction, nutrient cycling, fire regimes, watersheds, and forest ecology. The scientists' reviews of the analysis were generally positive with suggestions on how to clarify concepts and ideas for future post-fire management research.
- The Preferred Alternative proposed the most treatment. On August 2, 2005, Deschutes National Forest Supervisor Leslie Weldon decided a modified version of Alternative 2 best addresses the purpose and need of the project while responsibly addressing key issues. It treats up to 6,803 acres by salvage of fire killed trees, fuels reduction and reforestation.
- Long term ecological benefits include accelerating forest recovery through replanting, and creating conditions where fire can play a more natural role in the future. In response to public comments, closures of unneeded roads were increased slightly so that 74 miles of roads would be decommissioned or closed.
- Approximately 37 million board feet of timber would be harvested in the first 3 sales being offered. This is about 9,000 truck loads of logs or enough structural timber to build almost three thousand, three bedroom homes.
- On July 22, 2005, Regional Forester Linda Goodman approved a request for an emergency situation exemption from stay for the project. This allows harvest of fire killed trees in the 3 salvage timber sales (Little, Booth, and Butte) to proceed while challenges to the project are being resolved. Ms Goodman concurred with the concern that delaying implementation could decrease timber value to the point where purchasers would not bid on the timber sales.
- The Emergency Situation Determination (ESD) is an authority granted to the Forest Service which can exempt projects from standard timelines allowed for resolving appeals before implementation in situations where emergencies, including substantial loss of economic value to the Federal Government will occur.
- The ESD is needed because analysis of projected wood decay rates indicated that delay would result in a loss of approximately 1.1 million dollars to the Federal government if operations were delayed another field operating season (until June 2006). Normally, a project is not implemented for 105 days after a Record of Decision is signed, or longer depending on appeals, litigation, or possible seasonal restrictions.
- About 5.1 miles of new temporary roads are needed for timber harvests and would be closed after planned activities are completed. About 71 miles of existing roads would be closed.
- Three timber sales were advertised on August 2, 2005. The auction is scheduled for August 9th. Operations could begin as soon as mid-August.

POINT OF CONTACT:

Name: Maret Pajutee, District Ecologist, Sisters RD, Deschutes NF. (541) 549-7727

The B&B Fire Recovery Project FEIS and Record of Decision can be viewed online by logging onto:

<http://www.fs.fed.us/r6/centraloregon/projects/units/sisters/b-b-fire/bb-final-eis.shtml>

Restoration Work in the B&B Wildfire Area May 25, 2006

Background:

Two wildfires burned on the Sisters Ranger District during the summer of 2003- 1) Link and 2) B&B

The B&B Fire was the largest wildfire in Deschutes National Forest History

- **Land ownership of B&B Fire & Link Fires**= Total area= 94,281 acres
 - National Forest (Deschutes and Willamette) = 89,227 acres
 - Deschutes NF/Sisters RD= 69,659 acres
 - Willamette NF= 19,568
 - Wilderness on NF= (about 40,000 acres of total)
 - Confederated Tribes of Warm Springs= 3,803 acres
 - Private= 1,251 acres

The Link Fire- about 3,589 acres

- The human-caused Link Fire started July, 5, 2003, in a forest with many insect and disease killed trees, and burned at mixed intensities, threatening the Suttle Lake recreation area and Black Butte Ranch. No structures were lost.

The B&B Fire- about 90,692 acres

- **The lightning-caused Bear Butte and Booth Fires**, or B&B Complex Fire, were detected on August 19, 2003, in wilderness areas west of Camp Sherman. The Central Oregon Arson Task Force investigated the fires and determined that lightning from earlier storms smoldered and started both fires.
- **Insect and disease killed trees and dense forest conditions** fueled a rapidly spreading wildfire which closed Highway 20, required major evacuations (details below) and became the largest wildfire in Deschutes National Forest History
- **Evacuations** were ordered for Hoodoo Ski Bowl, Camp Sherman, Mt. Jefferson Wilderness, portions of the Pacific Crest Trail, Wizard Falls Hatchery, the Suttle Lake Recreation area, portions of Highway 20, portions of the Mt. Washington Wilderness, Round Lake and the Metolius River recreation areas.
- **Firefighters contained the blaze** on September 26, 2003, and controlled it on November 4, 2003. **Structure losses** included eight camp cabins, a shower house and an auditorium at Round Lake Christian Camp. A Nordic ski shelter at Santiam Pass was also destroyed. More than 1,100 structures were placed under a structure protection program composed of 12 structural task forces.

- **Incident cost** on October 14, 2003, on the B and B Complex Fire east and west side was \$39,200,000. This figure does not include the fire recovery costs forests incurred, after incident management teams left.

Restoring the Fire Area

Work to help the area recover began immediately but was complicated by planning, lawsuits, appeals, and post-fire activities on three other 2002/2003 wildfires. Emergency rehabilitation to protect water quality, hazard tree removals to protect public safety, small salvage sales, noxious weed control, and tree planting were begun while a large salvage sale, the B&B Fire Recovery Project was being planned.

