

**OREGON
ENVIRONMENTAL QUALITY
COMMISSION MEETING
MATERIALS 01/09/1997**



State of Oregon
**Department of
Environmental
Quality**

****REVISED** A G E N D A**

ENVIRONMENTAL QUALITY COMMISSION MEETING

January 9-10, 1997
DEQ Conference Room 3A
811 S. W. Sixth Avenue
Portland, Oregon

Notes:

Because of the uncertain length of time needed for each agenda item, the Commission may deal with any item at any time in the meeting. If a specific time is indicated for an agenda item, an effort will be made to consider that item as close to that time as possible. However, scheduled times may be modified if agreeable with participants. Anyone wishing to listen to the discussion on any item should arrive at the beginning of the meeting to avoid missing the item of interest.

Public Forum: The Commission will break the meeting at approximately **11:30 a.m.** for the Public Forum if there are people signed up to speak. The Public Forum is an opportunity for citizens to speak to the Commission on environmental issues and concerns not a part of the agenda for this meeting. The public comment period has already closed for the Rule Adoption items and, in accordance with ORS 183.335(13), no comments can be presented to the Commission on those agenda items. Individual presentations will be limited to 5 minutes. The Commission may discontinue this forum after a reasonable time if an exceptionally large number of speakers wish to appear.

Thursday, January 9, 1997 Worksession Beginning at 1:00 p.m.

1. **Informational Item:** Review Revised Environmental Clean-up Rules
2. **Informational Item:** Total Dissolved Gas Update
3. **Informational Item:** Pollution Control Tax Credit Proposed Rule Change
(This item has been removed from this meeting's agenda)

Friday, January 10, 1997 Beginning at 8:30 a.m.

- A. **Approval of Minutes**
- B. **Approval of Tax Credits (No tax credits will be presented)**
- C. **†Rule Adoption:** Revised Environmental Clean-up Rules
- D. **†Rule Adoption:** Air Quality Industrial Rules (Small Source Title V Deferral Extension)

- E. **Action Item:** Extension of the Tualatin Sub-basin Nonpoint Source Management Implementation/Compliance Schedule and Order (EQC Order)
- F. **Action Item:** DEQ v. Russell Henry, Jr. dba Henry Dozing and Excavating and Lane Ward--Appeal of Hearing Order Re: Violation and Assessment of Civil Penalty
- G. **Action Item:** Petition to Repeal a Portion of OAR 340-024-0301 Regarding Vehicle Inspection Program for W. and E. Scappoose
- H. **Action Item:** Department of Environmental Quality's Recommendations Regarding the Deadline for Accepting Comments on Proposed Rulemaking
- I. **Informational Item:** 8th Annual Environmental Clean-up Report
- J. **Informational Item:** Report to the 1997 Legislature on Status and Alternative Funding Mechanisms for the Toxics Use Reduction Program
- K. **Informational Item:** Report to 1997 Legislature on Orphan Site Funding Review
- L. **Informational Item:** Report to the 1997 Legislature on Solid Waste "Budget Note" Review
- M. **Informational Item:** Solid Waste Management Program Biennial Report to the 1997 Legislature
- N. **Commissioners' Report (Oral)**
- O. **Director's Report**

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

The Commission has set aside February 27-28, 1997, for their next meeting in Portland, Oregon

Copies of staff reports for individual agenda items are available by contacting the Director's Office of the Department of Environmental Quality, 811 S. W. Sixth Avenue, Portland, Oregon 97204, telephone 229-5395, or toll-free 1-800-452-4011. Please specify the agenda item letter when requesting.

If special physical, language or other accommodations are needed for this meeting, please advise the Director's Office, (503)229-5395 (voice)/(503)229-6993 (TTY) as soon as possible but at least 48 hours in advance of the meeting.

January 10, 1997

Department of Environmental Quality



EQC Work Session

Revised Environmental Cleanup
Rules

Brooks Koenig

Department of Environmental Quality

1

Revised Cleanup Law



■ Requiring Rulemaking

- Risk Assessment
- Hot Spots
- Remedy Selection

Department of Environmental Quality

2

Big Picture Changes



- More Risk Based
- Hot Spots
- More Emphasis on Cost
- More Emphasis on Use
- End of “Background” and “Lowest Feasible Concentration”
- End of “Permanence” Preference

More Risk Based



- One chance in one million or 1×10^{-6}
- Hazard Index (H.I.) < 1
- Point Before Significant Adverse Impacts (Ecological)
- Significant Adverse Effect on Beneficial Use
- Probabilistic Risk Assessment

Hot Spots



- Definitions
- Different Standards for Different Media
- Treatment Levels
- Higher Cost Threshold
- Hot Spot Study

More Emphasis on Cost



- Remediate to “Protective”
 - Not Necessarily Concentration Based
- Hot Spot Treatment
- “Feasible” Balancing Factors-
 - Effectiveness
 - Reliability
 - Implementability/Implementation Risk
 - Reasonableness of Cost

More Emphasis on Use



- **Current & Reasonably Likely Land Use**

- Range of Uses
- Range of Exposures

- **Current & Reasonably Likely Water Use**

- No Default to Drinking Water
- Range of Uses
- Some Uses Without Standards

- **Institutional controls**

- Deed restrictions, physical barriers

Implementation Plan



- **Site Clearinghouse**

- Field test approach

- **Guidance**

- **Training**

- **Various Public Forums**

- **Reconvene CAC**



Cleanup Rule Process

Waste Management and Cleanup
Dick Pedersen
Department of Environmental Quality

Overview of Process



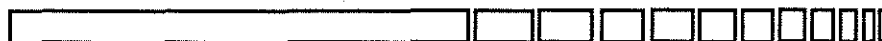
- Stakeholder Involvement Prior to Bill
 - AOI Sponsored Bill
 - Early DEQ Involvement
 - Other Stakeholders (City of Portland; OSPIRG)
- Stakeholder Involvement Post-Bill
 - Required Rulemaking by January '97
 - Formation of Advisory Groups
 - Extensive Public Involvement

Stakeholder Involvement



- Central Advisory Committee
- Technical Work Groups
- Citizen Discussion Groups
- Kick-off Sessions
- Mailing Lists/Factsheets
- Various Public Forums
- Information Sessions
- Public Hearings
- Written Comments

Central Advisory Committee



- 13 Citizens With Diverse Backgrounds
 - Industry Representatives
 - Environmental Representatives
 - Local & Tribal Government
 - Attorneys
 - Technical Experts
- Met every 3 weeks for 10 months

Central Advisory Committee



- Don Haagensen; Cable, Huston et al
 - Dick Bach; Stoel Rives
 - Jan Betz; City of Portland
 - Kathy Brewer; Hewlett Packard (CH2M-Hill)
 - Rich Craig; Warm Springs
 - Liz Frenkel; Sierra Club
 - Bill Funk; NW School of Law
 - Sheila Holden; PP&L
 - Ernie Niemi; ECONorthwest
 - Jim Owens; Cogan Owens Cogan
 - Steve Shain; Zidell
 - Randy Tucker; OSPIRG
 - Kevin Godbout; Weyerhaeuser
 - *Jim Whitty; AOI
 - *Jim Petersen; Karnopp Petersen et al
- * Former Member

Technical Work Groups



- 2 Groups (~ 9 members each)
 - Industry Representatives
 - Technical Experts
 - Attorneys
 - DEQ Staff
- Met every two weeks for 9 months

Technical Workgroups



■ Risk Assessment

- Tom Foster; Maul/Foster
- Rob Forrest; Truax Harris
- Kathy Futornick; Port of Portland
- Mark Whitson; PTI
- Janet Senior; City of Portland
- Dennis Shelton; CH2M-Hill
- Tryg Steen; PSU
- Paul Whitney; Beak
- Julie Wilson; GeoEngineers

■ Remedy Selection

- Rick Glick; Davis Wright Tremaine
- Debra Forslund; BPA
- Carl Batten; ECONorthwest
- Brad Berggren; Geraghty & Miller
- Bill Cobb; CH2M-Hill
- Kevin Godbout; Weyerhaeuser
- Dan Kearns; Preston Gates & Ellis
- Tony Palagyi; Texaco
- David Wilson; Pacificorp

Citizen Discussion Groups



■ February '96 ■ Statewide Effort

- Baker City
- Bend
- Coos Bay
- Corvallis
- Eugene
- La Grande
- Medford
- Portland

- Explained DEQ's role in the Cleanup Process
- Highlighted Issues
- Discussed DEQ's Rule Approach

“Kick-off” Sessions



- November 1995
 - Introduced Topics
 - Laid Out Process
 - Introduced CAC Members
- October 1996
 - Distributed Proposed Rules
 - Explained Provisions
 - Promoted Continuing Public Participation

Other Public Forums



- Numerous Continuing Legal Education (CLE) Sessions
- Industry/DEQ Sponsored Sessions
- Professional Organizations
- Academic
- Civic/Economic Development
- Publications/Media
- DEQ Mailings

Partial List of Outreach Events



- CLEs
 - NW School of Law Haz. Waste Law
 - Environ. Law Education Center
 - ABA-Sponsored
- Industry Sessions
 - REMCON
 - PTI Risk Assessment
 - PRC Risk Assessment
- Professional Groups
 - Oregon Ass'n of Environ. Professionals
- Publications/Media
 - Oregon Insider
 - League of Oregon Cities Bulletin
 - Cable Telecast of Kick-off Session
- DEQ Mailings
 - 2,500

Information Sessions



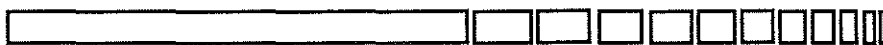
- Before Hearings
- Summarized Rule
- Discussed Issues
- Portland
- Coos Bay
- La Grande
- Bend
- Eugene
- Corvallis
- Medford

Public Hearings



- Hearings in 7 Locations
 - Same Locations as Info Sessions
- Limited Testimony
 - Two Oral Comments

Written Comments



- Comment Period: 45 Days
- 19 Timely; 5 Late
- Comments Led to Refinements
 - Basic Structure Followed CAC Agreements
 - Flexible, Workable Approach

Process Summary



- **Broad Participation**
 - Citizen Involvement
 - Multiple Opportunities to be Heard
- **Meets Interests of Participants**
 - Protective but Practical
- **Workable, Flexible Rules**
 - Commitment to Revise if Necessary

Independent Scientific Advisory Board

Northwest Power Planning Council

National Marine Fisheries Service

January 6, 1997

Dr. Mark J. Schneider
Chief, Hydro Branch
Environmental & Technical Services Division
National Marine Fisheries Service
525 NE Oregon Street
Portland, OR 97232-2737

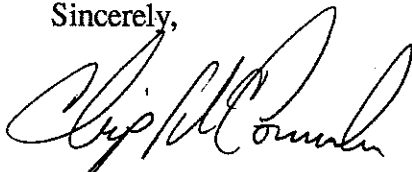
Dear Mark:

Attached you will find the report ISAB 97-1, the Independent Scientific Advisory Board's (ISAB) review of your "1996 Annual Report to the Oregon Department of Environmental Quality" (draft of December 1, 1996). You requested the ISAB review by letter to me on November 14, 1996.

The review represents consensus by the Board. Your draft report was evaluated in detail by a subcommittee chaired by Dr. Charles Coutant. A draft review was prepared for full ISAB consideration, and comments of the full committee were incorporated in this January 6 revision.

Although time is short between now and your January 15, 1997 deadline for presentation to the ODEQ, we hope that these comments will be useful for a revision of your annual report and for preparations for the 1997 migration season.

Sincerely,



Willis E. McConnaha
ISAB Science Coordinator,
for the Independent Scientific Advisory Board

Review of the National Marine Fisheries Services'
"1996 Annual Report to the Oregon Department of Environmental Quality"
related to Waiver of Dissolved Gas Standard
(December 2, 1996 draft)

Independent Scientific Advisory Board

January 6, 1997

Issue

By letter dated November 14, 1996 from Mark J. Schneider to Chip McConnaha, the National Marine Fisheries Service, Environmental & Technical Services Division (Portland, Oregon) requested that the Independent Scientific Review Board (ISAB) review its draft report to the Oregon Department of Environmental Quality. That report presents results of 1996 monitoring and evaluation related to the Department's 1996 waiver of state water quality standards for total dissolved gas saturation in the Columbia and Snake rivers to facilitate salmonid outmigration with spill. This ISAB report is our response to that request.

Background

In April 1996, the Oregon Department of Environmental Quality (ODEQ) considered a request by the National Marine Fisheries Service (NMFS) for a waiver of water quality standards for dissolved gas saturation in the Columbia and Snake rivers. The waiver from the standard of 110% total dissolved gas saturation (TDGS) was requested for a period in spring when voluntary spill at eight dams might be used by fishery managers to assist migration of salmonid smolts to the ocean. Spill has been demonstrated to yield higher survival than turbine passage in studies of smolt survival at several species and several dams [Schoeneman et al. 1961 (chinook salmon at McNary Dam); Johnson and Dawley 1974 (chinook salmon at Bonneville Dam); Long et al. 1975 (steelhead at Lower Monumental Dam); Raymond and Sims 1980 (chinook salmon at

John Day Dam); Weitkamp et al. 1980 (steelhead at Wells Dam); Heinle and Olson 1981 (coho salmon at Rocky Reach Dam); Ledgerwood et al. 1990 (chinook salmon at Bonneville Dam); Iwamoto et al. 1994 (chinook salmon at Little Goose Dam); Muir et al. 1995 (chinook salmon at Lower Monumental Dam). Spill also appears to pose less risk for fish at dams than some engineered fish bypasses (Ledgerwood et al. 1990).

However, spill contributes to an increase in TDGS in the river downstream of dams such that conditions well above the standard can be created, including levels that exceed those demonstrated to be lethal to juvenile salmonids in laboratory studies because of gas bubble disease (GBD) (Ebel 1969; Bouck 1980; Weitkamp and Katz 1980; USACE 1994). Despite these potential detrimental effects, the NMFS' Endangered Species Act Section 7 Biological Opinion (NMFS 1995) includes as a "reasonable and prudent alternative" the spillage of water at dams during the migration season for the protection of juvenile spring/summer chinook salmon. Under the Biological Opinion, the NMFS directed the U.S. Army Corps of Engineers to achieve 80% fish passage efficiency (FPE) using spill. Because the prescribed spill program is likely to cause TDGS to exceed 110%, the NMFS seeks annual waivers from these standards in order to implement the spill program.

The spill program under the Biological Opinion operates in an environment in which spill may be necessary for other reasons. Spillage may be necessary because the volume of water flowing in the river exceeds the physical capacities of fully-operating turbines to pass it. Some turbines at a dam may not be operable (such as requiring maintenance), thus lessening the physical capability of the dam to pass water. Turbines may also not be used because there is no market for the electricity they would produce, thus the turbines are stilled and the water shunted over spillways. Spillage forced upon dam operators by the functional hydraulic capacity of their dams is generally called involuntary spill. Spillage under the Biological Opinion (or other requests by fishery managers) is generally termed voluntary spill. In high-water years such as 1996, spill is a mixture of voluntary and involuntary types.

Barging smolts is an alternative to assisting their natural in-river migration with spill. Fish that pass dams via spill are not available for collection in fish bypass systems for loading onto barges. An ongoing question is whether barge transportation or natural,

in-river migration (with or without spill) is more effective for the survival of downstream migrating juvenile salmonids. Thus, the relative efficacies of barge transportation of fish and in-river migration enter into discussions of spill, as they did in the deliberations of the ODEQ.

The ODEQ granted NMFS the requested waiver, but with several stipulations. One stipulation was that the NMFS provide the ODEQ an annual report on several TDGS-related questions by January 15, 1997. The NMFS drafted the annual report and released it for peer and public review on December 1, 1996. The Independent Scientific Advisory Board (ISAB), established to assist the NMFS and the Northwest Power Planning Council in scientific review, was requested to provide peer review. This document is the ISAB review of the NMFS' December 1, 1996 draft annual report.

Seven topics were identified by the ODEQ for inclusion in the NMFS annual report. The NMFS organized the annual report in seven corresponding sections, each with an identified author or authors. The topics were (as given in the NMFS draft report):

1. Statistical evaluation of the available PIT-tag data to determine week-by-week survival changes.

2. Week-by-week estimates of the quantities of voluntary vs. involuntary spill. The factors causing the spill scenario shall be stated, i.e., hydraulic capacity, turbine outages, lack of power market, etc.

3. Empirical estimate of survival associated with spill.

4. Incidence of GBD signs in adult [salmonids] and estimates of upstream spawning delays of returning salmonids from increased spill.

5. Survival estimates of transported vs. untransported fish at collector projects.

6. Survival and incidence of GBD data from net pens below Bonneville Dam.

7. Incidence of GBD signs in resident fish species collected from below Bonneville Dam.

Although the NMFS' draft annual report attempts to address each topic, the agency found that responding to the exact wording of the stipulation was difficult due to the complexity of the issues. Thus, NMFS chose to respond in slightly different ways.

General Comments

The ISAB commends both the ODEQ and the NMFS for their agreement to identify topics of concern regarding modifications of the TDGS standard and to present the relevant information for the benefit of their agencies and others in the basin. Aided by peer review and revisions, this strategy should enhance mutual understanding of both what is known about TDGS effects and what still needs to be learned, with the ultimate benefit of reasonable and effective regulations.

Both the statement of topics and the provision of relevant information could be better refined to focus on the apparent items of concern. For example, the ODEQ did not specifically state that the survival data requested in topic 1 and the spill data requested in topic 2 should be from the same reaches of the river system, yet a comparison of survival with spill seems to be the obvious information need. However, the annual report provides survival data from the Snake River dams and spill data from the lower Columbia River dams, which cannot be compared. As a second example, topic 4 can be taken literally as questioning delays in actual spawning (deposition of eggs in redds) or as what seems to be the real concern, any delays in upstream spawning migrations caused by spill and high TDGS. The NMFS took a literal view and thus provided a somewhat unsatisfying response. Also, topic 6 requests information on GBD data from net pens below Bonneville Dam without specifying what species might be in those pens. The NMFS assumed that the ODEQ meant juvenile salmonids and noted that they did not do that type of study in 1996. Yet the information, including that for salmonids, is available in response to topic 7 on resident species.

We understand that at least one attempt was made to bring the respective staffs together for better mutual understanding of the topics and the information desired. If this annual report approach is taken in another year, the agencies could fruitfully spend additional time together to better understand what information is wanted and what kind of information can reasonably be provided.

The fact that 1996 was an especially high flow and spill year through the system should have provided an exceptionally good year for estimation of spill effects on fish survival. We were surprised that none of the responses referred to the monitoring data

on gas bubble disease signs in fish collected by the Fish Passage Center. Although subject to some criticism in their own right, these data should have been germane to several of the topics discussed in the report. Clearly, more synthesis of 1996 data from all sources is needed. Timely interpretation is important before designing studies for 1997, which appears to be another opportunity to evaluate conditions under high involuntary spill.

Detailed Comments by Section

Introduction.

The firm statements in the second paragraph that migration routes over spillways or through bypass systems are the safest should be tempered by data that show some bypasses can be more damaging than some turbines. A review by Chapman et al. (1991) indicates delayed mortality due to effects of passage through the entire bypass system at Lower Granite Dam produced estimated losses of 7.6, 4.4, and 5.1% in 1984, 1985, and 1986, respectively. Ledgerwood et al. (1990) showed smolt survival through Bonneville Dam was less for fish using the bypass than for fish passing through the turbines. High mortality appears to be due to mechanical problems within the bypasses and placement of the bypass outfalls in zones of high predation. The first sentence needs reworking for tense correction.

The next to the last sentence in the final paragraph is unclear. This sentence is especially important as it is a concluding sentence for the report. Does it mean that both low percentages of fish with GBD signs and high observed survival rates occurred at times when TDGS levels were high and well above 110%?

Topic 1. Statistical evaluation of the available PIT-tag data to determine week-by-week survival changes.

Our comments on this topic fall into two categories. One is related to the strictly statistical aspects. The other relates to the possible use of a more functional, alternative model for making evaluations of survival.

Statistical Aspects. We are unsatisfied with the statistical treatment as it is presented. We have several specific comments:

1. What exactly was the method used for estimating mortalities?

Initially the author calls the method Cormack-Jolly-Seber, and later just Jolly-Seber. What exactly is the formula used (for the estimate and for the standard error)? What is the reference? If packaged software was used, what package? If NMFS' own software was used, where is it archived and where is documentation of its validation? What are the crucial assumptions in application of this method or where are they discussed (citation needed)? Were those assumptions verified to have been met, at least practically, in application to this particular study?

2. Where are the data?

The report does not display (by table or figure) or reference (by document number or Internet address) the actual data. The graphs provided are very remote from the actual data; they are smoothed graphs of a time series of estimates made from the data, and the smoothing procedure is essentially undefined (the S-plus package is notoriously bad about documentation of their methods). As a consequence the reader has no picture of what the original data looked like, and therefore no way to judge whether the analyses done were reasonable, whether the interpretations were reasonable, and whether alternative analyses might have lead to very different interpretations. If not actually presented in this report, a citation chain for the data and analysis methods would be helpful.

3. What are the conclusions?

With the material presented, the reader cannot draw any conclusion about the key question--a relationship between survival and the degree of gas supersaturation. The correlation analysis for daily data showed a very low correlation, but because of the way the results are reported we can't tell why the correlation is so low.

For example, we would like to know whether the low correlation is owing to the absence of a relationship, or to non-linearity in a relationship, or possibly to measurement noise superimposed on a relationship, or to a discernibly patterned perturbation superimposed on a relationship, or to random process variation superimposed on a relationship, etc. Exploration of these possibilities would indicate where we should look next: should we recommend a larger sample size (as is proposed in the Idaho PIT tag study); should we focus on a search for other factors which might modulate the influence of gas supersaturation on survival; should we go to a different kind of experimental design; or should we actually conclude that there is little or no relationship in practice? No one can even start to explore these questions without the data.

We note further that the pattern that does emerge from analysis of the "smoothed" time series of estimates is inconclusive, notwithstanding some reported p-values that superficially look "significant." The graphs of the smoothed time series showed that, grossly, there were three episodes during the period of observation: two of these (early season, late season) had high gas supersaturation, and one (mid-season) has less gas supersaturation. During one of the episodes with high supersaturation, survival was high; during the other, survival was low. During the one episode of lesser gas supersaturation, survival was high. What can we conclude from that?

It is not technically valid (and it is extremely misleading) to compute correlation coefficients for a smoothed time series of estimates of this sort. The p-values at face value are meaningless, and should not be reported. Even with disclaimers, such p-values should not be reported, for invariably they fall into the hands of those who would misrepresent them.

Alternative Model. The NMFS report provides important reach-specific survival data, assuming the statistical aspects are further explained, but conclusions are limited by a strictly statistical evaluation of the results. Although the statistical evaluations of survival and environmental variables are interesting and informative, this analysis could be improved by consideration of a dose-accumulation model for TDGS effects on migrating fish. In a dose-accumulation model, the time it takes for a toxicant to take

effect is considered. Because of the time it takes juvenile salmonids to pass through Snake River reservoirs, the effects of upriver exposures may not be manifested until fish have reached the lower river reaches. Information on durations of exposure required for different levels of TDGS to cause biological effects is available in TDGS bioassay data in the literature (e.g., Blahm et al. 1975; Dawley and Ebel 1975; Fickeisen and Montgomery 1978; Bouck 1980; Colt et al. 1986; Jensen et al. 1986; Backman et al. 1991). Many of the relevant data are cited in recent reviews (e.g., Fidler and Miller 1993). The advantage of this approach will be evident as more detailed comments are made.

Even though much of the voluntary spill occurred downstream of McNary Dam, it apparently was not possible to develop PIT-tag-based survival estimates in that reach. A statement on page 4 about the distribution of PIT-tag data in relation to Biological Opinion spill seems needed (see topic 2). It would be useful to include a time schedule showing when it will be technically feasible to make survival estimates for reaches below McNary Dam.

The stated "small number of detections below McNary Dam" (1st paragraph on p. 4) could be interpreted as being caused by mortalities in the lower reach of river that resulted from accumulated exposures to high TDGS in upper reaches rather than a problem of lack of detectors at downriver sites. Presentation of both possibilities would be informative and set the stage for further investigation. Beyond the question of simple "toxicity" of TDGS, the interactive effects of predation, food web capacity, and high temperature would influence the survivorship of fish stressed earlier in their migration.

The presentation on environmental variables at the top of page 7 seems to suggest that fish receive their exposures *at* the dams. In fact, the exposure is in the reservoirs between dams and dosage is likely related to travel time and travel depth between dams. Thus, the statistical model leaves out an important feature of the TDGS exposure--its duration. Again, small number of detections at John Day and Bonneville dams may be due to mortalities below McNary due to accumulated doses from upstream. Thus, the urgency for adequate detectors at lower-river dams.

Constant high survival between Lower Granite Dam and Lower Monumental Dam noted in the middle of page 7 may not indicate good conditions there. Effects of

TDGS may be accumulating but not yet having an effect on survival. Table 1 indicates that the poorest survival occurs at the lower reaches from Lower Monumental Dam (LMO) to McNary Dam (MCN). There are two main interpretations of this information. One interpretation is that TDGS conditions in the lower Snake are worse than upstream (and the effects are shown there). Another interpretation is that doses of high gas accumulate in the fish as they migrate downstream and reduction in survival is exhibited primarily when fish have reached the lower river reach. The lower survival probabilities on the last set of dates may indicate that the accumulation of damaging doses occurs more rapidly at warmer temperatures (as has been demonstrated in previous studies such as Nebeker et al. 1979) and is manifested sooner (i.e., farther upstream) than at cooler temperatures. Alternatively, the especially high TDGS levels noted for Ice Harbor Dam tailrace may have been occurring upstream as well (no data are given). Such a dose-accumulation model does not seem to have been explored by the authors as an explanation for observed effects. We believe it should be.

Lack of statistical significance in survival between Lower Granite Dam and McNary Dam noted at the bottom of page 7 is likely a matter of data dilution. That is, as data from the upstream reaches showing high survival are combined with the data showing mortalities in the lower reaches, the statistical ability to detect lowered survival through the whole reach is decreased. This is another very good reason for considering a dose accumulation model rather than a statistical one for establishing causes.

In Figure 2, it is unclear what the purpose would be for drawing a line at 130% TDGS at Ice Harbor Dam. The line unrealistically gives an impression that values above it may be bad while those below it are good. Without this line, it is clear that fish survival declines markedly after a general rise in TDGS from near 120%. Again, it is the integrated dose between Lower Granite Dam and McNary Dam that is pertinent, not necessarily the TDGS value at Ice Harbor Dam. Moreover, the figure is unclear about the dates. Fish dated on the figure according to when they left Lower Granite Dam would experience TDGS at a time different from the Ice Harbor TDGS data by some unstated number of days (their migration time).

In the discussion, the overall conclusion that there is a demonstrated effect of high TDGS is justified by the data and statistical correlations, especially for steelhead.

But, the analysis would have been improved by consideration of duration of exposure of fish to high TDGS (integrated doses during migration downriver), which might explain many details of the observed effects, such as seeming anomalies between dates. The general concept of accumulation of doses (similar to temperature degree-days) during outmigration would explain a general trend toward high survival between upper river dams and lower survival downriver (where the accumulated doses would show their effects). The notion of steelhead becoming residualized that is introduced in the discussion would be better received if supported by some data or citations.

As a direct response to the ODEQ topic, we would recommend that data on fish survival be obtained from the lower Columbia River, where voluntary spill is implemented. This is especially important at The Dalles Dam, because the reach below John Day Dam is of special concern for high TDGS levels.

Topic 2. Week-by-week estimates of the quantities of voluntary vs. involuntary spill.

This section of the NMFS report gives valuable information, but not for the appropriate reaches. The ISAB believes that it is implicit in the sequence of topics 1 & 2 that the nature of spill was being requested in the reaches for which survival data were available. As it stands, survival data are provided from Lower Granite Dam on the Snake River to McNary Dam on the Columbia River, yet the spill characterization is given from McNary Dam to Bonneville Dam. These are completely non-overlapping reaches. Although the ODEQ perhaps should have made the topics more explicit, the NMFS response could have foreseen the importance of using data from the same reaches.

Moreover, the points in the discussion of this section generally are not well supported by the data in Table 7. For example, whereas the text notes that "most of the spill above 120% TDGS occurred due to the lack of turbine capacity," the table has only 6 of 36 entries where lack of turbine capacity was the highest category, and this occurred in only 3 of 9 weeks. All the rest of the entries attributed the highest spill to Biological Opinion voluntary spills. Thirteen of 36 entries (36%) were only Biological Opinion

voluntary spills. Thus, the Biological Opinion spills appear to be the dominant spill type in this accounting.

It is not clear why the accounting in Table 7 began with May 15 and ended with July 10. Was there no spill before and after these dates? The responses to topic 1 indicate much upriver spill before May 15. It would be helpful if the selection of these dates for data presentation were justified.

The "NMFS Note" needs further explanation with specific reference to quantities in Table 7. If the spills would have occurred anyway because of lack of turbine capacity in the face of high flows in a wet year, why are the spills not tallied as "lack of turbine" spills instead of Biological Opinion spills? Why were spills at The Dalles Dam never attributed to reasons other than Biological Opinion voluntary spills? Surely there must have been times when there was no market for power from that dam or turbine capacity was exceeded.

In general, this section gives little confidence that the accounting for spills is undertaken in a consistent and logical manner that gives a true picture of involuntary and voluntary spills. Moreover, the lack of geographic overlap of spill data with fish survival data makes conclusions about relationships impossible.

Topic 3. An empirical estimate of survival associated with spill.

The restriction of the response to voluntary spill seems unreasonable, based on the general nature of the stated topic. The statement that very little spill occurring in 1996 was voluntary spill is not consistent with the data given in Table 7.

The discussion of limitations in experimental procedures for responding to the topic seem inconsistent with the presentation for Topic 1, in which correlations were calculated for the various factors that may have contributed to survival estimates. Clearly, spill was one of the significant correlates. If the spill data from Topic 2 and the survival data from Topic 1 had been on the same reaches, a better estimate of effects of spill type might have been drawn. The monitoring data from the Fish Passage Center, which included the reaches reported in Topic 2, might have been referenced. The fact that 1996 was an especially high spill year (for whatever reason) through the system

should have provided an exceptionally good year for estimation of spill effects on fish survival.

Although estimation of survival associated with spill is a complex subject, this response does not appear to be adequate for communication with the ODEQ, given the information presented elsewhere in this annual report.

Topic 4. Incidence of GBD signs in adult [salmonids] and estimates of upstream spawning delays of returning salmonids from increased spill.

This response would be better if it were directed in a more straightforward manner to clear the intent of the topic. As noted in the general comments, it appears that concern for delays in upstream migration is the second part of the topic, not actual spawning. A consistent use of GBD throughout the report would be better than using gas bubble trauma (GBT) here.

The text is somewhat inconsistent with Table 8, which is not called out in the text, in its description of the incidence of signs. At Lower Granite Dam, four salmon were found with signs of GBT, not three as the text states. In addition, the table lists headburns, which some people consider to be a biological sign of high TDGS, in 128 fish (about 5%) distributed throughout the sampling period when adults were fairly abundant. No data on run timing were presented in response to the second part of the topic.

The discussion point that few adult salmon showed GBD signs despite high flows (and high TDGS) is a fair summary of the signs data. However, the discussion of delays seems to avoid the clear intent of this issue. Data should have been available from dam counts to determine whether adult migration rates were any slower (or faster) in this year of high flows and high spills compared to years with little spill. If the reports cited already do an adequate job of making this comparison, then their results could have been given, as was done for the Bjornn and Peery (1992) study.

We take exception to the "bottom line" given in the last sentence of the section. The purpose of the report to ODEQ, as we understand it, is to obtain the data needed to establish the risk to adult salmon from increased spill. It is not to obtain a restatement

that someone has already accepted the (unquantified) risk as a matter of policy. With the requested data, spill can more validly be included in an overall management strategy.

Topic 5. Survival estimates of transported vs. untransported fish at collector projects.

Although the answer is technically correct with respect to the 1996 outmigration, it does not seem responsive to the ODEQ. There is an opportunity here to summarize the existing data on transported and in-river fish from previous years that differed in amounts of spill. The high-spill year of 1996 will certainly add to the existing data in important ways, but it does not represent much of what we know about the subject (Williams et al. in press). The taggings in 1996 could have been put into perspective with reports of previous taggings (cited), and the importance of the high-flow 1996 for recoveries made in subsequent years emphasized.

Topic 6. Survival and incidence of GBD data from net pens below Bonneville Dam.

The note seems unduly unresponsive, if only in tone. The topic listed by the ODEQ was not restricted to salmonids, as implied by the note. As described in Section 7, there actually were net pen studies below Bonneville Dam. A more positive statement seems warranted that the responses to topics 6 and 7 have been combined because they result from a combined study of resident fish and salmonids that were collected from the river and subsequently held in pens.

Topic 7. Incidence of GBD signs in resident fish species collected from below Bonneville Dam.

This appears to be a well planned and conducted study that has yielded important results. Our comments are mainly editorial. In background, it is mentioned that spill has diurnal fluctuations. This point seems not to have been addressed in any of the other

topic responses, and perhaps should be. Under Findings, the first heading might better say Prevalence of GBD Signs in Non-Captive Fish. The same addition might be useful in the legend for Table 10 (to avoid confusion with the subsequent net-pen-held fish). The legend for Table 11 might note that it is for all species combined, and by weeks at three depths. Figure 6 could use some explanation and description of the results in the text rather than the simple callout on page 38.

Summary

The ISAB commends the ODEQ and the NMFS for identification of topics of concern for modifications of the TDGS standard and for presentation of relevant information for the benefit of their agencies and others in the basin. We have reviewed NMFS' draft report to ODEQ from the scientific perspectives of factual accuracy, openness of discussion, and alternative interpretations that may yield further gains in understanding and ability to manage the hydropower system and its living resources.

Both the statement of topics and the provision of relevant information could be better refined to focus on the apparent items of concern. If this annual report approach is taken in another year, we strongly urge that the agencies spend more time together to better understand what information is wanted and what kind of information can reasonably be provided. Some responses show very literal interpretations of the topic, which restricted the usefulness of the data presented and the discussion. Some discussions did not match the data. Injection of a policy conclusion as a response to a request for factual information was inappropriate.

The analysis suffered from the seven sections essentially being done independently. Although the geographic mismatch of survival and spill data is the most obvious example, other sections could have benefited from a more synthetic approach. As it stands, some sections border on publishable research reports whereas others suggest that the request was not taken seriously and there was an effort to minimize the time and effort required to respond. We suggest that topics needing additional discussion in the report be bolstered by citation of existing analyses (e.g., the transportation issue) and

indication that more extensive discussion can follow the January 15 deadline, perhaps in an annual report for 1997.

A better categorization of types of spill appears essential for meaningful progress toward managing the resource. This report highlighted an accounting system for spill that is confusing, at best, and misleading, at worst.

Finally, for meaningful evaluation of salmonid survival in different spill regimes it is essential that survival and spill data be collected from the same reaches of river and that survival be considered a cumulative response to sequential exposures over time of migration. We have suggested an alternative analytical tool, the cumulative dose-response model, as appropriate for understanding the distribution of mortalities in relation to TDGS values throughout the migration route and season. There is a fundamental disjunction in this report between spill, TDGS exposure, and survival that undermines confidence that there is an integrated plan for study and evaluation of spill, TDGS, and their biological effects.

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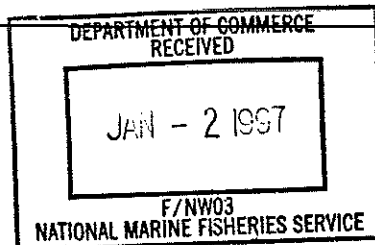
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Drafted 12/13/96, reviewed by subcommittee and then whole ISAB, revised 1/6/97.
C. C. Coutant for the ISAB.



Oregon

December 18, 1996

DEPARTMENT OF
FISH AND
WILDLIFE

Mark Schneider, Ph.D.
National Marine Fisheries Service ETSD
525 N.E. Oregon Street
Portland, OR 97232

Columbia River
Research Program

Mark
Dear Dr. Schneider:

Thank you for the invitation to review the draft report prepared by National Marine Fisheries Service (NMFS) for submission to the Oregon Environmental Quality Commission (EQC). You specifically requested that the Dissolved Gas Team (DGT) members address the question: are the responses reasonable and scientifically sound?

NMFS has done a very reasonable job of confronting the EQC's waiver conditions. I would caution, however, that too much has been inferred from the limited data available. The multiple environmental forces that downstream migrants have been facing create a complex set of conditions capable of affecting their survival. This complexity alone, particularly in the river reaches in question, makes it extremely challenging to isolate dissolved gas supersaturation, as experienced in 1995 and 1996, as a distinct limiting factor to fish survival.

I firmly believe that the potential for such problems is quite real, and that all such possibilities continue to be carefully examined. In this instance, however, NMFS has not made a convincing argument in defense of the conclusionary statements made in this report. The information developed so far has not established a definite cause-and-affect relationship between high TDG levels and decreases in downstream migrant survival over the past two years.

Thank you for the opportunity to comment.

Sincerely,

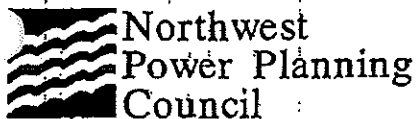
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c: Boyce, Fish Division



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Montana



John Etchart
Chairman
Stan Grace
Council Member

Mark J. Schneider, Ph.D.
National Marine Fisheries Service
Environment & Technical Services Division
525 NE Oregon Street
Portland, Oregon 97232-2737

January 3, 1997

Dear Mr. Schneider:

This letter contains Montana's comments on the DRAFT 1996 Annual Report to the Oregon Department of Environmental Quality, December 2, 1996. Thank you for the opportunity to comment on the Draft spill report. While the Biological Opinion does not call for spill at Montana reservoirs, operations of the FCRPS ultimately affect the aquatic ecosystems associated with Libby and Hungry Horse reservoirs, the citizens, and the ratepayers of Montana. As a result, we are very concerned about FCRPS operations for salmon.

In 1996, spill was shifted from the Columbia mainstem projects to Hungry Horse Reservoir to reduce gas levels. Spill occurred for over five weeks into the Southfork of the Flathead River. Gas levels as high as 116% were recorded in the Southfork and 114% in the mainstem Flathead River. These exceed Montana's water quality standards of 110% and no waiver was applied for or granted in 1996. Thus it can be seen that the spill program for salmon, especially in a high water year, does effect resources in Montana and we intend to watch these operations very carefully in the future to ensure that resources in the Flathead and Kootenai are preserved and water quality laws respected.

The seven topics or stipulations in the ODEQ waiver identified for discussion are reasonable and appropriate. It is unfortunate that responses to two key topics, #3 Empirical estimate of survival associated with spill, and #4 Incidence of GBD signs in adult and estimates of upstream spawning delays of returning salmonids from increased spill, were not fully responded to in the report. These are essentially the focal point of the spill program. It is of great concern that "the analyses requested were not possible". It seems that NMFS should have anticipated that they were not possible prior to requesting the waiver.

With regard to stipulation #6 Survival and incidence of GBD data from net pens below Bonneville Dam, the introductory text on page three appears to assign error on ODEQ for assuming that there would be net pen studies using juvenile salmonids. It notes that no juvenile salmonids were used in 1996 net pens and that only resident fish were used. Yet on page 38 it is explained that in 1995 salmonids were held in pens, but unlike in 1995 hatchery reared salmonids were not used in 1996

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because of the desire on the part of NMFS to "stem regional controversy regarding the interpretation of results". This does not seem like an appropriate reason for suspending monitoring efforts on a program as costly and as potentially risky as the spill program.

The survival estimates on pages 4 - 17 are of a very limited scope and do not attempt to estimate the effects of spill on survival in the lower Columbia. While Montana understands that PIT tag techniques are limited in the lower river, we are concerned that no monitoring information or survival estimates are provided in the report for this reach. Under the BiOp more flow augmentation is provided from the upper Columbia than from the Snake. Based on the BiOp's emphasis on flow augmentation for the lower Columbia, this must be a most critical reach. It was subject to high levels of spill and gas in 1996. In addition, fish traversing this reach would be expected to be experiencing the cumulative effects of gas exposure from the upstream reaches. Thus, this study fails to examine any effects of chronic repeat exposure or cumulative effects that may manifest in the lower river. Even though limited, the report should examine and discuss what survival data it has for the lower river. According to Will Stelle, NMFS, in a recent letter¹ to Brigadier General Robert H. Griffin, COE, "An estimate of reach survival through the John Day Reservoir and Dam was possible for the first time in 1996." If this information is available it should be included in the spill report.

In the Draft report's text, tables and figures reference is made to the flow variable. I was unable to find flow data in this report. The 1996 operations likely represented the upper end, if not the high end, of flows that the region can provide for migration. The report notes a negative correlation of survival to flow volumes in 1996. Flow data should be provided.

The fact that a negative correlation between survival and flow volume, percentage of flow, and TDGS was demonstrated by the review of the 1996 operations is of great concern to Montana. Especially since the BiOp calls for more storage water for flow augmentation from reservoirs in Montana than from any other state in the region.

The time frame examined in the report, April - May, appears limited. Gas levels persisted at high levels in the Snake and Columbia well into August. Given the reported downward trend of survival in late May noted in the report, the June, July and August survival estimates are of great concern. This is especially true since the effects of spill on species such as the fall chinook are not captured by this report.