Impacts of Fire Suppression

- **Fire Suppression impacts** such as fire lines and safety zones, were rehabilitated in the fall of 2003.

Public Safety- Removing hazards-

- Thousands of dead trees along roads and trails have been cut and removed or cut and left to improve safe passage. Crews estimate they cut at least 80 hazard trees per mile on 38 miles of road - over 3000 of the most dangerous hazard trees were felled shortly after the fire. Another 3,000 hazardous trees were dropped and left in riparian areas after the B&B Roadside Salvage Sale.
- Managers used categorical exclusion authorities to remove and sell some hazardous trees (B&B Roadside Salvage Sale).
- Hazard signing and gate closures were installed to ensure public safety until hazard trees could be removed.

Watershed Rehabilitation

- **Emergency watershed rehabilitation** was initiated immediately through a Burned Area Emergency Rehabilitation Team (BAER).
 - **BAER Recommendations-** The BAER Team identified needed actions such as installing larger culverts to protect and prepare roads from increased water flows, improving road drainage to guard water quality, protecting streamside areas, and removing noxious weeds. These actions cost approximately \$3 million dollars.
 - **Road drainage improvements:**
 - **7 major Culverts-** Over \$1,000,000 of costs were associated with the replacement of 7 major culverts or bridges.

- **12 small culverts** were replaced
- **30 drainage dips, 70 water bars, 7 rock fords** were constructed/ or improved
- **72 culvert inlets were cleaned/brushed, and 23 miles of road surface** drainage was improved.
- **Storm patrol** trips inspected road conditions after rain events to look for damage and identify problem areas for erosion concerns.
- **Riparian recovery-** We built 7 buck and pole riparian enclosure fences on ten acres of riparian areas that were severely burned in the head of First, Abbot, and Brush Creeks. This helps with riparian plant recovery by reducing grazing by deer and elk. This helps seed reach areas downstream more rapidly and speeds recovery.
- **Slope stability Evaluation-** A slope stability assessment of steep slopes prone to landslides above Hwy 20 west was done.
- **Erosion Monitoring – We monitored sediment production along road segments which might carry soil into streams**

Reforestation

- **In 2004-** We planted about 1,650 acres of trees in the fire area.
- **In 2005 -** We planted about 3,000 acres in the fire area. Of those 474 acres were riparian restoration, planted with vine maple, dogwood, rose, bitter cherry, elderberry, cottonwoods and aspens.
- **In 2006 -** We are planting around 3,400 acres of the B&B fire area this year. Of that 1,249 acres are with sale units of the B&B Fire Recovery Salvage. Although much of the area is replanted to the previously dominant tree, ponderosa pine, diverse species are planted as appropriate to the site including western white pine at higher elevations and Douglas fir, larch, Engelmann spruce in moist forest areas.
- **A Total of 8040 acres have been planted**

Noxious Weed Control and Monitoring

- Non native plants, noxious weeds are stimulated by fires to spread and grow.
- **About 62 known noxious weed sites were known to occur** in the B&B fire area before the fire. Weed sites were revisited and manually pulled for 2 years and new sites were identified and mapped.
- **97 new sites were found.**
- **Weed sites now total 172 sites over 95 acres and are being included in a larger plan for weed treatment** on the Deschutes and Ochoco National Forests.

Recreation

- **Two burned campground toilets** at the Abbot and Round Lake campgrounds were sealed to protect public safety.
- **Trail drainage was improved on 43 miles of trail, 50 miles of trails were cleared, and hazardous areas were signed or cleared of hazardous trees.**

Economic Recovery- Salvage of burned trees

- **Burned portions of two ongoing timber sales, Lower Jack and Coil Fiber** were salvaged in summer of 2004 and fall/winter of 2005, using Healthy Forest Initiative authorities and limited salvage CE's. 348 acres were salvaged producing 2200 mbf.
- **The B&B Fire Recovery Project** proposed salvage of dead trees, fuels reduction, replanting, and road closures. A decision was issued on the project on August 2, 2005. The chosen alternative proposed active management including salvage, reforestation, and road closures on up to 6,823 acres of the burned area.
 - **This is about 7% of the total fire area** or 17% of the burned area outside of wilderness. Areas excluded are: other ownerships, wilderness, research natural areas, roadless areas, spotted owl habitat, areas prone to landslides, high elevation forests, plantations, underburned areas with few dead trees, most streamside riparian reserves and areas where salvage was not economically viable.
 - **Three timber sales (Booth, Butte, and Little) on about 3300 acres were sold on August 9th for about \$3.8 million.**
 - On August 11th a lawsuit was filed on the project by a coalition of six environmental groups. Lawsuits continue in both the US District and Appellate Court (9th Circuit).
 - **Approximately 25 million board feet of timber has been harvested** from the three sales over the fall and winter. Much of the logging was completed over snow, helping protect soils and recovering vegetation. Approximately 87% of the acres on all three sales have been harvested.