The testing results of fish sampled at the dams should be compared with the PIT tag results. This comparison is needed to see if the dam passage information is consistent with the PIT tag results especially when trends such as the drop of survival in late May are observed.

On page 7 the report notes that a 7% change in survival is not statistically significant in the Snake. The standard error in the survival estimates is reported to range from 3.4 % to 7.6%. Montana finds these numbers quite interesting given the recent CRiSP model estimates for 1996. The CRiSP model estimated that the change in survival associated with all of the 1996 storage releases for flow augmentation from the upper Columbia was on the order of 0.2% (survival change 52.6% to 52.8%). These two unrelated sets of survival estimates will require more analysis. These data sets appears to

¹ William Stelle Jr., Regional Administrator NMFS to Brigadier General Robert Griffin, Division Commander U.S. Army Corps of Engineers. RE: Scientific Justification For Studying Feasibility of Drawing Down John Day Reservoir, December 23, 1996, page 4.

suggest that our ability to measure survival has a range of variability greater than our ability to influence survival with Columbia flow augmentation efforts.

Finally, in the discussion section on page 12, the report notes that steelhead survival is confounded by residualization. It states that residualization is not distinguishable from mortality in the data. Then it claims that late-season declines in steelhead survival are likely due to increased residualization. The report should explain upon what evidence it based its conclusion that residualization increased over time and what causative factors the authors believe effect residualization. If they have data on residualization, i.e. enough to predict rates of change, that suggest, that residualization may be separable (at least to some degree) from mortality. If historic residualization information is available, it should be provided or cited to support the conclusion drawn.

The Week by Week Estimates of the Quantities of Voluntary vs. Involuntary Spill reported on pages 18-20 are in error. This analysis has failed to account for the effects of BiOp operations that hold winter time reservoir elevations at upper rule curves and higher than historic operations. Deeper winter drafts, such as those allowed under IRC operations would allow more storage space in reservoirs to contain high flows in wet years. Thus, the analysis has overestimated involuntary spill and underestimated BiOp spill. Since this effect will persist in the future, this error must be accounted for. Montana is especially concerned with this issue because an IRC draft at Hungry Horse would have reduced the spill and resultant high gas levels in the Southfork and Mainstem Flathead Rivers in 1996.

Under the topic heading An Empirical Estimate of Survival Associated with Spill, the report notes that isolating the effects of spill on the fish population when many dynamic variables are present is not feasible. Instead, NMFS takes the approach of implementing as many improvements to the migration corridor as possible and then testing the overall survival of the juvenile outmigration population over time. Montana is sympathetic to the confounding nature of the problem, however, we are disappointed to see such limited efforts to validate the effects of migration improvement in the lower river where water drafted from reservoirs in Montana are applied to assist migration.

In addition, we hope that the realization by NMFS, that isolating the effects of a particular operation on a population of fish is not feasible, will allow NMFS to better understand Montana's resident fish dilemma. The NMFS and other downstream flow advocates have repeatedly requested documentation of the damages to resident fish caused by flow augmentation demands on Libby and Hungry Horse reservoirs. Such damages are difficult to define when other factors such as hydropower, flood control, land use, etc., all contribute to some degree to fish population impacts. Montana's approach to mitigation for hydropower damages caused by construction and operations has been very similar to that described in the report by NMFS, i.e. rather than attempt to isolate specific effects, implement as many improvements, as based on our best science and judgment, to the habitat as possible and then observe the population over time. We trust that, if this is the standard that NMFS applies to it's own recommended operations for spill in the lower river, it is a standard suitable for reservoir and river operations in the upper headwaters as well.

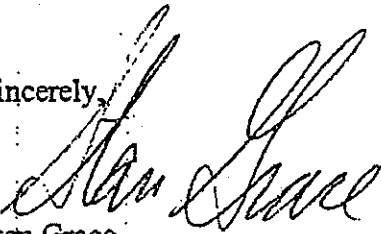
This same logic applies to the stipulation topic on pages 23 - 28 entitled Incidence of GBD signs in adults. Here NMFS rather than try to isolate the cause of spawning delay, it has chosen to implement operating and maintenance criteria designed to minimize adult delay. This can be viewed as analogous to Montana's IRC approach to operations. Rather than try to isolate the effects

of an abnormal hydrograph, Montana has developed the IRC "criteria" to move the river and reservoir hydrograph towards a more normative condition and ensure channel maintenance flows.

This section fails to discuss the magnitude, distribution and effects of adult fall back delays caused by high spill levels. Furthermore, it lists headburn frequency in the tabular data but does not discuss the implications of this degradation in the text. These two deficiencies should be corrected in the final version.

In closing, these comments are offered to help improve the draft report and further the communication between parties affected by the sometimes contentious operations of the Federal Columbia River Power System. However, the fact that a negative correlation between survival and flow volume, percentage of flow, and TDGS was demonstrated by the review of the 1996 operations is of great concern to Montana. This report seems to contain contradictory statements regarding the negative effect of TDGS on the survival of migrating juvenile salmonids. At one point it notes that "the 1996 PIT-tag data provide reasonable evidence of a negative effect of TDGS on survival," but in the very next sentence cautions about "interpreting the data as evidence for a negative effect of TDGS exposure on survival". This raises a very fundamental question about what standard of evidence is needed to influence decisionmaking for spill and other river management options. We encourage the NMFS to fully address this question and the other issues we have raised in the final annual report.

Sincerely,



Stan Grace
Montana Office of the Governor
Northwest Power Planning Council

CC: Oregon Department of Environmental Quality
Montana Department of Environmental Quality
Montana Department of Fish, Wildlife and Parks
Montana Department of Natural Resources and Conservation
Confederated Salish and Kootenai Tribes
Members Northwest Power Planning Council
Senator Conrad Burns
Senator Max Baucus
Representative Rick Hill

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DRAFT

December 12, 1996

Dr. Mark Schneider
National Marine Fisheries Service, ETSD
525 NE Oregon Street
Portland, OR 97232-2737

Dear Mark:

Thank you for the opportunity to review the draft document submitted to OR-DEQ. I realize that the questions posed were stipulations associated with the waiver for total dissolved gas. The draft is well written and consistent with the questions asked. The Fish Passage Center would like to offer the following comments on the draft document. We will present our comments in the context of each question.

1. Statistical evaluation of the available PIT tag data to determine week by week survival changes.

The dissolved gas levels observed in 1996 were primarily a result of uncontrolled runoff and spill, as we all recognize. The total dissolved gas levels rose significantly above the 115/120% TDGS waiver granted by OR-DEQ and WA DOE. Concern regarding the potential for fish mortality rose with the increase in TDGS. We are not suggesting that TDGS levels above 135% are acceptable to fish, but we are concerned somewhat regarding the interpretation of the PIT tag data by NMFS.

There was considerable concern expressed several years ago prior to the implementation of the survival studies and the appropriate interpretation of the results from these studies. The studies were designed to develop annual estimates of survival. Recently the analyses by some consultants have forced the NMFS to begin analyzing their data in a way that was never intended. That is the development of in-season short time frame estimates. The process of relating the in-season survival estimate to environmental parameters is not easy. Fish are released as a lot from a single location. They are recovered at a downstream location over several days. For analysis the survival estimate for the group is related to an environmental variable averaged in some unique way, because all members of the lot released did not experience the same environmental regime. In some cases applying an average parameter to fish recovered over a sufficiently long time frame is not adequate. In addition, there is no way to represent the environmental parameter for the fish of interest, those that died. This is the reason only weak relations can be identified between the environmental parameters and the survival estimate.

Of particular importance is the fact that there is no control, or baseline with which to compare the data. Collection of adequate PIT tagged fish downstream of McNary Dam, that are necessary to the development of an estimate below Lower Monumental, was not possible until 1995 and 1996. Both of these years were characterized by high levels of TDGS below Ice Harbor Dam. What is not known is whether this decreasing trend in survival is characteristic of the migrating population in any year. That is whether there is a change in quality of fish that migrate later in the season.

The method depends on the development of a fish guidance efficiency at the recovery site averaged for the time period over which fish from a particular release group have been recaptured. The adequacy of this estimation is questioned when the flow/spill changes are significantly different over the recovery period, as they were in 1996 coincident with the decline in survival estimates. The survival estimation technique also relies on an assumption that all fish are mixed at the recovery sites. Evidence suggests that fish that pass in spill do not experience delay at the projects and consequently travel faster through the migration corridor. This would put them at the recovery sites in advance of the fish that passed through the project and could bias the estimate. This may certainly have an effect on the 1996 data since the technique detected the decline in the survival as the spill increased.

In spite of the shortcomings associated with the technique and the weak statistical relations developed in the analysis, NMFS makes some pretty strong statements - "the 1996 PIT tag data provide reasonable evidence of a negative effect of TDGS on the survival of migrating juvenile salmonids". The conditions below Ice Harbor Dam remain a concern to the fishery agencies and tribes and the potential for mortality were a recognized concern for the TDGS levels observed in 1996. However, we cannot agree that the PIT tag studies provide "reasonable evidence". We recommend that NMFS revise this section of the report to DEQ and temper it to accurately reflect the limitations of using this study in the requested context.

2. Week-by-week estimates of involuntary versus voluntary spill.

NMFS submitted a table provided by BPA which identifies a spill for FPE and includes a correct note stating that much of the spill considered as BiOp spill actually is excess hydraulic capacity spill. We have taken this thought one step further and have developed an alternate table to include in the final report that illustrates the hydraulic capacity effect. We have developed the table for the same weeks and projects. The total flow was taken from the COE's final flow data and averaged for the week. The hydraulic capacity was obtained from a sheet provided to us in-season by BPA that identified the hydraulic capacity for each project based on unit outages. (We have checked with BPA to see if there was a final after-the-fact version of this table, but apparently there is not). The hydraulic capacity at McNary Dam was set to 190 kcfs based on conversations with BPA. The spill necessary column is simply the total flow minus the hydraulic capacity. In the absence of any spill program this amount of water would have gone over the spillway during that week because of the limitation of the hydraulic capacity of the project. The spill necessary was compared to the total spill that actually occurred to develop the "remainder" identified in the spreadsheet. This calculation was to define the spill that occurred for reasons other than hydraulic capacity. In their spreadsheet BPA identified spill that occurred due to a lack of market. This amount was subtracted from the remainder to yield the final column, Fish Specific spill.

We also accumulated the spill over the season and estimated the percent of the spill that can be attributed to fishery needs. The following table illustrates the comparison:

Project	FPC Table (%)	BPA Table (%)
MCNARY	18.4	54
JOHN DAY	26.9	60
THE DALLES	47.5	100
BONNEVILLE	30.7	56

From the table it is apparent that the BPA calculations represent an overestimation of the percent of spill that was fish related. It cannot be reiterated enough - most of the spill that occurred from the middle of May to the middle of July was a direct result of flow in excess of hydraulic capacity.

We do not have any comment on the remainder of the responses to the questions. Please do not hesitate to contact us if you need any additional information.

Sincerely,

Michele DeHart
Fish Passage Center Manager

Angie

-95

- Log this in.
- Copy it for the Dissolved Gas, DDEQ Annual Report file.
- ~~Ret~~ Return a copy to me.

Comparison of average flow to hydraulic capacity of projects and identification of fish specific spill

McNary

Week ending	Total Flow	Hydraulic Capacity	Spill Necessary	Total Spill	Remainder	Lack of Market	Fish Specific
05/26/96	378.4	144.8	233.6	228.4	-5.2	21.5	0
06/02/96	388.2	190	198.2	267.6	69.4	12.2	57.2
06/09/96	414.2	190	224.2	269.3	45.1	4.9	40.2
06/16/96	434.3	190	244.3	298	53.7	5.3	48.4
06/23/96	364.5	190	174.5	230.5	56	9	47
06/30/96	308.8	190	118.8	181.8	63	18.9	44.1
07/07/96	265	190	75	125.3	50.3	4.9	45.4
07/10/96	277.3	190	87.3	122.1	34.8	0	34.8
		Sum	1355.9	1723			317.1
		% of Total	78.69%				18.40%

John Day

Week ending	Total Flow	Hydraulic Capacity	Spill Necessary	Total Spill	Remainder	Lack of Market	Fish Specific
05/19/96	343.5	314.9	28.6	85.3	56.7	9.3	47.4
05/26/96	403.7	293.4	110.3	100.8	-9.5	15	0
06/02/96	405	314.9	90.1	102.5	12.4	17.9	0
06/09/96	423.6	314.9	108.7	109.9	1.2	7.1	0
06/16/96	451.5	336.4	115.1	131.8	16.7	6.5	10.2
06/23/96	374.9	336.4	38.5	84.4	45.9	5.7	40.2
06/30/96	315.4	336.4	0	52.2	52.2	1.5	50.7
07/07/96	267.1	336.4	0	40.6	40.6	0	40.6
07/10/96	276.7	336.4	0	29.8	29.8	0	29.8
		Sum	491.30	737.3			218.9
		% of Total	66.64%				29.69%

Wrie Dalles

Week ending	Total Flow	Hydraulic Capacity	Spill Necessary	Total Spill	Remainder	Lack of Market	Fish Specific
05/19/96	328.7	229.7	99	206.9	107.9	0	107.9
05/26/96	390.1	245.8	144.3	260.3	116	0	116
06/02/96	388.8	245.8	143	233	90	0	90
06/09/96	408	231.5	176.5	242.9	66.4	0	66.4
06/16/96	434.7	245.8	188.9	277.6	88.7	0	88.7
06/23/96	360.4	245.8	114.6	213.9	99.3	0	99.3
06/30/96	303.6	229.7	73.9	164.4	90.5	0	90.5
07/07/96	256.8	245.8	11	140	129	0	129
07/10/96	267.5	232.9	34.6	139.4	104.8	0	104.8
		Sum	985.80	1878.4			892.6
		% of Total	52.48%				47.52%

Bonneville

Week ending	Total Flow	Hydraulic Capacity	Spill Necessary	Total Spill	Remainder	Lack of Market	Fish Specific
05/19/96	337.5	264	73.5	140.2	66.7	18.1	48.6
05/26/96	397.4	264	133.4	202.2	68.8	35.2	33.6
06/02/96	396.8	264	132.8	220.7	87.9	44.9	43
06/09/96	413	264	149	216.9	67.9	12.3	55.6
06/16/96	436.4	264	172.4	244.7	72.3	24.1	48.2
06/23/96	370.7	264	106.7	184.6	77.9	20.2	57.7
06/30/96	315.9	250.9	65	139	74	24.5	49.5
07/07/96	268.5	250.9	17.6	86.6	69	0	69
07/10/96	275.4	250.9	24.5	86.7	62.2	0	62.2
		Sum	874.90	1521.6			467.4
		% of Total	57.50%				30.72%



Schneider

DEPARTMENT OF COMMERCE RECEIVED
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F/NW03 NATIONAL MARINE FISHERIES SERVICE

EQC
Work
Session
1-9-97

IDAHO FISH & GAME
 CLEARWATER REGION
 1540 Warner Avenue
 Lewiston, Idaho 83501-5699

Phil Batt / Governor
 Jerry M. Conley / Director

Dr. Mark Schneider
 Nation Marine Fisheries Service
 525 NE Oregon Street
 Portland, OR 97232-2737

Dear Mark:

Thank you for the chance to review the draft report *Annual Report to Oregon Department of Environmental Quality* submitted to OR-DEQ. The Idaho Department of Fish and Game (IDFG) recognizes that the draft represents a thorough response to the topics stipulated by the ODEQ's waiver regarding dissolved gas standards in the mainstem Snake and Columbia Rivers during the 1996 spill season. However, we have two comments addressing the topics: 1) Statistical evaluation of available PIT-tag data to determine week-by-week survival changes, and 2) Week-by-week estimates of the quantities of *voluntary vs. involuntary* spill.

1) The IDFG is concerned with the NMFS response that "the 1996 PIT tag data provide reasonable evidence of a negative effect of TDGS on the survival of migrating juvenile salmonids." The total dissolved gas levels rose significantly above the 115/120% waiver granted by OR-DEQ and WA DOE, primarily as a result of uncontrolled runoff and spill. The conditions below Ice Harbor Dam remain a concern to the fishery agencies and tribes, and the potential for mortality was a recognized concern for the TDGS levels (up to 135%) observed in 1996. However, we cannot agree that the PIT tag studies provide "reasonable evidence" of in-season survival rate changes due to TDGS because of substantial limitations of the estimation technique. For the following reasons and the weak statistical relations developed in the analysis, IDFG does not agree that the PIT tag studies provide "reasonable evidence" of decreased survival rate with increased TDGS in 1996. We recommend that NMFS revise this section of the report to DEQ and temper it to accurately reflect the limitations of using this study in the requested context.

An overriding problem with NMFS interpretation of the 1996 PIT tag studies is that the studies were designed to develop annual estimates of survival, and not in-season, week-by-week estimates. Recently the analyses by some consultants have forced NMFS to begin analyzing their data in a way that is not supported by the study design. The process of relating in-season survival estimates to environmental variables is problematic because all members of the lot released do not experience the same environmental conditions. In addition, there is no way to represent the environmental parameter for the fish of interest, those that died. This technique has not been shown to produce reliable estimates of survival related to environmental variables.

There is no control, or baseline with which to compare the week-by-week survival estimates. Collection of adequate numbers of PIT tagged fish downstream of McNary Dam, that are

necessary to develop an estimate below Lower Monumental, was not possible until 1995 and 1996. Both of these years were characterized by high levels of TDGS below Ice Harbor Dam. What is not known is whether the decreasing trend in estimated survival late in the season is characteristic of the migrating population in any year. That is, whether there is a deterioration in smolt quality later in the season that may confound influences of the environmental factor.

Finally, the in-season survival estimate method depends on the development of a fish guidance efficiency at the recovery site averaged for the time period over which fish from a particular release group have been recaptured. This method may be inadequate when the flow/spill changes are significantly different over the recovery period, as they were in 1996, coincident with the decline in survival estimates. The survival estimation technique also relies on an assumption that all fish are mixed at the recovery sites. Evidence suggests that fish that pass in spill do not experience delay at the projects and consequently travel faster through the migration corridor. This would put them at the recovery sites in advance of the fish that passed through the project and could bias the estimate. This factor may have biased the 1996 results since the in-season survival estimates decreased as the spill increased.

2) The IDFG has genuine concern with the reports' attempt to identify spill for fish passage efficiency (FPE) and involuntary spill associated with hydraulic capacity. We have taken a close look at the volumes provide by BPA in Table 7 (*Comparison of average flow to hydraulic capacity of dams and FPE fish spill*), and strongly suggest that NMFS reexamine the calculations. Based on spill analysis provided by the Fish Passage Center (FPC), we believe that the BPA calculations are overestimations of the volume of spill that was fish related. It should have been readily obvious to anyone concerned that most of the spill which occurred from mid-May until the middle of July resulted from discharge exceeding hydraulic capacity. The final Report should reflect this discrepancy. IDFG suggests that NMFS seek agreement from the state and tribal salmon managers prior to submitting the final report to ODEQ.

On a broader level, IDFG questions why the NMFS/ODEQ Report even addresses the issue of increased TDG at the four Columbia River dams when it is doubtful that any FPE spill contributed to TDG concentrations above 110%. If, like the Report suggests, 1996 runoff volumes resulted in spill levels well above FPE levels during much of April, May and June (which regularly exceeded 130% at several dams), we believe that they do not require treatment specified by the ODEQ wavier stipulations.

We have limited our comments to the above topics. We look forward to reviewing the completed report in its final draft.

Sincerely,

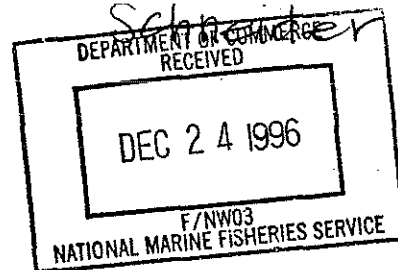


Stephen W. Pettit
Fisheries Staff Biologist



State of Washington
DEPARTMENT OF FISH AND WILDLIFE

Mailing Address: 600 Capitol Way N • Olympia, WA 98501-1091 • (360) 902-2200, TDD (360) 902-2207
Main Office Location: Natural Resources Building • 1111 Washington Street SE • Olympia, WA



December 18, 1996

Dr. Mark Schneider
National Marine Fisheries Service
Hydro Branch
525 Northeast Oregon Street
Portland, Oregon 97232

Dear Dr. Schneider:

Thank you for the opportunity to review the draft 1996 annual report to the Oregon Department of Environmental Quality on the Biological Opinion controlled spill program. My comments are arranged by page.

Page 12: The fact that for a substantial portion of the season TDGS levels were well in excess of even the 115-120% allowed by temporary water quality standard modifications was mentioned in the introduction, but should be repeated here.

The two paragraphs in this discussion are confusing, if not contradictory to each other. The last sentence of the first paragraph (... "reasonable evidence of a negative effect of TDGS on survival...") is not supported by the analysis but appears to be the opinion of the author(s). Also, the first sentence of the second paragraph contradicts this strong statement. While I agree that extreme total dissolved gas saturation levels seen in 1996 as the result of forced spill are probably detrimental to survival, this report should not attempt to use the reach survival data beyond its capabilities. Among other limitations, the study was never designed to look at survival in weekly increments but rather over the entire season. This entire section should be modified to accurately reflect what the analysis supports.

Although the report is supposed to deal specifically with the 1996 season, it might be useful to at least discuss the PIT-tag information from 1994 (steelhead only) and 1995.

Page 18: Although the text clearly points out that, strictly speaking, there was no Biological Opinion (BiOp) spill during most of the season, the table provided by Bonneville Power Administration (BPA) shows the majority of spill as being BiOp spill. The table should be at least footnoted to make it clear that the BiOp spill column is what would have been provided

Mr. Mark Schneider, Ph.D.

December 18, 1996

Page 2

if the system was in a controlled spill condition but that the total spill volume shown in the table would have occurred in 1996 regardless of the BiOp requirements. It would be preferable if the table is changed to show only those volumes of spill provided for fish passage efficiency under controlled spill conditions and all forced spill assigned to other categories.

In the second paragraph under Background, you should explain that the four Snake River projects are not included in the table because they are located entirely in Washington, but that substantial amounts of uncontrolled spill occurred at those sites in 1996 and influenced water quality downstream.

Page 21: In the first sentence of the third paragraph there seems to be missing language: "Starting and stopping [????] while releasing test groups..."

That concludes the comments I had on the report. If you need additional information, please call me at (360) 902-2812.

Sincerely,



James R. Nielsen
Columbia River Policy Coordination

cc: Tom Cooney
Fish Passage Center
Fish Passage Advisory Committee

December 27, 1996

Environmental Quality Commission
Oregon Department of Environmental Quality
811 S.W. Sixth Avenue
Portland, Oregon 97204

RE: NMFS Annual Report to Oregon DEQ Regarding Dissolved Gas Waiver

Dear Chairman Lorenzen and Commissioners:

As we approach the fourth annual request by the National Marine Fisheries Service to set aside Oregon's water quality standards for a spill program, we wish to thank the Commission for requiring the Service to prepare for the Commission a special report on that program as a condition of the 1996 waiver. It should be noted the report, which was supposed to be available for public comment on December 1st., was received on December 9th. The cover memorandum to the Department of Environmental Quality asks for comments by December 27th. As in previous years, the comment period is inadequate for a full analysis of the draft report, but we provide these comments to the Commission and the Department in the hope that the report can be improved.

There is much valuable information in the draft report, which we review in some detail below. First, it appears to confirm that the 1996 spill program injured the very salmon it was supposed to protect. Mortality definitely rose from gas bubble disease, so that 1996 survival was well below 1995 survival, but disputes remain as to the extent that this resulted from "voluntary action". Without a doubt, the draft report confirms that the Smolt Monitoring Program was unable to detect a large increase in smolt mortality. We have for several years provided detailed scientific evidence predicting the decreased survival and explaining why the monitoring program is defective. At this point, we would hope that the Commission would begin to put more weight on the views of independent scientists, including NMFS' own Expert Panel, which has expressed profound skepticism about both the spill and monitoring program.

The Commission's Order of April 12, 1996, required the National Marine Fisheries Service to provide seven categories of information. In no case has the Service provided a response which is complete in the sense of summarizing the available information on a topic. To see why this is so, it is useful to examine, category by category, the information NMFS was to provide:

“(a) Statistical evaluation of available PIT-tag data to determine week-by-week survival changes. Techniques should be used to detect differences between groups with small sample size or maximize the sample size to increase statistical reliability. The association between survival estimates and TDG, temperature, flow-related effects, or other phenomena which could affect survivorship will be evaluated”

NMFS provides the most complete response to this topic, consisting of a week-by-week analysis of survival for part (but not all) of the migration season. This analysis shows that survival fell by more than a factor of three at the end of May (Table 1, p. 5), when migrating smolts experienced the highest total dissolved gas levels. NMFS candidly admits that “the 1996 PIT-tag data provide reasonable evidence of a negative effect of TDGS on the survival of migrating juvenile salmonids”.

What is far more striking, however, is the analysis in Table 3, where NMFS (for the first time ever, to our knowledge) presented correlation estimates between flow, spill, temperature and total dissolved gas and survival. Spill provided the most predictive power of all the variables, with a strong *negative* correlation with survival. For example, a 1% increase in spill at Little Goose Dam is predicted to increase mortality by 0.64%; this spill variable alone explains 41% of the variance in survival.

While the analysis is somewhat of an oversimplification, it merely confirms what more advanced analyses in computer models have been predicting for several years: the net effect of the spill program is to kill the very fish it is supposed to be saving. The Commission should also keep in mind that survival is only measured from Lower Granite Dam to McNary Dam; no survival changes are provided at all for fish downstream of McNary Dam. Since mortality resulting from exposure to total dissolved gas is cumulative, it would appear that actual mortality caused by spill is even higher causing fish to continue to die below McNary Dam.

Unfortunately, NMFS provided no analysis of survival changes whatsoever for time periods after May, yet spill persisted through June, July and August. We would urge the Commission to require NMFS to expand the analysis for the entire period of time for which a waiver is sought. NMFS also limits its analysis to the Cormack-Jolly-Seber (CJS) technique of analysis. In scientific meetings this fall, NMFS has acknowledged that the method employed by Mr. Steve Cramer had less statistical bias than the CJS method, but NMFS provides no review and comparison with the Cramer results.

NMFS also provides no comparison with prior years. We would urge the Commission to request this additional information, as we strongly suspect that the increase in mortality during 1996 will be blamed on “involuntary” spill. Yet a very similar drop in survival was present in 1995, when there were no claims of involuntary spill.

“(b) An empirical estimate of survival associated with spill”

NMFS interpreted this requirement, as do we, to be a command from the Commission to present some sort of estimate of the supposed survival improvements resulting from the spill program facilitated by the Commission's waivers. However, NMFS refuses to answer the question, taking the position that it cannot isolate the effects of spill, and need not do so, since “[r]ather than attempting to isolate specific variables such as spill, our approach has been to implement as many improvements to the migration corridor as possible and then test overall survival . . .”. (p. 21)

That assumes the very point the Commission has asked NMFS to demonstrate—that increased spill is an “improvement”. Some spill surely can increase survival, and no one has challenged spill that does not violate the existing 110% total dissolved gas standard. But general assertions that “we believe that spill does increase survival”, in the face of the contrary evidence just discussed under (a), should not be adequate.

Moreover, NMFS does have a sophisticated and accurate method of separating out the effects of all of the different variables: the CRiSP computer model of juvenile passage survival, which was recently lauded by the University of Washington as one of the top research projects in the last 100 years. NMFS presents no results from this model; we have previously provided the Commission with the model runs that show that the spill program *decreases* salmon survival. As Commissioner Van Vliet has observed, these sorts of computer models are very useful for environmental decision making, and the Commission ought to require NMFS to use the model to produce a response to this requirement of the waiver.

“(c) Week-by-week estimates of the quantities of voluntary vs. involuntary spill. The factors causing the spill scenario shall be stated i.e. hydraulic capacity, turbine outages, lack of a power market, etc.”

Here NMFS' response is both incomplete and contradictory, apparently reflecting a difference of opinion with the Bonneville Power Administration, which produced the analysis. The text of the report suggests that “most of the spill above 120% TDG occurred due to lack of turbine capacity”, but it is impossible to tell from the data what “most” means. For example, Table 7 (p. 20) suggests that at The Dalles, *all* of the spill was voluntary spill.

The Commission needs to demand that NMFS produce sufficient data to determine whether or not the project operators had the discretion not to violate the 120% limit. The data also ignores a crucial discretionary decision of the dam operators, dictated by NMFS: the decision to store extra water during the winter to enhance the spring flows, and thereby increase the total dissolved gas problem. Our preliminary analysis suggested that

this effect exacerbated the total dissolved gas levels by as much as three percent at some projects, but we simply do not have the data to conduct an adequate analysis.

This is again a critical question in this wet winter year, because even now NMFS is commanding the U.S. Army Corps of Engineers and other agencies to store water in what will in all likelihood be another wet spring. Unless the Commission requires NMFS to produce data concerning the effect of the extra storage as one of the "factors causing the spill scenario" (which Department staff suggested to us was included within the word "etc."), the Commission will once again be faced with claims that violations of its waiver were "involuntary".

"(d) survival estimates of transported vs. untransported fish at collector projects"

Notwithstanding almost 30 years of transportation research at the collector projects, NMFS takes the position that it can provide no response because fish tagged in 1996 will not be available until 1999. NMFS is fully capable of providing the requested information, which might be provided most accurately through use of the CRISP model. The Commission should insist that NMFS provide a meaningful estimate of the increased mortality the spill program causes by reducing transportation at collector projects. Indeed, it is our belief that the single greatest step the Commission could take to help Columbia Basin salmon would be to shift to a project-by-project approach and eliminate collector projects from any future waivers.

The Commission might be interested to know that preliminary data on fish transported during 1994 has recently been released in a report prepared for the U.S. Army Corps of Engineers by Harza Associates. That report, based on the first year of salmon to come back, shows that transported wild salmon survived at *seven-and-one-half times* the rate of untransported fish. Frankly, this very high transportation benefit ratio will probably reduce to the conventional doubling of survival, but the evidence does not foreclose the possibility that the reason the Transport Benefit Ratio is so high is because the 1994 spill program has reduced the survival of in-river fish, exaggerating the measured benefits of transportation.

"(e) Survival and incidence of GBD data from net pens below Bonneville Dam. Care must be taken to avoid areas with excessive flow or elevation fluctuations or to engineer around problems. Care must be taken to avoid size and species differences within net pens to reduce losses from predation."

The Commission doubtless recalls that the requirement for this sort of information comes from the fact that NMFS found very substantial mortality in salmon held in net pens during 1995, yet explained away the mortality by blaming high flow, elevation fluctuations, and predation. Incredibly, NMFS declined to put any salmon in net pens

during 1996, "to stem regional controversy regarding the interpretation of results" (p. 38). This response should not be acceptable.

Instead of measuring the effects of total dissolved gas on salmon, NMFS measured the effects on resident fish. But the whole idea of the Commission's requirement was to obtain data about the effects on salmon, the species that is supposed to be benefitted by spill. As NMFS candidly admits, "[t]he tolerance of resident fish species of the Columbia River to dissolved gas supersaturation is not well understood", so that the continued high mortality in the net pens can be argued to be irrelevant in evaluating effects on salmon.

Politicization of experimental design, which began in 1995 when NMFS gave its researchers magnifying glasses instead of the microscopes with which they had found substantial symptoms of gas bubble disease in 1994 is of great concern. This is another reason the Commission simply must insist on thorough scientific assessment leading to the decision whether to set aside Oregon's water quality standards.

"(f) Incidence of GBD signs in adults and estimates of upstream spawning delays of returning adult salmonids from increased spill."

For several years we have advised the Commission that increasing spill was likely causing substantial delays of adults because fish passage facilities were simply not designed to operate at such high spill levels. No one disputes that the loss of a single returning adult salmon is more important to the continued survival of endangered salmon species than the loss of hundreds of juveniles. In August, a dramatic demonstration of this effect occurred when a power outage curtailed spill at The Dalles. The number of adult salmon passing the dam increased dramatically during the four days spill was curtailed.

NMFS does not address this event, and cites a single 1992 study suggesting that "moderate amounts of spill actually increased passage rates". This begs the question, because no one is quarreling with the moderate amounts of spill used for several years before the Commission began granting the waivers to allow much higher spill levels. We have previously provided the Commission with scientific references documenting the problems with adult passage, and NMFS can and should be required to synthesize the available information in some useful way.

NMFS ultimately adopts the same position it takes with respect to measuring survival changes from the spill program: many factors influence adult passage, so that NMFS cannot "isolate the effect of a single variable on spawning delay". In sum, NMFS's position on the spill program is that the supposed benefits to juveniles cannot be quantified and the known harm to adults cannot be quantified. We respectfully suggest that it is time for the spill program to show quantifiable net benefits for endangered salmon or be terminated.

The CRiSP model would permit, for the first time, a measured assessment balancing the juvenile and adult effects of spill and other dam operations for a rational assessment of the net impact on salmon populations. By insisting on such a rational assessment before granting any future waivers, the Commission can do much for the cause of salmon recovery.

“(g) Incidence of GBD signs in resident fish species collected from below Bonneville Dam. Sampling will occur once each week April 15 through August 31.”

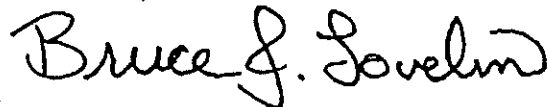
Having shifted its resources away from examining the effect of gas bubble disease in the river, NMFS has accumulated a good deal of information about the prevalence of symptoms in resident fish below Bonneville Dam. Time does not allow us to review this information in detail.

It should be noted, however, that here too NMFS failed to comply with the conditions of the waiver. As far as we can tell, no sampling occurred before May 15th or after August 12th., so that a month and a half of the required monitoring period was simply not completed.

We noticed that NMFS has arranged a “peer review” through two groups, the Independent Science Advisory Board (ISAB) and the Dissolved Gas Team (DGT) (pp. 1-2). Conspicuously absent is NMFS’ own Expert Panel, the Northwest body with significant expertise in the effects of gas bubble disease on salmon. The Commission may recall that the Expert Panel was harshly critical of the Smolt Monitoring Program and skeptical of the spill program as well. As far as we can tell, none of the Expert Panel’s extensive recommendations for improving the Smolt Monitoring Program were implemented; our written inquiry on this subject was ignored by NMFS and the Fish Passage Center. We would suggest having the Expert Panel be a part of the peer review process.

We trust that these comments will assist the Commission and Department staff in evaluating and commenting upon NMFS’ draft report.

Regards,



Bruce J. Lovelin
Executive Director

cc: Mark Schneider, NMFS
Stephanie Hallock
Russell Harding
Gene Foster
Eric Schlorff

Approved _____
Approved with Corrections _____

Minutes are not final until approved by the EQC

**ENVIRONMENTAL QUALITY COMMISSION
MINUTES OF THE TWO HUNDRED AND FIFTY-SIXTH MEETING**

**November 14, 1996
Regular Meeting**

The Environmental Quality Commission meeting was convened at 9:00 a.m. on Thursday, November 14, 1996, at the Department of Environmental Quality, 811 S.W. Sixth Avenue, Portland, Oregon. The following members were present:

Henry Lorenzen, Chair
Carol Whipple, Vice Chair
Linda McMahan, Member
Tony Van Vliet, Member
(Member Melinda Eden joined the meeting at
9:20 a.m.)

Also present were Larry Knudsen, Assistant Attorney General, Oregon Department of Justice, Langdon Marsh, Director, DEQ, and other DEQ staff.

Note: Staff reports presented at this meeting, which contain the Department's recommendations, are on file in the Office of the Director, 811 S.W. Sixth Avenue, Portland, Oregon 97204. Written material submitted at this meeting is made a part of this record and is on file at the above address. These written materials are incorporated in the minutes of the meeting by reference.

Chair Lorenzen called the meeting to order at 9:10 a.m.

A. Approval of Minutes

Commissioner Whipple moved approval of the meeting minutes for the September 27, 1996 work session, the October 10, 1996 work session and the October 11, 1996 regular meeting. Commissioner Van Vliet seconded the motion and it was unanimously approved.

B. Approval of Tax Credits

Mike Downs, Water Quality Division Administrator, and Maggie Vandehey, Water Quality Division, presented this item to the Commission. The Department recommended the Commission approve certification for the tax credit applications listed below.

Applications for Pollution Prevention Pilot Program: Air Quality

All equipment is used in the normal course of doing business. However, the owners would not have replaced their existing systems at this time or with this particular equipment had it not been required by the National Emission Standards for Hazardous Pollutants (NESHAP) and to avoid monitoring and record-keeping requirements.

TC No.	Applicant	Description	Cost	Percent Allocable
4655	Dallas City Cleaners	Non venting dry-to-dry perc dry-cleaning machine. Installed as a replacement for an old perc machine which vented emissions to the atmosphere during drying cycle.	\$ 29,000	
4656	Riverside Cleaners, Inc.	Non venting dry-to-dry perc dry-cleaning machine. Installed as a replacement for an old perc machine which vented emissions to the atmosphere during drying cycle.	\$ 37,000	
4657	Rejuvenation, Inc.	An ultrasonic aqueous cleaning system. Installed as a replacement for a vapor degreaser which used Trichloroethylene.	\$ 45,205	
4658	Oldham's Classic Cleaners	New, large washing machine. Installed as a replacement for an old perc machine which vented emissions to the atmosphere during drying cycle.	\$ 32,993	
4660	Hubbard Cleaners and Laundromat	A multiprocess wet cleaning system. Installed as a replacement for a production capacity perc dry cleaning machine which vented emissions to the atmosphere during drying cycle.	\$ 23,068	

Total Prevention \$ 167,266

Applications for Pollution Control Tax Credit

Division 16 - UST: Underground Storage Tanks are used in the normal course of doing business. However, the owners would not have replaced or upgraded their existing systems at this time or with this particular equipment had it not been required by EPA and Chapter 340, Division 150.

TC No.	Applicant	Description	Cost	Percent Allocable
4595	Harold & Jim Pliska	UST system replacement.	\$ 133,031	95
4601	G.S. Company, INC.	UST system replacement.	\$ 4,735	100
4603	Wilco Farmers	UST system replacement.	\$ 189,438	88
4606	Cain Petroleum Inc.	UST system replacement.	\$ 157,933	91
4607	Jersey Development Corp.	UST System replacement.	\$ 117,207	91
4614	Cain Petroleum Inc.	UST system upgrade.	\$ 93,664	98
4621	Western Stations Co.	UST system upgrade.	\$ 62,468	99
4622	Western Stations Co.	UST system replacement.	\$ 114,218	89
4623	Cain Petroleum Inc.	UST system replacement.	\$ 193,491	91
4641	Western Stations Co.	UST system upgrade.	\$ 160,125	99
4645	Cain Petroleum Inc.	UST system replacement.	\$ 197,342	93
4646	Younger Oil Co.	UST system upgrade.	\$ 8,676	100

4647	Younger Oil Company	UST system upgrade.	\$ 8,375	100
4652	Truax Harris Energy LLC	UST system replacement.	\$ 199,735	96
4659	Fisher Corporation	UST system replacement.	\$ 109,420	83
4661	Leathers Oil Company	UST system upgrade.	\$ 117,611	99
4662	Leathers Oil Company	UST system upgrade.	\$ 144,117	99
4663	Leathers Oil Company	UST system replacement.	\$ 143,779	87
4664	Leathers Oil Company	UST system upgrade.	\$ 86,056	99
4665	Leathers Oil Company	UST system upgrade.	\$ 112,928	99
4666	Leathers Oil Company	UST system replacement.	\$ 231,991	92
Subtotal UST:			\$ 2,586,340	

Other Division 16

4649	Briggs Farm, Inc.	Air Quality: Field Burning. Sole purpose. New 130 HP Massey Ferguson Tractor. Used in the normal course of business.	\$ 60,000	62
4564	B & C Leasing	Solid Waste. Sole Purpose. 1993 International truck, Lely-pac 3500 gallon tank, 1995 International truck, 1993 26' WABO trailer and grease container. Used in the normal course of business.	\$ 196,080	97
4667	Quantum Resource Recovery	Solid Waste, sole purpose. Electrical panel upgrade for plastic granulator; and heavy duty plastic boxes for collection and transport of scrap plastic and metal. Used in the normal course of business.	\$ 21,976	100
4668	Quantum Resource Recovery	Solid Waste, sole purpose. Flatbed truck, semi truck, Hyster forklift, Morris scales, and five collection trailers. Used in the normal course of business.	\$ 46,835	100

Subtotal Other \$ 324,891
Total Pollution Control \$ 2,911,231

Applications for Reclaimed Plastic Tax Credit

All facilities are a normal part of doing business. It is unknown if the applicant would have installed these particular facilities at this particular time without the incentive provided by the Reclaimed Plastic Tax Credit.

TC No.	Applicant	Description	Cost	Percent Allocable
4188	Gage Industries, Inc.	Thermoforming mold, 3 sets of mold cavities, a trim die set, and stacker tooling for manufacture of nursery flat inserts.	\$ 178,668	100
4377	Lane International	Double Cavity molding die for production of a 10 inch reclaimed plastic manhole access step.	\$ 26,937	100
4387	Resco Plastics, Inc.	Nelmor Granulator will be used to recycle relatively large waste plastic items, like one gallon milk jugs.	\$ 18,500	100
4582	The Richwine Company	Cumberland Granulator, Toyota forklift truck and an air handling system.	\$ 64,761	100

4612	WWDD Partnership	Conair shredder.	\$ 87,282	100
4616	Recycled Plastic Marketing	Cumberland Grinder, hydraulic ramp, Ball Jewel Grinder, 200 amp electrical subpanel, 8'X 10' grinder vault, (1) 1986 & (1) 1983 Yale forklift, (2) 5000 lb.. digital scales; two rotary box staplers, and (1) 2HP vacuum dust collector.	\$ 64,000	100

Total Reclaimed Plastic \$ 440,148

In addition, the Department recommended the transfer of the remaining value of Tax Credit Certificate #2676 from McCall Heating Oil to McCall Oil and Chemical Corporation as presented in Attachment B of the Department's staff report.

Chair Lorenzen moved to approve all the Department's recommendations, with the exception of Tax Credit Certificate #4649 for Briggs Farm Inc., to be reviewed separately. Commissioner McMahan seconded the motion and it was approved with three yes votes and one no vote (Commissioner Van Vliet). Following a discussion of Tax Credit Certificate Application #4649 for Briggs Farm Inc., Commissioner Whipple moved to approve the application as recommended by the Department. Commissioner McMahan seconded the motion and it was approved with three yes votes and one no vote (Commissioner Van Vliet).

Ms. Vandehey noted the need for a special EQC telephone conference to review tax credit applications that must be processed before the end of the year, and proposed several dates for this meeting. The Commissioners agreed to hold the meeting on December 31, 1996, at 9:00 a.m.

C. Action Item: Petition to Amend OAR 340-101-033 (Hazardous Waste Rules)

Note: Two people signed up to address the Commission during the Public Forum portion of the meeting had comments regarding this agenda item. Chair Lorenzen called them both up at this time.

Carroll D. Johnston, member of the Board of Directors of the Oregon Chapter of Physicians for Social Responsibility, spoke to the Commission regarding his concerns with exposure to dioxins, and the current absence of established exposure limits.

David Schreiner, the petitioner, gave the background for developing the petition. He said the Department can't adopt a "wait and see" position regarding dioxin and recommended the Commission adopt the rules as proposed in his petition.

Anne Price, Hazardous Waste Manager with the Waste Management and Cleanup Division, and Dave Fagan with Waste Management and Cleanup discussed the current Resource Conservation and Recovery Act (RCRA) regulations for dioxins. Rick Gates, Laboratory Division Manager, spoke about dioxin testing methods and the amounts of dioxin in incinerator ash.

Commissioner Lorenzen thanked the petitioners for bringing the proposed rule adoption item to the Commission, and encouraged the Department to work towards further review of dioxin level limits.

Director Marsh said the Department would research and summarize the Environmental Protection Agency's (EPA) timeline for establishing limits on dioxin levels and report back to the Commission. He said the Department would focus its efforts initially on the dioxin levels in incinerator ash and pulp and paper residue.

Commissioner McMahan moved to approve the Department's recommendation to deny the petition, with the instruction that the Department diligently pursue efforts to clarify dioxin level limits. Her motion also included the Commission's approval for the Director to sign the written order denying the petition. Commissioner Eden seconded the motion and it was unanimously approved.

D. Action Item: Theron Stiehl, Case No. SW-WR-95-083 - Appeal of Hearing Officer's Findings of Fact and Conclusions of Law

Larry Knudsen, Assistant Attorney General with the Department of Justice, introduced this item, reviewed the background of the case and explained the options available to the Commission. Larry Cwik with the Department's Northwest Region Enforcement Section was available to answer Commissioners' questions. Susan Greco, Rules Coordinator in the Office of the Deputy Director, also provided information to the Commission.

Mr. Stiehl was not present but had submitted written information dated November 13, 1996 to the Commission. Mr. Stiehl appealed the Hearing Officer's Findings of Fact and Conclusion of Law, and Hearing Officer's Final Order, dated February 15, 1996. The hearing officer determined that Appellant had established a solid waste disposal site on property owned or controlled by him without first obtaining a solid waste disposal site permit. The solid waste disposal site created a potential hazard to ground and surface waters. Mr. Stiehl was ordered to submit a cleanup plan to the Department within 10 days of the order and remove the solid waste from the site within 45 days of the Order. He appealed the order on March 12, 1996.

After considering the record in the case, Commissioner Whipple moved to approve the Department's recommendation to adopt the Hearings Officers Findings of Fact and Conclusion of Law as its own. Commissioner Van Vliet seconded the motion and it was unanimously approved.

Note: The following Agenda Items were taken out of order.

J. Informational Item: Presentation by the City of Portland Regarding the Combined Sewer Overflow (CSO) Project

Dean Marriott, Director of the Bureau of Environmental Services (BES) with the City of Portland, presented this item to the Commission. Mr. Marriott reviewed the status of the CSO correction program and discussed details of the public education program undertaken by the Bureau. He said BES is continuing to focus on efficient, lower-cost alternatives that may lead to savings from initial projections for the project. Mr. Marriott identified the next critical piece in the CSO project will be to review the use of chlorine in the water treatment process and explore other techniques to accomplish the same result.

Chair Lorenzen thanked Mr. Marriott for his presentation and urged BES to continue in its efforts to make the Willamette River a safe place for humans and wildlife.

Note: Greg Green, Air Quality Division Administrator, introduced items E and G as the last two portions of the Portland area ozone and carbon monoxide maintenance plans.

E. Rule Adoption: New Source Review Requirements for Air Quality Maintenance Areas

and

G. Rule Adoption: Portland Area Enhanced Vehicle Emissions Testing

Andy Ginsburg, Air Quality Planning Section, summarized agenda item E. Mr. Ginsburg indicated that the proposed rules apply to major new and expanding industry in ozone and carbon monoxide areas that are redesignated from nonattainment to attainment. He explained that the proposal was adopted in concept by the Commission when the maintenance plans were adopted in July, 1996. The proposed rules are needed to implement the program so that EPA can approve the maintenance plans. There were no questions from the Commission.

Ed Woods, Vehicle Inspection Program manager, summarized agenda item G. Mr. Woods indicated that the Department has worked closely with EPA to determine exactly how effective they believe our enhanced I/M program will be relative to the standard IM240 program. EPA has recently approved the emission reduction credit for the program, but at a slightly lower level than the Department had assumed for the maintenance plans. Mr. Woods noted that the Department will have to make up for the lost credit and make some conforming changes to the maintenance plans. For example, the proposed rules have built in flexibility to conduct a more thorough check of the evaporative emission control systems, if necessary, to make up for the lost credit.

Mr. Woods noted that the testing program is scheduled to begin in September, 1997, and that it will be a significant effort to construct test facilities and hire and train staff to meet that deadline. Commissioner Van Vliet asked if statutory changes would be needed to implement the enhanced inspections. Mr. Green responded that the Department is proposing a statute change to allow the test fee to be collected per test

rather than per certificate, but that the program could be implemented without this change. Chair Lorenzen noted that legislative approval for the new positions would likely be controversial, and Mr. Green agreed. Mr. Green explained that there is no easy alternative to the enhanced inspection, and that choosing another option would take several years and could result in additional air quality violations in the Portland area.

Commissioner Van Vliet moved to approve the rules as recommended by staff for agenda item E. Commissioner Whipple seconded the motion and it was unanimously approved.

Commissioner Van Vliet moved to approve the adoption of rules as proposed by the Department for agenda item G. Commissioner Eden seconded the motion and it was unanimously approved.

F. Rule Adoption: Ten Lane Regional Air Pollution Authority (LRAPA) Regulations for Approval as a Revision to the State of Oregon Clean Air Act

Greg Green, Air Quality Division Administrator, presented this item to the Commission. Mr. Green indicated that rules adopted by the LRAPA Board must be approved by the Commission if they are to be included in the State Implementation Plan or if LRAPA plans to request delegation of an EPA program. Commissioner Whipple asked if LRAPA will continue to operate or turn over its functions to the Department. Mr. Green said that the LRAPA Board is reviewing that issue and is scheduled to make a decision sometime in early 1997.

Commissioner Eden moved approval of adoption of the rules as recommended by the Department. Commissioner Van Vliet seconded the motion and it was unanimously approved.

I. Informational Item: Periodic Rule Review of Oregon Administrative Rules, Chapter 340, Divisions 11 through 180

Susan Greco, Rules Coordinator for the Department, presented this item to the Commission. Under ORS 183.545 and 183.550, the Department is required to conduct a review of its administrative rules at least once every three years. The Department must accept public comments on all of its rules, including recently adopted rules and previously reviewed rules. In May, 1996, notice of the rule review was sent to approximately 1800 people listed on the Department's mailing list. Prior to the close of the comment period, 14 comments were received. Based on these comments, the Department reviewed specific rules and responded individually to each comment. The comments and responses are included in the Department's staff report.

Following discussion about the comments submitted, Commissioner Van Vliet moved to approve the Department's recommendations as presented in the staff report. Commissioner Eden seconded the motion and it was unanimously approved.

M. Commissioners' Reports

There were no Commissioners' reports presented.

N. Director's Report

Director Marsh updated the Commission on the status of the Department's 1997-1999 budget. He indicated the Department will ask for selected fee increases during the upcoming legislative session. These revenue increases would offset rising costs that contributed to program deficits during the current budget period and pose even greater problems in the next biennium.

Director Marsh reviewed the Department's activities with the Governor's Coastal Salmon Restoration Initiative. These include DEQ staff working with Oregon Department of Fish and Wildlife personnel to integrate Umpqua Basin core areas into DEQ GIS files, EPA loaning a staff person to assist the Department in TMDL development for the lower South Fork Umpqua River, and two DEQ staff people now working on special assignment to evaluate and prioritize municipal discharges in the Rogue, Umpqua and Tillamook basins.

The Department continues its involvement with the revitalization project along Martin Luther King, Jr. Blvd. in Portland. Staff has put considerable effort into providing technical support as needed, including offering workshops for local residents and businesses on topics such as how to recognize potential environmental hazards or contaminated sites.

Director Marsh also announced that Mike Downs, who has served as Water Quality Division Administrator for the past few years, will be taking on a new assignment. Mr. Downs will have lead responsibility for several high priority water quality issues within the Department, including the Governor's Coastal Salmon Recovery Initiative. Stephanie Hallock, Eastern Region Administrator, will serve as interim Water Quality Division Administrator during the recruitment period for a new administrator.

Note: The meeting was temporarily recessed at 12:00 p.m. and reconvened at 1:00 p.m.

H. Action Item: Petition for Reconsideration or Rehearing in the matter of the Renewal of Smith Frozen Foods, Inc.'s WPCF Permit No. 3533

Commissioner Eden asked that she be recused from discussion and voting on this agenda item, as she had a potential conflict of interest.

Michael Tedin, an attorney with the Columbia Basin Institute, represented the petitioners. He addressed the Commission and answered questions regarding jurisdictional thresholds. Lynne Perry with Miller Nash represented Smith Frozen Foods, Inc. Following a discussion of jurisdictional issues, Chair Lorenzen asked Larry

Knudsen, Assistant Attorney General with the Department of Justice, for clarification of the role of the Commission in the petition process. Mr. Knudsen responded that because the permit was issued by the Department, as delegated by the Legislature, the Commission could remand the petition to the Director for a decision.

Commissioner Van Vliet moved to have the petition submitted by Umatilla Water Quality Protective Association, the Columbia Basin Institute and Robert Ehmann regarding the renewal of WPCF permit No. 3533 issued to Smith Frozen Foods, Inc. remanded to Director Marsh for a final determination. Commissioner McMahan seconded the motion and it was approved with four yes votes.

K. Informational Item: Report from Fish and Wildlife Regarding Salmon Restoration and Spills

Note: This item was not presented.

L. Informational Item: Proposal by the Confederated Tribes of the Umatilla Indian Reservation for Disposal of Chemical Weapons at the Umatilla Chemical Depot

Donald Sampson, Chairman of the Board of Trustees of the Confederated Tribes of the Umatilla Reservation (CTUIR), and J.R. Wilkinson with the CTUIR's Department of Natural Resources - Special Sciences and Resources, presented this item to the Commission.

Chairman Sampson provided an outline of CTUIR issues and examples of concerns about the proposed permit and the permitting process. He discussed ways to increase meaningful public and tribal involvement in the decision process, reduce immediate risk at the chemical storage site, and elements of an alternatives assessment CTUIR would recommend.

The options presented to the Commission by the CTUIR include:

- consider a reconfiguration facility
- request a Governor's task force on chemical weapons disposal
- potential recommendation to Congressional delegation for Defense Authorization Act modifications supporting Oregon's actions
- establish an innovative demonstration to advance the technologies available to the nation
- create cooperative working relationships between all parties involved in the decision making process

Chairman Sampson thanked the Commission for the opportunity to present CTUIR's information and asked that they consider alternative recommendations regarding the permitting process for the Umatilla Chemical Depot.

There was no further business and Chair Lorenzen adjourned the meeting at 2:10 p.m.

Approved _____
Approved with Corrections ✓

**Environmental Quality Commission
Work Session**

November 15, 1996

The Environmental Quality Commission work session was convened at 8:30 a.m. on Friday, November 15, 1996, at the Department of Environmental Quality, 811 S.W. Sixth Avenue, Portland, Oregon. The following members were present:

Henry Lorenzen, Chair
Carol Whipple, Vice Chair
Melinda Eden, Member
Linda McMahan, Member
Tony Van Vliet, Member

Also present were Larry Knudsen, Assistant Attorney General, Oregon Department of Justice, Langdon Marsh, Director, DEQ, and other DEQ staff.

Stephanie Hallock, Eastern Region Administrator, said the objective of the work session was to answer questions from the Commission and provide opportunity for public comment on the proposed permit for the Umatilla Chemical Depot. She noted that the public comment period for the proposed permit would close at 5:00 p.m. that evening. A panel of experts had been invited to the work session to provide information and address any questions the Commission might have.

Kristiina Iisa, Assistant Professor of Chemical Engineering at Oregon State University provided information regarding dioxin formation in the proposed facility. She summarized her findings and answered questions about carbon filters and comparisons of dioxins from various combustion processes.

Sheila Fleming and Julie Wroble of Ecology and Environment, Inc., reviewed available risk assessment information on incineration and alternatives. They said the greatest risks were still related to continued storage and answered questions regarding the amount of water required in the incineration process.

Sue Oliver, DEQ's Umatilla Chemical Depot Permit Coordinator, discussed details of the water requirements of the proposed facility. Commissioner Eden asked about the source and outcome of water used in the neutralization ~~incineration~~ process.

Lt. Col. John Ontiveros with the U.S. Army answered the Commission's questions about the neutralization process proposed for testing at the Aberdeen Proving Grounds facility. He also spoke about the risks of chemical incineration compared to those associated with continued storage of agent.

Gary Boyd with SAIC, an environmental consulting firm said storage risk was dominated by risks associated with rocket propellant.

Ms. Hallock and Ms. Oliver then reviewed the findings the Commission must make before issuing a hazardous waste permit.

Larry Edelman, Assistant Attorney General with the Department of Justice, answered questions regarding liability, both of the U.S. Army and the potential operator under contract to the Army.

Beginning at 11:45 a.m., the Commission listened to public comment from fourteen people. Their comments are a part of the official record.

Following the public comment, Chair Lorenzen called the Commission into executive session at 12:50 p.m. for the purpose of consulting with legal counsel regarding the potential appeals of Commission decisions relating to the U.S. Army's application to construct an incinerator at the Umatilla Depot.

The executive session concluded at 1:45 p.m. and the work session was reconvened. There was no further business and Chair Lorenzen adjourned the work session at 1:46 p.m.

Approved _____
Approved with Corrections _____

**Environmental Quality Commission
Special Session**

November 22, 1996

The Environmental Quality Commission special session was convened at 8:45 a.m. on Friday, November 22, 1996, at the Little Vert Theater, 345 SW Fourth, Pendleton, Oregon. The following members were present:

Henry Lorenzen, Chair
Carol Whipple, Vice Chair
Melinda Eden, Member
Linda McMahan, Member
Tony Van Vliet, Member

Also present were Langdon Marsh, Director, DEQ, Larry Edelman, Assistant Attorney General, and other DEQ staff.

Decision on Findings and Permits for Umatilla Chemical Depot

Stephanie Hallock, DEQ Regional Administrator of the Eastern Region, welcomed the Commission to this session to decide on findings regarding the proposed incineration of nerve and chemical agents which are stored in bulk and in munitions at the Umatilla Chemical Depot (UCD), Hermiston, Oregon. Ms. Hallock introduced speakers from the U.S. Army who were to address follow-up discussion items from the Commission work sessions held in Portland, Oregon on November 14 and 15, 1996

Gil Decker, Assistant Secretary of the Army for Research, Development, and Acquisition, introduced the Army staff and consultant to speak to the Commission. Mr. Decker then discussed the schedule and cost ramifications of using an alternative technology along with the baseline (incineration) system at UCD. Mr. Decker stated that there would be significant increases in both cost and schedule. He also discussed the water issues the Army would have to address if neutralization were used at UCD for the mustard agent.

Colonel Landry, Product Manager for Alternative Technologies, Program Manager for Chemical Demilitarization (PMCD), responded to questions regarding water usage and neutralization of mustard.

Gary Boyd from Science Applications International Corporation, consultant for PMCD, discussed risk reduction issues at UCD. In part, Mr. Boyd discussed issues of potential production changes and reverse assembly and storage options and their resultant risks.

Brett McKnight, Manager of the Eastern Region Hazardous Materials Program, provided a summary of the comments received regarding the draft environmental permits and the ORS 466.055 and 466.060 criteria.

Best Available Technology (BAT) Finding

Langdon Marsh, DEQ Director, presented the Department's recommendation that incineration for the chemical agent and associated munitions is best available technology.

Chair Lorenzen asked each Commissioner to state his/her views on the BAT finding.

Commissioner Eden supported an affirmative finding that the baseline (incineration) system is best available technology. She said she concurred with the DEQ recommendation.

Commissioner Van Vliet supported an affirmative finding that the baseline (incineration) system is best available technology. He stated he concurred with the DEQ recommendation.

Commissioner McMahan supported an affirmative finding that the baseline (incineration) system is best available technology. She said that she concurred with the previous two Commissioners and further stated she was not, generally, an advocate of incineration technology, but the temporary nature of UCD operations was a consideration in making this finding.

Vice Chair Whipple supported an affirmative finding that the baseline (incineration) system is best available technology. As a caveat, Commissioner Whipple stated that she was not wholly convinced that the storage risk posed immediate threats, but did state that at present incineration is the only available technology to destroy the chemical stockpile.

Chair Lorenzen supported an affirmative finding that the baseline (incineration) system is best available technology. He concurred with the Department's recommendation and further stated that previous testimony from Professor Lisa from Oregon State University helped him reach his finding. He

further stated that the requirement for carbon filters attached to the Pollution Abatement System (PAS) was key in making the BAT finding.

The Commission then discussed the other ORS 466.055 and 466.060 findings.

Findings

The Commission reviewed DEQ staff's analyses finding by finding. These findings would be incorporated into a Commission order.

Public Participation Finding: Commissioner Van Vliet stated that the order should identify the documentation relied on. Commission Whipple wanted the order to include both required and additional public participation activities that were conducted during the permitting process.

Location Finding: Chair Lorenzen stated that the location, in this case, is dependent on the nature of the origin of the waste (i.e., the on-site munitions) and that this is not to accept off-site waste. The Commissioners stated that it should be clear that all of the stockpile should be treated on-site, that no off-site waste should ever be accepted at the site and that it is not desirable to send the UCD chemical agent elsewhere.

Commissioner Whipple stated that once the permit is in hand, the Army should proceed expeditiously in building the facility and destroying the chemical munitions. To meet the Congressional deadline of 2004, the Army plans to begin construction around March, 1997. Director Marsh suggested some sort of re-opener if either Congress or the Army proceeds with a more aggressive alternative technology program.

Need for the Facility Finding: Chair Lorenzen indicated that the need for a facility was self-evident.

Will There be an Adverse Effect Finding: Chair Lorenzen supported making this finding.

Owner and Operator Capability Findings: Assistant Attorney General Larry Edelman discussed some ramifications of what would happen when the Army's contractor assigned to build and operate the facility later became a co-permittee. The discussion focused on the liability issue of who would or could pay for any damages due to releases. Brett McKnight discussed the permitting procedures needed to include the Army's contractor as a co-permittee.

Chair Lorenzen directed the Department to draft the final order to present later to the Commission.

Chair Lorenzen announced a temporary adjournment for lunch.

Discussion of Permit Conditions to be Included in the Hazardous Waste Permit

The Commission reconvened after lunch.

Chair Lorenzen directed the Department to review technical non-significant policy comments and incorporate them into the final permit, if appropriate.

Emergency Preparedness: Brett McKnight discussed the new proposed permit conditions regarding emergency readiness. Chemical Stockpile Emergency Preparedness Program (CSEPP) issues were discussed. Commissioners Lorenzen and Van Vliet expressed the view that construction should not necessarily be delayed to await CSEPP implementation. Assistant Secretary Decker described the Integrated Process Team (IPT) with the Oregon CSEPP program and said that in six to eight months a progress report was likely. Commissioner Eden stated that there should be a deadline in insuring progress in the CSEPP program. Director Marsh recommended that the Army report back, as required by a permit condition, as to the progress of the IPT-CSEPP efforts. The Commission agreed.

Closure of Facility: Chair Lorenzen stated that the building that houses the disassembly and incineration equipment should have more restrictive re-use language and that the Army would retain the obligation of its eventual removal. Commission McMahan agreed with Commissioner Lorenzen that stricter language is needed and to reinforce that the facility is temporary.

Carbon Filters for the Pollution Abatement System: Brett McKnight noted that technical comments were received regarding the carbon filters and that operating requirements would be made into permit conditions. Commissioner Lorenzen agreed.

Emergency Operation Center Positive Pressurization and 24-Hour Staffing: Brett McKnight discussed that permit conditions would be placed into the permit to require positive pressurization and 24-hour staffing. Commissioner Eden thought the Department proposed timelines should be shorter.

Independent Oversight: Brett McKnight discussed the proposed new permit condition. Chair Lorenzen described the nuclear industry's practice to use inspectors who are "very removed" from the facility to provide meaningful oversight. Commissioner Lorenzen said that it would be good to have in place an ability for the Department to use third-party oversight in the case it was determined to be needed for any aspect of the operations. Major General Orton described the current oversight programs in-place. Stephanie Hallock suggested reviewing the reports that are generated by the Army program and, where applicable, making any necessary corrections to the environmental permits. Chair Lorenzen stated this would be fine and for the Department look into it. Commissioners McMahan and Van Vliet said it would also be good to have public involvement.

Emergency Shut-down: Brett McKnight briefly discussed the proposed new permit conditions that address the statutory authority to shut-down operations at the facility.

Bad Weather Conditions: Brett McKnight discussed the proposed new permit condition to adopt Army standard operating procedures (SOPs) that pertain to natural adverse conditions of operations.

Baseline Monitoring: Chair Lorenzen asked if baseline data has been collected and whether the permit required a monitoring program to assess any potential impacts. Brett McKnight responded that the draft permit did not require this. Commissioner Eden said that a basic, but not necessarily extensive, monitoring system would be valuable to assess any impacts. Chair Lorenzen also stated support for such a monitoring system as another oversight function to assure the public that there are no adverse effects.

Commissioner Whipple asked a further question regarding local involvement in CSEPP.

Commissioner Lorenzen adjourned the proceedings.

Approved _____
Approved with Corrections _____

Minutes are not final until approved by the EQC

Environmental Quality Commission
December 31, 1996
Telephone Conference Call

The Environmental Quality Commission telephone conference call was convened at 9:00 a.m. on Tuesday, December 31, 1996. The following Commissioners were connected for the call:

Henry Lorenzen, Chair
Carol Whipple, Vice Chair
Melinda Eden, Member
Linda McMahan, Member
Tony Van Vliet, Member

Also present at DEQ headquarters, 811 S.W. Sixth Avenue, Portland, Oregon, were Larry Knudsen, Assistant Attorney General, Oregon Department of Justice, Langdon Marsh, Director, DEQ, and DEQ staff members.

- A. Action Item:** Petition to Temporarily Amend OAR 340-024-0301 to Stay Implementation of Vehicle Inspection Program Boundary in Regard to W. and E. Scappoose

Note: This item was withdrawn at the Petitioner's request

- B. Approval of Tax Credits**

Maggie Vandehey with the Department's Management Services Division presented this item to the Commission. The Department recommended the Commission approve certification for the tax credit applications listed below.

Applications for Pollution Prevention Pilot Program: Air Quality

All equipment is used in the normal course of doing business. However, the owners would not have replaced their existing systems at this time or with this particular equipment had it not been required by the National Emission Standards for Hazardous Pollutants (NESHAP) and to avoid monitoring and record-keeping requirements.

TC No.	Applicant	Description	Cost	Percent Allocable
4678	John L. Craig	Non venting dry-to-dry perc dry-cleaning machine. Installed as a replacement for an old perc machine.	\$ 31,900	

4680	PECO Incorporated	An aqueous cleaning system. Installed as a replacement for a vapor degreaser which used Trichloroethylene.	\$ 75,000	
4682	Instromedix, Inc..	An aqueous cleaning system. Installed in lieu of a halogenated solvent.	\$ 75,000	
4691	Webster Cleaners	Non venting dry-to-dry perc dry-cleaning machine. Installed as a replacement for an old perc machine.	\$ 28,000	
4697	Terry L. Stragey	Non venting dry-to-dry perc dry-cleaning machine. Installed as a replacement for an old perc machine.	\$ 30,395	
4704	Campus Cleaners & Laundry Inc.	An aqueous cleaning system. Installed as a partial replacement for the production capacity of a perc dry cleaning machine.	\$31,000	

Total Prevention \$ 271,295

Applications for Pollution Control Tax Credit

Division 16 - UST: Underground Storage Tanks are used in the normal course of doing business. However, the owners would not have replaced or upgraded their existing systems at this time or with this particular equipment had it not been required by EPA and Chapter 340, Division 150.

TC No.	Applicant	Description	Cost	Percent Allocable
4669	Russell Oil Company	UST system upgrade.	62,058	99
4673	Western Stations Co.	UST system upgrade.	164,623	99
4683	Truax Harris Energy LLC	UST leak detection equipment.	18,878	100
4684	Truax Harris Energy LLC	UST system replacement.	187,412	95
4685 ²	Truax Harris Energy LLC	UST system replacement.	206,289	95
4686	Truax Harris Energy LLC	UST corrosion protection/spill prevention.	51,698	99
4692	Western Stations Co.	UST system upgrade.	105,598	99
4698	Pete & Gaynell Bourikas	UST system replacement.	49,467	100
4699	Richard A. Wallace	UST system upgrade.	118,220	99
4701	Georgia Wormer	UST system replacement.	21,135	100
4702	William J. & Joyce A Reller	UST system replacement.	10,085	100

Subtotal UST: \$ 995,463

Other Division 16

4396	PGE Company	WQ: Principal Purpose - catch basin, vault and oil stop valve.	12,936	100
4427	PGE Company	WQ: Principal Purpose - concrete lined containment dike around fuel pump station, curbed containment at fuel pad, storm drain catch basin, oil/water separator and associated piping system.	55,216	100
4439	PGE Company	WQ: Principal Purpose - oil/water separator, vault with an oil stop valve and a drain piping system.	26,922	100

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4441	PGE Company	WQ: Principal Purpose - oil/water separator, asphalt pavement, vault with an oil stop valve and a storm drain piping system.	69,469	100
4469	PGE Company	WQ: Principal Purpose - liner/barricade to retard passage of oil in the event of an oil spill.	30,837	100
4533	Weyerhaeuser Paper Company	AQ: Principal Purpose - scrubber with four stacks 600 hp electric motor with blower, required piping and duct work, instrumentation & control.	255,990³	100
4560	Boise Cascade Corporation	AQ: Principal Purpose - dry electrostatic precipitator.	548,116	100
4561 ²	Boise Cascade Corporation	AQ; Principal Purpose - like-for-like replacement of wet electrostatic precipitator.	674,559	100
4569	Intel Corporation	WQ: Principal Purpose - storage tank, pH adjustment tank, reaction vessel, heat exchanger.	1,038,138	100
4577	Schaumburg Investments	WQ: Sole Purpose - water recycling system. Used in the normal course of business.	35,014	100
4610	Portland Bolt and Manufacturing Co.	HW: Sole Purpose - sulfuric acid recovery system. Used in the normal course of business.	74,691	100
4611	Portland Bolt and Manufacturing Co.	HW: Sole Purpose - spill containment and collection facility.	37,059	100
4624	Northwest Pipeline Corporation	AQ Noise/Oil: Sole Purpose - pressure relief vent silencer, separator captures oil that could be vented during process.	167,596	100
4640	Sam Trakul Investments	AQ CFC: Principal Purpose - automobile air conditioner refrigerant recycling equipment.	1,994	100
4644	Willamette Industries, Inc.	AQ Principal Purpose - like-for-like replacement of sweeper/vacuum truck. Used in the normal course of business.	25,000	100
4690	John Knez Jr.	SW-Material Recovery: Sole Purpose - Sheetrock recycling machine; vibrating conveyer & screen, loader. Used in the normal course of business.	126,437	100
4695	Roger Neuschwander	AQ Field Burning: Sole Purpose - John Deere seven bottom plow, Coastal Farm harrow, and John Deere 195 hp tractor. Used in the normal course of business.	68,134	79
4703	United Disposal	SW-material recovery: Sole Purpose - TVB vertical baler to recycle waste cardboard. Used in the normal course of business.	8,800	100

Subtotal Other \$ 3,256,908

Total Pollution Control \$4,252,371

² See Certificate Revocation.

³ Bolded amounts denote applications over \$250,000 with an Independent Accountant's Review Report attached.

Applications for Reclaimed Plastic Tax Credit

All facilities are a normal part of doing business. It is unknown if the applicant would have installed these particular facilities at this particular time without the incentive provided by the Reclaimed Plastic Tax Credit.

TC No.	Applicant	Description	Cost	Percent Allocable
4632	WWDD Partnership	'79 27x96 van trailer	2,550	100
4705	WWDD Partnership	200 hp Cal Sierra densifier for plastic recycling.	18,300	100
Total Reclaimed Plastic			\$ 20,850	

In addition, the Department recommended the following actions:

Certificate Revocation

Truax Harris Energy LLC claimed equipment on tax credit application number 4685 that replaced equipment certified on December 2, 1994 by Pollution Control Facility Certificate number 3397. Certificate number 3397 would be revoked to coincide with the approval of application number 4685.

Boise Cascade Corporation claimed equipment on tax credit application number 4561 is like-for-like replacement of equipment certified on September 12, 1986 by Pollution Control Facility Certificate number 1889. Certificate number 1889 would be revoked to coincide with the approval of application number 4561.

Certificate Transfer

Tax Credit 4612 was erroneously issued to WWDD Partnership but should have been issued to Denton Plastics Inc.

The Commission briefly discussed the treatment of corporate overhead in the Department's recommendations. Ms. Vandehey assured the Commissioners that applications implicated by the overhead issue had been withdrawn.

Chair Lorenzen asked for clarification of Intel's application number 4569. The Department recommended Intel's water pollution control facility be eligible for tax credit certification because the principal purpose of the facility is to comply with a pretreatment requirement imposed by the United Sewerage Agency. Chair Lorenzen asked if Intel's water pollution control facility would be eligible for a tax credit based on the sole purpose test rather than the principal purpose test because the pretreatment requirement originates with EPA and is not directly imposed on the applicant. Assistant Attorney General Larry Knudsen

responded that previous interpretations held that if a requirement is imposed by a Federal or State entity, that is sufficient to meet the eligibility requirement, regardless of whether the Department or another designated management agency implements the requirement. Chair Lorenzen indicated the Commission may wish to revisit this issue in the future.

Commissioner Eden moved to approve the recommendations of the Department, including the two revocations and the transfer. Commissioner Whipple seconded the motion. The motion passed with four yes votes and one no vote (Commissioner Van Vliet).

Commissioner Van Vliet asked the Department to provide a breakdown of the dollar amount of tax credits granted over the life of the program. Director Marsh assured him this information would be provided.

There was no further business and Chair Lorenzen adjourned the telephone conference meeting at 9:30 a.m.

Environmental Quality Commission

- Rule Adoption Item
- Action Item
- Information Item

Agenda Item C
January 10, 1997 Meeting

Title:

Environmental Cleanup Rule Amendments

Summary:

In July 1995 the Governor signed HB 3352 into law which directed the EQC to adopt environmental cleanup rules addressing a risk protocol for risk assessment, definitions for "hot spots" and remedy selection balancing criteria.

The proposed rule for risk assessment will require that more attention be given to current and reasonably likely anticipated land uses and to current and reasonably likely future beneficial uses of water. This approach departs from the previous assumption that all waters are to be restored if possible to the highest beneficial use (usually drinking water). In addition, the proposed rule includes technical detail to perform risk assessments for human health and ecological receptors.

The proposed rules defining "hot spots" are based on the respective media. In water, hot spots will be defined based on whether or not beneficial uses of water have been or will be significantly affected, except in instances where the Director determines treatment is not likely to protect or restore beneficial uses within a reasonable time based upon a site-specific feasibility study evaluating remedial action alternatives. In other media, areas delineated as hot spots will be defined primarily based on the risk associated with exposure. For example, the hot spot trigger level is set at concentrations of hazardous substances exceeding a risk-based concentration equal to or greater than one additional cancer for every 10,000 individuals exposed (1×10^{-4}). Other thresholds exist for non-carcinogenic risk and ecological risk.

The proposed rules for remedy selection make allowances for the Department's consideration of direct costs, benefits associated with various remedial action alternatives, and the role of treatment verses other remedial action alternatives such as excavation and off-site disposal.

Department Recommendation:

It is recommended that the Commission adopt the rules/rule amendments regarding environmental cleanup as presented in Attachment A of the Department's Staff Report.

Jeffery Christensen
Report Author


Chuck Peterson
Division Administrator

Wanda Wase
Director

State of Oregon
Department of Environmental Quality Memorandum

Date: 23 December 1996

To: Environmental Quality Commission

From: Langdon Marsh 

Subject: Agenda Item C, Environmental Cleanup Rule Amendments; EQC Meeting on 10 January 1997

Background

On September 12, 1996, the Director authorized the Waste Management and Cleanup (WMC) Division to proceed to a rulemaking hearing on proposed rules which would amend Oregon Administrative Rules 340 Division 122 Rules 010 through 110.

Pursuant to the authorization, hearing notice was published in the Secretary of State's Bulletin on October 1, 1996. On September 17, 1996 the Hearing Notice and informational materials were mailed to the mailing list of approximately 2,500 people who have asked to be notified with respect to this rulemaking.

Nine public hearings in seven locations (Portland, Coos Bay, Bend, La Grande, Eugene, Corvallis, and Medford) were held between October 22 and 30 with various DEQ staff serving as Presiding Officer. Only one location, La Grande, resulted in oral public testimony from two commentors. Written comment was received through November 15, 1996 and nineteen comments were received before the close of the public comment period. Five additional comments were received after the close of the public comment period, and the Department has notified these commentors that these late submittals could not be accepted without extending the public comment period.

Attachments C and D provide copies of the comments received and the Department's response. Department staff have evaluated the comments received. Based upon that evaluation, modifications to the initial rulemaking proposal are being recommended by the Department. These modifications are shown in Attachment E.

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

The following sections summarize the issue that this proposed rulemaking action is intended to address, the authority to address the issue, the process for development of the rulemaking proposal including alternatives considered, a summary of the rulemaking proposal presented for public hearing, a summary of the significant public comments and the changes proposed in response to those comments, a summary of how the rule will work and how it is proposed to be implemented, and a recommendation for Environmental Quality Commission (EQC) action.

Issue this Proposed Rulemaking Action is Intended to Address

On July 18, 1995, Governor Kitzhaber signed into law HB 3352 (Chapter 662 of Oregon Law 1995). The law directed the EQC to adopt environmental cleanup rules in the following three subject areas:

1. Risk protocol for risk assessment;
2. Definition of "hot spots"; and
3. Remedy selection balancing criteria

The Department has supported the changes to make risk assessment more rational; to require treatment of hot spots, and to make remediation more reasonable in both cost and time to complete. While not every remediation will be "cheaper, faster, better," the Department believes that the revised rules will result in more remediations that meet the protective standards set out in the statute.

Relationship to Federal and Adjacent State Rules

The Oregon environmental cleanup law (state superfund) is not a delegated program. The federal Superfund program uses ARARs (applicable or relevant and appropriate requirements) and Superfund-specific standards that are not applicable to the state program. However, one should note that the 1995 amendments establish standards that might be regarded as more stringent than what might be imposed under Superfund. For example, the 1995 amendments require that risk for human exposure to individual carcinogens not exceed 1×10^{-6} (one in one million) while the federal Superfund allows a risk range from 1×10^{-6} to 1×10^{-4} .

The proposed rules allow use of MCLs (Maximum Contaminant Levels) and other criteria as potential "triggers" for defining hot spots in water which is currently or reasonably might be used as drinking water, but not as a standard *per se*. Under Oregon's cleanup law and the proposed new environmental cleanup rules, there is a requirement for treatment, if feasible, for hot spots in water and other media. In contrast, the DEQ Director shall select or approve the least expensive remedial action alternative (which may include engineering or institutional controls) for contaminated areas

which are not defined as a hot spot, unless a more expensive remedy has significant benefits in terms of risk reduction, reliability of the remedy, or other benefits addressed by specified remedy selection balancing factors. At the federal level, the preference for treatment remains in place for all contamination.

Authority to Address the Issue

As provided by HB 3352, Chapter 662 of Oregon Law 1995, the EQC must adopt rules within 18 months of the effective date. Since HB 3352 was signed by the governor in July 1995, the Commission is required to adopt rules by January 1997.

Process for Development of the Rulemaking Proposal (including Advisory Committee and alternatives considered)

A 13-member Cleanup Advisory Committee (CAC) was convened in November, 1995 and met every three weeks through August, 1996. The CAC was established as a steering committee to provide high-level policy advice necessary to complete proposed revisions to the state's environmental cleanup rules. Concurrent with the main CAC advisory committee, two Technical Workgroups (TWGs) provided input. The TWGs met every other week. All groups (CAC and the TWGs) were diverse groups representing different stakeholder interests, and all groups worked through significant public policy issues to create what the Department believes is a workable set of rules. The Department also sponsored a series of community meetings throughout the state to discuss the amended cleanup law and associated rulemaking issues with local government officials, businesses and citizens. In addition, the Department held nine information sessions at seven locations around the state prior to the scheduled hearings.

Summary of Rulemaking Proposal Presented for Public Hearing and Discussion of Significant Issues Involved.

The proposed rules address three subject matters: risk protocol for risk assessments; definitions for "hot spots"; and remedy selection balancing factors.

Risk Assessment

A proposed new rule (-084) specific to risk assessment to the cleanup rules and several definitions are provided. Assessment of risk associated with exposure to hazardous substances is a key driver for determining the extent of required remedial action. As part of this assessment of risk, HB 3352 and the proposed rules require consideration of current and reasonably likely future land uses and current and reasonably likely future beneficial uses of water. In general, more attention will need to be given to determinations of current and reasonably likely future

land use and current and reasonably likely future beneficial uses of groundwater and surface water, including water resources currently impacted by releases of hazardous substances and water resources which may be impacted by migration of contaminants. In addition, the rules proposed for EQC consideration include significant technical detail in performing risk assessments for human health and ecological receptors.

Hot Spots

"Hot spots" may be described in general terms as seriously-contaminated media.

The proposed rules define hot spots in water on the basis of whether beneficial uses of water have been or will be significantly affected, except that significantly affected beneficial uses of water do not constitute a hot spot if treatment is not reasonably likely to protect or restore beneficial uses within a reasonable time as determined during a feasibility study. In effect, the proposed rules reflect a departure from the former practice of defaulting to an assumption that all water resources are to be protected to drinking water standards. In reality, for some sites, there are several current or reasonably likely future beneficial uses of water, which may, or may not, include drinking water.

In defining hot spots for media other than water, including soils, the primary trigger is risk -- are any of the individual contaminants present at risk-based concentrations of greater than one excess cancer for every 10,000 exposures (1×10^{-4})? The protectiveness standard in statute and rule is one in one million (1×10^{-6}) for each individual contaminant, so the hot spot threshold is 100 times the acceptable risk level. The proposed rules also have thresholds for non-carcinogenic risk and ecological risk.

Under the proposed rules, there is a requirement for treatment only for hot spots of hazardous substance contamination. This requirement is subject to balancing factors, but hot spots have a "higher threshold" for evaluating cost of treating the contamination. Under the proposed rules, this higher threshold applies until the hot spot threshold is met. In contrast, the least expensive remedy, subject to the balancing factors, is preferred for contamination which does not have the characteristics of a hot spot.

Remedy Selection

The rules proposed, if approved, will amend the state's remedy selection balancing factors. Probably the most important of the changes are those previously discussed: greater consideration of current and reasonably likely land and water use and a preference for treatment of hot spots of contamination.

Another significant rulemaking issue concerned analysis of costs and benefits associated with various remedial action alternatives, and the role of treatment vs. other remedial action alternatives, including excavation and off-site disposal. Under the proposed rules, in selecting or approving remedies, the Director's consideration of costs of the alternative is limited to the direct costs of the action. With respect to consideration of the benefits of various remedial action alternatives, benefits are to be considered to the degree which they result in improved risk reduction or risk management. In general, broader societal costs or opportunity costs are not factored in, but long-term operational and maintenance cost will be. The existing and proposed rules provide opportunities for public comment and participation. This participation may be particularly important for determinations with respect to current and reasonably likely future land and water uses.

The rules provide for evaluation of a range of remedial action alternatives which may include treatment (in-situ or ex-situ), excavation and off-site disposal, engineering controls, institutional controls, or a combination of these methods. This range of alternatives may be appropriate for evaluation of both hot spots and facilities which do not have hot spots.

Summary of Significant Public Comment and Changes Proposed in Response

DEQ established three advisory committees to assist the Department in this rulemaking effort, and has also relied on community discussion groups, workshops, and other forums in addition to the formal public comment period to develop the recommended rules. Copies of all comments and the Department's response are included in Attachments C and D, along with a "redline" review of the changes made in response to the public comments in Attachment E.

The following reflects general categories of comments made on the proposed rule as submitted for public comment:

1. The rules are too complex;
2. The rules should allow for screening level risk assessments; and
3. The requirement for treatment of hot spots is too restrictive.

The following provides a short summary of the changes the Department made in response to these comments. This short summary does not reflect all of the proposed changes or respond in detail to every comment; please refer to the attachments for detailed responses.

The rules are too complex

DEQ acknowledges that the rules are complex. The levels of detail for conducting risk assessments and for determining hot spots are greater than in previous rules, but the Department

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Agenda Item C, Environmental Cleanup Rule Amendments; EQC Meeting 1/10/97

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believes that the general structure of the rules as proposed for EQC consideration is appropriate. The Department has clarified some definitions, has reduced the number of redundant passages, and has moved some elements to achieve a more logical flow.

The rules should allow for screening level risk assessments

The rules proposed for EQC consideration allow for "scoping" and/or "screening" level risk assessments. The Department added a new section to make that clear. A tiered approach to risk assessment is one the Department has always favored.

The ecological acceptable risk levels, as proposed for EQC review, have been modified to make it clear when "the point before significant adverse impacts to the health or the viability of a population" occurs. DEQ believes the new language is clearer and arguably less stringent but still protective consistent with HB 3352's requirement to protect individual threatened and endangered species and the health and viability of populations of other species.

The requirement for treatment of hot spots is too restrictive

The Department continues to support the requirement for treatment of hot spots, but the Department also believes that application of the balancing factors will allow excavation and offsite disposal (with or without treatment) when appropriate. In the proposed rules presented for EQC consideration, DEQ has modified the rule relating to removal actions to address comments received and to clarify the Department's intent with respect to excavation and off-site disposal of hot spots of contamination.

Summary of How the Proposed Rule Will Work and How it Will be Implemented

The statute required DEQ to "interpret and apply its rules and select remedial actions consistent with the purpose and intent of . . . [the] Act to the maximum extent practicable." In many ways, the Department has begun implementation and will continue and intensify those efforts over the coming months.

The Department has conducted "site clearinghouse" meetings almost weekly for the past year to provide recommendations for addressing site-specific technical and legal issues in a manner consistent with the new law and anticipated rules.

The Department sponsored two "kick off" sessions in November 1995 and October 1996, each attended by over 275 people to discuss the new law and the rules as proposed for the public comment period. The Department has also sponsored community discussion groups and

information sessions around the state and actively participates in conferences addressing environmental cleanup activities in Oregon.

DEQ is in the process of developing guidance, as required for implementation of the rules, and will conduct or sponsor additional training sessions. DEQ's guidance development process will continue the Department's open process of stakeholder involvement in rule implementation.

Recommendation for Commission Action

It is recommended that the Commission adopt the rules/rule amendments regarding environmental cleanup as presented in Attachment A of the Department Staff Report.

Attachments

- A. Rule (Amendments) Proposed for Adoption
- B. Supporting Procedural Documentation:
 - 1. Legal Notice of Hearing
 - 2. Fiscal and Economic Impact Statement
 - 3. Land Use Evaluation Statement
 - 4. Questions to be Answered to Reveal Potential Justification for Differing from Federal Requirements
 - 5. Cover Memorandum from Public Notice
- C. Public Comments
 - 1. Presiding Officer's Report on Public Hearing
 - 2. Written Comments
- D. Department's Evaluation of Public Comment
- E. "Redline" Version Showing Changes from Public Comment
- F. Rule Implementation Plan
- G. Hot Spot Summary and References
- H. Advisory Committee Membership

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Approved:

Section:

Dick Pedersen

Division:

Dick Pedersen for Mary W. Hill

Report Prepared By: Jeff Christensen

Phone: 229-6391

Date Prepared: 20 December 1996

BK/bk
staffcvf.doc

Attachment A

**PROPOSED REVISIONS TO
DIVISION 122 RULES:
HAZARDOUS SUBSTANCE REMEDIAL ACTION**

Rule Index

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11	Generic Remedies	340-122-047
11	Activities	340-122-050
12	Removal	340-122-070
13	Site Evaluation	340-122-071
13	Preliminary Assessment	340-122-072
15	Confirmation of a Release	340-122-073
16	Development of Confirmed Release List	340-122-074
16	Development of Inventory	340-122-075
17	Inventory Ranking	340-122-076
18	Initiation of Process for Delisting Facilities	340-122-077
19	Inventory Delisting	340-122-078
19	Delisting--Determination	340-122-079
20	Remedial Investigation	340-122-080
22	Risk Assessment	340-122-084
27	Feasibility Study	340-122-085
28	Selection or Approval of Remedial Action	340-122-090
34	Public Notice and Participation	340-122-100
35	Administrative Record	340-122-110
36	Definitions	340-122-115

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PROPOSED REVISIONS TO
DIVISION 122:
HAZARDOUS SUBSTANCE REMEDIAL ACTION RULES

Purpose

340-122-010 (1) These rules establish the standards and ~~procedures process~~ to be used under ORS 465.200 through ~~465.455 and 465.900 465.380~~ for the determination of removal and remedial action, and ~~degree of cleanup~~ necessary to assure protection of the present and future public health, safety, and welfare, and the environment in the event of a release or threat of a release of a hazardous substances.

(2) These rules also establish the standards and ~~procedures processes~~ to be used under ORS 465.200 to ~~465.455 and 465.900 465.380~~ and ORS ~~466.706 466.705~~ to 466.835 and 466.895 for the determination of remedial action or corrective action of releases of petroleum from underground storage tanks necessary to assure protection of the present and future public health, safety and welfare, and the environment in the event of a release or threat of a release of petroleum.

(3) These rules further establish the procedures for implementation of a site discovery program for hazardous substance releases pursuant to ORS 465.215 through 465.245 and 465.405, including a process for evaluation and preliminary assessment of releases of hazardous substances, and a process for developing and maintaining a statewide list of confirmed releases and an inventory of sites requiring investigation, removal, remedial action, or related long-term engineering or institutional controls.

Stat. Auth.: ORS 465.400(1), 465.405, Ch. 466 & 468.020

Hist.: DEQ 26-1988, f. & cert. ef. 9-16-89; DEQ 29-1988, f. & cert. ef. 11-9-89; DEQ 29-1990, f. & cert. ef. 7-13-90

Definitions

340-122-020 Terms not defined in this section have the meanings set forth in ORS 465.200. Additional terms are defined as follows unless the context requires otherwise:

—— (1) "Alternative Technology" means a system, process, or method that permanently alters the composition of a hazardous substance through chemical, biological, or physical means so as to significantly reduce the volume, toxicity, or mobility of the hazardous substance or contaminated materials treated. Such technology may include a system, process, or method during any of the following stages of development:

—— (a) Available technology that is fully developed and in routine or commercial or private use;

—— (b) Innovative technology where cost or performance information is incomplete and where full scale field testing is required before the technology is considered proven and available for routine use; or

—— (c) Emerging technology that has not successfully passed laboratory or pilot scale testing.

—— (8) "Background Level" means the concentration of hazardous substance, if any, existing in the environment at the site before the occurrence of any past or present release or releases.

—— (3) "Director" means the Director of the Department of Environmental Quality or the Director's authorized representative.

1 ~~_____ (4) "Environment" includes the waters of the state, any drinking water supply, any land~~
2 ~~surface and subsurface strata, sediments, saturated soils, subsurface gas, or ambient air or~~
3 ~~atmosphere.~~

4 ~~_____ (5) "Facility" or "Site" has the meaning set forth in ORS 465.200(6).~~

5 ~~_____ (6) "Hazardous Substance" means:~~

6 ~~_____ (a) Hazardous waste as defined in ORS 466.005;~~

7 ~~_____ (b) Any substance defined as a hazardous substance pursuant to section 101(14) of the~~
8 ~~federal Comprehensive Environmental Response, Compensation and Liability Act, P.L. 96-510, as~~
9 ~~amended, and P.L. 99-499;~~

10 ~~_____ (c) Oil as defined in ORS 465.200(11); and~~

11 ~~_____ (d) Any substance designated by the commission under ORS 465.400.~~

12 ~~_____ (7) "Permitted or Authorized Release" means a release that is from an active facility and~~
13 ~~that is subject to and in substantial compliance with a current and legally enforceable permit issued~~
14 ~~by: the Department, the United States Environmental Protection Agency; or the Lane Regional Air~~
15 ~~Pollution Authority; is in conformance with Department rules; or is otherwise in conformance with~~
16 ~~the provisions of a State Implementation Plan.~~

17 ~~_____ (8) "Release" means any spilling, leaking, pumping, pouring, emitting, emptying,~~
18 ~~discharging, injecting, escaping, leaching, dumping or disposing into the environment including the~~
19 ~~abandonment or discarding of barrels, containers and other closed receptacles containing any~~
20 ~~hazardous substance, or any threat thereof, but excludes:~~

21 ~~_____ (a) Any release which results in exposure to a person solely within a workplace, with~~
22 ~~respect to a claim that the person may assert against the person's employer under ORS Chapter~~
23 ~~656;~~

24 ~~_____ (b) Emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel or~~
25 ~~pipeline pumping station engine;~~

26 ~~_____ (c) Any release of source, by product or special nuclear material from a nuclear incident, as~~
27 ~~those terms are defined in the Atomic Energy Act of 1954, as amended, if such release is subject to~~
28 ~~the requirements with respect to financial protection established by the Nuclear Regulatory~~
29 ~~Commission under Section 170 of the Atomic Energy Act of 1954, as amended, or, for the~~
30 ~~purposes of ORS 465.260 or any other removal or remedial action, any release of source by product~~
31 ~~special nuclear material from any processing site designated under Section 102(a)(1) or 302(a) of the~~
32 ~~Uranium Mill Tailings Radiation Control Act of 1978; and~~

33 ~~_____ (d) The normal application of fertilizer.~~

34
35 Stat. Auth.: ORS 465.400(1), 465.405, Ch. 466 & 468.020

36 Hist.: DEQ 26-1988, f. & cert. ef. 9-16-89; DEQ 29-1990, f. & cert. ef. 7-13-90; DEQ 12-1992, f. &
37 cert. ef. 6-9-92

38
39 **Scope and Applicability**

40 340-122-030 These rules apply to the release or threat of release of hazardous substances
41 into the environment, except as provided below:

42 (1) Exempted Releases. These rules shall not apply to releases exempted pursuant to ORS
43 465.200(21)(14)(a), (b), (c), and (d).

44 (2) Conditional Exemption of Permitted Releases. These rules do shall not apply to
45 permitted or authorized releases of hazardous substances, unless the Director determines that

1 application of these rules might be necessary in order to protect public health, safety, or welfare, or
2 the environment. These rules may be applied to the deposition, accumulation, or migration resulting
3 from otherwise permitted or authorized releases.

4 (3) Relationship to Other Cleanup Actions:

5 (a) Except as provided under subsection (3)(b) of this rule, these rules ~~do shall~~ not apply to
6 releases where one of the following actions has been completed:

7 (A) Spill response pursuant to ORS 466.605 to 466.680;

8 (B) Oil spill cleanup on surface waters pursuant to ORS ~~468B.300 468.780~~-to
9 ~~468B.500468.815. (Renumbered 468B.300 to 468B.335 in 1991);~~

10 (C) Corrective action of a release of a hazardous waste pursuant to ORS 466.005 to
11 ~~466.357466.350. (Renumbered 468B.005 to 468.095 in 1991);~~

12 (D) Cleanup pursuant to ORS ~~468B.005 468.700~~ to ~~468B.095468.778~~.

13 (b) Where hazardous substances remain after completion of one of the actions referred to in
14 subsection (3)(a), ~~these of this rules may~~ apply if the Director determines that ~~application of these~~
15 ~~rules might be necessary to perform~~ a preliminary assessment or additional investigation or
16 remediation may be necessary in order to protect public health, safety, or welfare, or the
17 environment.

18 (4) Corrective Action for Petroleum Releases from Underground Storage Tanks. OAR
19 340-122-205 to 340-122-360 shall apply to corrective action for releases of petroleum from
20 underground storage tanks that are subject to ORS ~~466.706 466.705~~ to 466.835 and 466.895, except
21 as provided under OAR 340-122-215(2), ~~which authorizes~~ the Director to order the remedial
22 action or corrective action cleanup under OAR 340-122-010 to 340-122-110.

23 (5) Nothing in these rules regarding listing on the Confirmed Release List or the
24 Inventory, OAR 340-122-073 through 340-122-079, shall be construed to be a prerequisite to or
25 otherwise affect the liability of any person or the authority of the Director to undertake, order, or
26 authorize a removal, remedial action, or other activities under ORS Chapter 465 or other
27 applicable law.

28 (6) Any determination of current or reasonably likely future land uses or beneficial uses of
29 water pursuant to these rules shall apply only for the purpose of selecting or approving removal or
30 remedial actions under these rules.

31
32 Stat. Auth.: ORS 465.400(1), 465.405, Ch. 466 & 468.020

33 Hist.: DEQ 26-1988, f. & cert. ef. 9-16-89; DEQ 29-1988, f. & cert. ef. 11-9-88; DEQ 15-1989, f. &
34 cert. ef. 7-28-89 (and corrected 8-3-89); DEQ 29-1990, f. & cert. ef. 7-13-90; DEQ 12-1992, f. & cert.
35 ef. 6-9-92

36
37 **Standards**

38 340-122-040 (1) Any removal or remedial action shall address a release or threat of release
39 attain a degree of cleanup of hazardous substances and control of further release of hazardous
40 substances in a manner that assures protection of present and future public health, safety, and
41 welfare, and the environment. Such protection shall prevent, eliminate, or minimize potential and
42 actual adverse impacts from hazardous substances to:

43 ~~_____~~ (a) Biological receptors;

44 ~~_____~~ (b) Present and future uses of the environment;

45 ~~_____~~ (c) Ecosystems and natural resources; and

~~(d) Aesthetic characteristics of the environment.~~

~~(2)(a) In the event of a release of a hazardous substance, remedial actions shall be implemented to achieve the environment shall be restored to:~~

~~(a) Acceptable risk levels defined in OAR 340-122-115, as demonstrated by a residual risk assessment; or~~

~~(b)(A) The Numeric soil cleanup levels specified in OAR 340-122-045, if applicable appropriate; or~~

~~(c) Numeric cleanup standards developed as part of an approved generic remedy identified or developed by the Department under OAR 340-122-047, if applicable; or~~

~~(d) For areas where hazardous substances occur naturally, the background level of the hazardous substances, if higher than those levels specified in subsections (2)(a) through (2)(c) of this rule. Background Level, unless the Director determines that remedial actions designed to attain Background Level do not meet the "feasibility" requirement of OAR 340-122-090(1)(b), in which event the environment shall be restored to the lowest concentration level in accordance with OAR 340-122-090.~~

~~(b) In the event of a threat of release of hazardous substances, the Background Level of the environment shall be protected;~~

~~(c) As provided under subsections (2)(a) and (b) of this rule, background before contamination and, when appropriate, the concentration levels specified in OAR 340-122-045 are the standards. These levels might not be possible in some instances or feasible in others, based on the qualifying factors as applied under OAR 340-122-045 and 340-122-090(1)(b).~~

~~(3) In the event of a release of hazardous substances to groundwater or surface water constituting a hot spot of contamination, treatment shall be required in accordance with OAR 340-122-085(5) and OAR 340-122-090.~~

~~(4)(3) A removal or remedial action shall prevent or minimize future releases and migration of hazardous substances in the environment. A removal or remedial action and related activities shall not result in greater environmental degradation of the environment worse than that existing when the removal or remedial action commenced, unless short-term degradation is approved by the Director under OAR 340-122-050(4).~~

~~(5)(4) A removal or remedial action shall provide long-term care or management, as where necessary and appropriate, including but not limited to monitoring, operation, and maintenance, and periodic review as appropriate.~~

Stat. Auth.: ORS 465.400(1), Ch. 466 & 468.020

Hist.: DEQ 26-1988, f. & cert. ef. 9-16-89; DEQ 12-1992, f. & cert. ef. 6-9-92

Numerical Soil Cleanup Levels

340-122-045 This rule provides cleanup levels for hazardous substances in soil only. These optional cleanup levels may differ from background or the lowest feasible concentration levels provided elsewhere within this division. Remedial actions under this rule are remain subject to the public participation requirements provided under ORS 465.320 and OAR 340-122-100. The responsible party may propose A remedial action may be proposed under this rule if the responsible party meets the criteria of sections (1) through (5) of this rule would be satisfied.

(1) The characterization of the hazardous substances and the facility has been conducted in a manner acceptable to the Department.

1 (2) The characterization has determined:

2 (a) The number and the nature of the contaminants of concern;

3 (b) The contaminants of concern exist in soil only;

4 (c) All contaminants of concern are listed on the soil cleanup table;

5 (d) The source(s) of the contaminants of concern;

6 (e) The vertical and horizontal extent of the contaminants of concern; and

7 (f) The depth to groundwater.

8 (3) The responsible party can demonstrate to the Department that upon completion of the
9 remedial action the total excess cancer risk will not exceed 1×10^{-5} , and the hazard index for
10 non-carcinogens with similar critical endpoints will not exceed one:

11 (a) Risks are presumed to be additive for carcinogens and for non-carcinogens with similar
12 critical endpoints. The cleanup levels in Table 1 and Appendix 1 must be prorated downward when
13 the substances have similar critical endpoints to keep the total site risk below the prescribed levels;

14 (b) In determining whether a site with multiple contaminants of concern will be accepted
15 for remedial action under this rule the Department will consider the following:

16 (A) Detected concentrations;

17 (B) Toxicity and critical endpoints;

18 (C) Frequency of detection;

19 (D) Mobility;

20 (E) Persistence;

21 (F) Bioaccumulation potential; and

22 (G) Degradation products.

23 (4) No contaminants of concern at the facility will adversely affect surface water based
24 upon consideration of:

25 (a) Distance to the surface water;

26 (b) Containment of the contaminants of concern;

27 (c) Surface soil permeability;

28 (d) Maximum two-year, 24-hour precipitation event;

29 (e) Proximity of flood plain(s);

30 (f) Terrain slope;

31 (g) Vegetative cover; and

32 (h) Hydrological connections between groundwater and surface water.

33 (5) No contaminants of concern at the facility will adversely affect sensitive environments
34 based upon consideration of:

35 (a) Distance to the sensitive environment;

36 (b) Surface soil permeability and erodibility;

37 (c) Vegetative cover; and

38 (d) Transport media.

39 (6) If all the criteria in sections (1), (2), (3), (4) and (5) of this rule are met, the responsible
40 party may propose a remedial action which uses Table 1 and Appendix 1 to determine the
41 appropriate cleanup levels. All remedial actions under this rule must meet the appropriate Soil
42 Cleanup Level for volatiles, semi-volatiles or pesticides or the appropriate Leachate Concentration
43 for inorganics as contained in Table 1 unless the responsible party can demonstrate by one of the
44 following methods that groundwater will not be adversely affected or that the cleanup level is

1 below background or the practical quantitation level (PQL) and a higher residual concentration than
2 the appropriate level in Table 1:

3 (a) The responsible party can demonstrate with a sampling methodology acceptable to the
4 Department that the leachate concentrations from representative site samples contaminated with
5 volatiles, semi-volatiles, or pesticides do not exceed the Leachate Reference Concentrations in
6 Appendix 1. (For inorganic compounds, the responsible party must always conduct a leaching test,
7 and the resultant leachate must not exceed the Leachate Concentration in Table 1.) The responsible
8 party may perform the Synthetic Precipitation Leaching Procedure (SPLP; EPA Method 1312), the
9 Toxicity Characteristic Leaching Procedure (TCLP; EPA Method 1311) or other Department
10 approved procedures to estimate potential leaching of contamination at the site. In no case may the
11 residual contamination exceed the Maximum Allowable Soil Concentrations in Appendix 1 as
12 specified in section (7) of this rule;

13 (b) The responsible party can demonstrate with a Department-approved fate and transport
14 model and with default and/or site-specific data approved by the Department that residual soil
15 concentrations will not result in contaminant concentrations in the groundwater which exceed the
16 Groundwater Reference Concentrations listed in Appendix 1. This demonstration must consider
17 factors such as type/nature of contaminants; source quantity; quantity of contaminated soils; clay
18 content; soil pH; redox potential; chemical and physical properties of the contaminants including
19 toxicity and mobility; net precipitation; subsurface hydraulic conductivity; vertical depth to
20 groundwater; degradation products; and naturally-occurring background levels. In no case may the
21 residual contamination exceed the Maximum Allowable Soil Concentrations in Appendix 1 as
22 specified in section (7) of this rule; or

23 (c) The responsible party can demonstrate that the soil cleanup level for the contaminant of
24 concern is at or below the background level for compounds that occur naturally. The responsible
25 party may in a manner acceptable to the Department determine the representative background
26 concentration and clean up to that level; or

27 (d) The responsible party can demonstrate that the soil cleanup level is below the practical
28 quantitation level (PQL) for the contaminant of concern. The responsible party may in a manner
29 acceptable to the Department and according to "Test Methods for Evaluating Solid Waste,
30 SW-846, 3rd Edition", U.S. EPA, 1986 (including methods as approved in 54 FR 40260 40269,
31 9/29/89 and 55 FR 8948-8950, 3/9/90) determine the proper PQL and remediate until the residual
32 contamination meets the PQL level; or

33 (e) The responsible party can elect to opt out of this rule and perform a Remedial
34 Investigation, risk assessment, or and F feasibility Sstudy (RI/FS)-under OAR 340-122-080
35 through 340-122-085.

36 (7) If leaching to groundwater is not the pathway of concern or if the responsible party
37 demonstrates that groundwater will not be adversely affected by performing the appropriate
38 leaching test or fate and transport model, the residual soil contamination shall not exceed the
39 Residential Maximum Allowable Soil Concentration in Appendix 1 unless the site meets the
40 industrial criteria and the responsible party proposes to meet the Industrial Maximum Allowable
41 Soil Concentration. If the responsible party proposes to meet the Industrial Maximum Allowable
42 Soil Concentration cleanup levels, the facility must meet all the following additional criteria:

43 (a) The facility is planned and zoned for industrial use; and

44 (b) Appropriate institutional controls (e.g., deed restrictions, restrictive covenants,
45 Environmental Hazard Notice) will be in force; and

1 (c) Uses of the facility and uses and zoning of properties within 100 meters of the
2 contaminated area are industrial uses or are other uses where the Department concurs that the
3 exposure is limited and thus does not warrant application of the residential standard.

4 (8) Proposed remedial actions under this section are not required to include the feasibility
5 study in OAR ~~340-122-085~~ ~~340-122-080(3)~~ except as provided ~~noted~~ in subsection (6)(e) of this
6 rule. Only remedial technologies that have been proven to be effective in reaching the cleanup
7 levels shall be approved.

8 (9) This rule, including the numerical cleanup levels and the procedures and standards set
9 forth in this rule, is not intended to be construed or applied as applicable or relevant and appropriate
10 requirements under Section 121(d) of the Comprehensive Environmental Response, Compensation
11 and Liability Act of 1980, 42 U.S.C. § 9621.

12 (10) If the responsible party has adequately characterized the site and achieved the
13 appropriate cleanup levels or made appropriate demonstrations as described in sections (6) and (7)
14 of this rule, the Department will issue a written determination that the cleanup is complete subject
15 to any Department finding based on new information that the cleanup as performed is not protective
16 of human public health, safety or welfare, or the environment.

17
18 [Publications: The publication(s) referred to or incorporated by reference in this rule are available
19 from the Department of Environmental Quality.]
20

21 Stat. Auth.: ORS 465.400(1) & 468.020

22 Hist.: DEQ 12-1992, f. & cert. ef. 6-9-92

23
24 **Definitions for OAR 340-122-045 and the Soil Cleanup Table**

25 ~~340-122-046 (1) "Carcinogen" means any substance or agent that produces or tends to produce~~
26 ~~cancer in humans. "Carcinogen" as applied to the substances in the Soil Cleanup Table means the~~
27 ~~substance has been classed by the U.S. Environmental Protection Agency (EPA) as an "A" (known~~
28 ~~human) or "B" (probable human) carcinogen in the EPA Integrated Risk Information System~~
29 ~~(IRIS) database.~~

30 (2) ~~"Cleanup Level" means the residual concentration of a hazardous substance in a~~
31 ~~medium that is determined to be protective of human health and the environment under specified~~
32 ~~exposure conditions.~~

33 (3) ~~"Contaminants of Concern" means a hazardous substance that is present in such~~
34 ~~concentrations that the contaminant poses a threat to human health or the environment. Hazardous~~
35 ~~substances are not "contaminants of concern" if the substances would not be "confirmed releases"~~
36 ~~under OAR 340-122-427(2) and (3). The department shall consider whether a hazardous substance~~
37 ~~is a "contaminant of concern" based upon:~~

38 (a) ~~The toxicological characteristics of the hazardous substance that influence its ability to~~
39 ~~adversely affect human health or the environment relative to the concentration of the hazardous~~
40 ~~substance at the site;~~

41 (b) ~~The chemical and physical characteristics of the hazardous substance which govern its~~
42 ~~tendency to persist in the environment;~~

43 (c) ~~The chemical and physical characteristics of the hazardous substance which govern its~~
44 ~~tendency to move into and through environmental media;~~

45 (d) ~~The natural background concentrations of the hazardous substances;~~

- 1 (e) The thoroughness of the testing for the hazardous substance at the site;
2 (f) The frequency that the hazardous substance has been detected at the site; and
3 (g) Degradation by products of the hazardous substances.

4 (4) "Critical Endpoint" or "Critical Effect" means the adverse health effect used as the
5 basis for the derivation of the reference dose (RfD). Exposure to a given chemical may result in a
6 variety of toxic effects (e.g., liver defects, kidney defects, or blood defects). The critical endpoint is
7 selected from the different adverse health effects produced by a given chemical, and it is the
8 adverse health effect with the lowest dose level that produced toxicity.

9 (5) "Groundwater" means any water, except capillary moisture, beneath the land surface or
10 beneath the bed of any stream, lake, reservoir or other body of surface water within the boundaries
11 of the state, whatever may be the geological formation or structure in which such water stands,
12 flows, percolates or otherwise moves.

13 (6) "Hazard Index" means the sum of two or more hazard quotients for multiple hazardous
14 substances and/or multiple exposure pathways.

15 (7) "Hazard Quotient" means the ratio of the exposure of a single hazardous substance over
16 a specified time period to a reference dose for that hazardous substance derived for a similar
17 exposure period.

18 (8) "Practical Quantitation Limit" or "PQL" means the lowest concentration that can be
19 reliably measured within specified limits of precision, accuracy, representativeness, completeness,
20 and comparability when testing field samples and tested under routine laboratory operating
21 conditions using department approved methods.

22 (9) "Risk" means the probability that a hazardous substance, when released into the
23 environment, will cause adverse effects in exposed humans or other biological receptors.

24 (10) "Risk Assessment" means the process used to determine the threats posed by
25 hazardous substances. Elements include identification of the hazardous substances present in the
26 environmental media; assessment of exposure and exposure pathways; assessment of the toxicity of
27 the hazardous substances; characterization of human health risks; characterization of the impacts
28 and/or risks to the environment.

29 (11) "Sensitive Environment" means an area of particular environmental value where a
30 hazardous substance could pose a greater threat than in other non sensitive areas. Sensitive
31 environments include but are not limited to: Critical habitat for federally endangered or threatened
32 species; National Park, Monument, National Marine Sanctuary, National Recreational Area,
33 National Wildlife Refuge, National Forest Campgrounds, recreational areas, game management
34 areas, wildlife management areas; designated federal Wilderness Areas; wetlands (freshwater,
35 estuarine, or coastal); wild and scenic rivers; state parks; state wildlife refuges; habitat designated
36 for state endangered species; fishery resources; state designated natural areas; county or municipal
37 parks; and other significant open spaces and natural resources protected under Goal 5 of Oregon's
38 Statewide Planning Goals.

39 (12) "Soil" means a mixture of organic and inorganic solids, air, water and biota which
40 exists on the earth surface above bedrock, including materials of anthropogenic sources such as
41 slag, sludge, etc.

42 (13) "Surface Water" means lakes, bays, ponds, impounding reservoirs, springs, wells,
43 rivers, streams, creeks, estuaries, wetlands, inlets, canals, the Pacific Ocean within the territorial
44 limits of the State of Oregon, and all other bodies, natural or artificial, inland or coastal, fresh or
45 salt, public or private (except those private waters which do not combine or effect a junction with

1 natural surface waters), which are wholly or partially within or bordering the state or within its
2 jurisdiction.

3 (14) "Total Excess Cancer Risk" means the upper bound on the estimated excess cancer risk
4 associated with exposure to multiple hazardous substances and multiple exposure pathways.

5
6 Stat. Auth.: ORS 465.400(1) & 468.020

7 Hist.: DEQ 12-1992, f. & cert. ef. 6-9-92

8 9 Generic Remedies

10 340-122-047 (1) The Department may identify or develop generic remedies for common
11 categories of facilities, hazardous substances, or impacted media. For purposes of this rule, a
12 "generic remedy" means a potential remedial technology or method developed or identified by
13 the Department for use at eligible facilities on a streamlined basis with limited evaluation of
14 other remedial alternatives. Generic remedies may be used, as follows:

15 (a) A generic remedy that has been developed or identified by the Department may be
16 proposed for use at an eligible facility. When evaluating a generic remedy proposed for use at a
17 specific facility, the specific requirements of the remedial investigation or feasibility study may
18 be focused or eliminated, with Department approval.

19 (b) Any generic remedy which allows for elimination of the requirement for conducting a
20 site-specific feasibility study shall be based on a generic feasibility study documenting the
21 Department's conclusions with respect to the manner in which facilities eligible for use of the
22 generic remedy will meet the requirements of OAR 340-122-085 and OAR 340-122-090.

23 (c) Any generic remedy which includes numeric cleanup standards as a component of the
24 remedy shall be based on a generic risk assessment documenting the Department's conclusions
25 with respect to how facilities eligible for use of the generic remedy will achieve acceptable risk
26 levels and other requirements of OAR 340-122-084 through OAR 340-122-090.

27 (2) In developing generic remedy guidance, the Department will provide opportunities for
28 public participation regarding the scope and content of the guidance.

29 (3) Remedial actions proposed under this rule are subject to the public participation
30 requirements provided under ORS 465.320 and OAR 340-122-100.

31 (4) The Department may select or approve use of a generic remedy at a specific facility
32 upon a facility-specific demonstration that the generic remedy is consistent with Department
33 generic remedy guidance and in compliance with OAR 340-122-090(1).

34
35 Stat. Auth.: ORS 465.315 & 465.400

36 Hist.:

37 38 Activities

39 340-122-050 (1) The Director may perform or require to be performed the following
40 activities:

41 (a) Preliminary Assessment; as required under OAR 340-122-426;

42 (b) Removal;

43 (c) Remedial Investigation and;

44 (d) Risk Assessment;

45 (e) Feasibility Study; or

1 (f)(d) Other investigations and rRemedial action.

2 (2) These activities, and the scope of these activities, are to be determined by the Director
3 on a case-by-case basis. The Director may determine that all, a combination of less than all, or only
4 one of the above activities are necessary at a facility. (For example, based upon the results of the
5 pPreliminary aAssessment, the Director might find that a rRemedial iInvestigation and fFeasibility
6 sStudy ~~are is~~ not necessary.) The Director may also determine that performance of the above
7 activities shall overlap or occur in an order different than that set forth in section (1) of this
8 rule above. (For example, the Director might find that a rRemoval must be undertaken during a
9 rRemedial iInvestigation and fFeasibility sStudy.)

10 (3) Removals, rRemedial aActions, pPreliminary aAssessments, rRemedial iInvestigations,
11 and fFeasibility sStudies, and related activities shall be performed by any person who is ordered or
12 authorized to do so by the Director, or may be performed by the Department.

13 (4) The Director may allow short-term degradation of the environment during a removal or
14 remedial action or related activities, provided that the Director finds:

15 (a) Such short-term degradation cannot practicably be avoided during implementation of the
16 removal or remedial action or related activities; ~~and~~

17 (b) The removal or remedial action or related activity is being implemented in accordance
18 with a schedule approved by the Department; and

19 (c) The short-term degradation does not present an imminent and substantial endangerment
20 to the public health, safety, or welfare, or the environment.

21
22 Stat. Auth.: ORS Ch. 466

23 Hist.: DEQ 26-1988, f. & cert. ef. 9-16-89

24
25 340-122-060 [Renumbered to 340-122-426]

26
27 **Removal**

28 340-122-070 (1) Based upon the Preliminary Assessment or other information, the Director
29 may perform or require to be performed a removal that the Director determines is consistent in
30 compliance with the standards set forth under OAR 340-122-040(1), (2), (3), and (4) and is
31 necessary to prevent, minimize, or mitigate damage to the public health, safety and or welfare, and
32 or the environment that might result from the release or threat of release of hazardous substances.
33 A removal may address potential harm posed by the toxicity, corrosivity, flammability, ignitability,
34 and other threats to public health, safety and welfare, and the environment from a release or threat
35 of release. A removal action may include, but is not limited to, offsite transport and disposal of
36 hazardous substances if such action would be consistent with and expedite completion of remedial
37 action or would minimize the need for onsite engineering or institutional controls.

38 (2) The performance of a removal shall not affect the Director's authority to perform or
39 require to be performed a remedial action in addition to the removal, if such remedial action will
40 permanently or more fully address a release or threat of release of hazardous substances. The
41 Director may undertake or require that a removal be undertaken at any time from the discovery of a
42 release or threat of a release through the completion of a remedial action.

43
44 Stat. Auth.: ORS 465.400(1) & 468.020

45 Hist.: DEQ 26-1988, f. & cert. ef. 9-16-89; DEQ 12-1992, f. & cert. ef. 6-9-92

1 **Site Evaluation**

2 340-122-071 (1) When the Department receives information about a release or potential
3 release of a hazardous substance, the Department shall evaluate the information and document its
4 conclusions. The purpose of the site evaluation is to determine whether a release has or might
5 have occurred and whether the release may pose a significant threat to public health, safety and
6 welfare, or the environment.

7 (2) The Department may request or gather additional information to complete the site
8 evaluation. When evaluating the potential for human health and ecological impacts, the
9 Department may consider, but is not limited to considering, the potential presence in the locality
10 of the facility, of:

11 (a) Human populations;

12 (b) Any sensitive human subpopulations;

13 (c) Threatened and endangered species or their critical habitat;

14 (d) Ecological receptors, including any terrestrial or aquatic habitat(s);

15 (e) Exposure pathways potentially connecting receptors with hazardous substances; and

16 (f) Current and reasonably likely future land and water uses.

17 (3) After a site evaluation is completed, the Department will determine whether a
18 preliminary assessment, removal, remedial action, other action, or no further action is needed at
19 the facility.

20
21 Stat. Auth.: ORS 465.315 & 465.400

22 Hist.:

23
24 **Preliminary Assessments**

25 340-122-072 (1) The Department shall conduct a preliminary assessment or approve a
26 preliminary assessment conducted by another person in accordance with section (4) of this rule if
27 the Department determines that a release of a hazardous substance poses a significant threat to
28 public health, safety or welfare, or the environment. The Department may conduct or approve a
29 preliminary assessment without such determination. The Department may determine that
30 existing information constitutes the equivalent of all or part of a preliminary assessment.

31 (2) Prior to conducting a preliminary assessment, the Director shall notify the owner and
32 operator of the facility, if known, of the Department's intent to conduct the assessment, and
33 allow the owner or operator to submit relevant information to the Department or to request to
34 conduct the preliminary assessment. The Department may accept or deny any such request.

35 (3) The purpose of a preliminary assessment is to develop sufficient information to
36 determine whether additional investigation, removal, remedial action, or long-term engineering
37 or institutional controls related to removal or remedial action are needed at a facility to assure
38 protection of present and future public health, safety and welfare, and the environment.

39 (4) A preliminary assessment shall include sufficient onsite observations, maps, facility
40 data, sampling, and other information to accomplish the purposes of a preliminary assessment as
41 described in section (3) of this rule including, as appropriate:

42 (a) Description of historical operations at the facility, including past and present
43 generation, management, and use of hazardous substances; compliance with relevant
44 environmental requirements; and investigations or cleanups of releases of hazardous substances;

1 (b) Identification and characterization of hazardous substances that are being or might
2 have been released and, if available, an estimate of the quantities released, the concentrations in
3 the environment, and extent of migration;

4 (c) Documentation of releases of hazardous substances to the environment;

5 (d) Identification of present and past owners and operators of the facility;

6 (e) Description of the facility, including its name, and a site map identifying property
7 boundaries, the location of known or suspected releases of hazardous substances, and significant
8 topographic, terrestrial, and aquatic habitat features;

9 (f) Description of potential pathways for migration of known or suspected releases of
10 hazardous substances, including surface water, groundwater, air, soils, and direct contact;

11 (g) Description of human and ecological receptors potentially affected by releases of
12 hazardous substances;

13 (h) Description of any other physical factors that might be relevant to assessing short and
14 long-term exposure to releases of hazardous substances; and

15 (i) Evaluation of present and reasonably likely future threats to public health, safety and
16 welfare, and the environment. During the preliminary assessment, the Department may consider
17 the following information:

18 (A) Concentrations of hazardous substances in environmental media;

19 (B) The documented presence, in the locality of the facility, of any of the following:

20 (i) Human populations;

21 (ii) Any sensitive human subpopulations;

22 (iii) Threatened and endangered species or their critical habitat;

23 (iv) Ecological receptors including any terrestrial or aquatic habitat;

24 (v) Exposure pathways potentially connecting receptors with released hazardous
25 substances;

26 (vi) Current and reasonably likely future land uses; and

27 (vii) Current and reasonably likely future beneficial uses of water.

28 (5) After completion of a preliminary assessment, the Director shall make one or more of
29 the following determinations regarding a facility:

30 (a) Additional investigation, removal, remedial action, or long-term engineering or
31 institutional controls related to removal or remedial action are needed to assure protection of
32 present and future public health, safety and welfare, and the environment;

33 (b) Current regulatory action under another state or federal agency program is adequate to
34 protect public health, safety and welfare, and the environment;

35 (c) Other actions are necessary to assure protection of present and future public health,
36 safety and welfare and the environment; or

37 (d) Based on available information, no further action is needed to assure protection of
38 present and future public health, safety and welfare, and the environment.

39 (6) When the preliminary assessment is completed, the Director shall provide a copy to
40 the owner and operator, if known, and shall notify them of any determination made pursuant to
41 section (5) of this rule.

1 Stat. Auth.: ORS 465.315 & 465.400

2 Hist.:

3

4 **Confirmation of a Release**

5 340-122-073 (1) The Director shall determine that a release of a hazardous substance has
6 been confirmed for the purposes of listing a facility on the Confirmed Release List or the Inventory
7 if the Director determines that the release meets the criteria in subsections (a) and (b) of this
8 section:

9 (a) The release has been documented by:

10 (A) An observation made and documented by a qualified government inspector or agent;

11 (B) A written statement or report from an owner, operator, or representative authorized by
12 an owner or operator stating that the release has occurred; or

13 (C) Laboratory data indicating the hazardous substance has been detected at levels greater
14 than background levels.

15 (b) The release is not excluded under section (2) of this rule.

16 (2) A release shall not be defined as a "confirmed release" pursuant to section (1) of this
17 rule if, based on the information available at the time a final listing decision is made, the Director
18 determines that the release meets any of the following criteria:

19 (a) The release is a de minimis release;

20 (b) The release by its nature rapidly dissipates to undetectable or insignificant levels and
21 poses no significant threat;

22 (c) The release is a permitted or authorized release, but not including deposition,
23 accumulation, or migration of substances resulting from an otherwise-permitted or authorized
24 release;

25 (d) The release is a pesticide product registered under the Federal Insecticide, Fungicide,
26 and Rodenticide Act (7 U.S.C. 136) and applied for its intended purpose in accordance with label
27 directions, but not including deposition, accumulation, or migration of substances resulting from an
28 otherwise-authorized release;

29 (e) The release has been cleaned up to a level that is consistent with rules adopted by the
30 Commission under ORS 465.400 or ORS Chapter 466 or that poses no significant threat to present
31 or future public health, safety, welfare, or the environment; or

32 (f) The release otherwise requires no additional investigation, removal, remedial action, or
33 long-term environmental or institutional controls related to removal or remedial action to assure
34 protection of present and future public health, safety, welfare, and the environment.

35 (3) A release shall not be excluded pursuant to section (2) of this rule if continuing
36 environmental or institutional controls related to removal or remedial action are required to assure
37 protection of present and future public health, safety, welfare and the environment.

38
39 [Publications: The publication(s) referred to or incorporated by reference in this rule are available
40 from the Department of Environmental Quality.]

41

42 Stat. Auth.: ORS 465.400(1), 465.405 & 468.020

43 Hist.: DEQ 29-1990, f. & cert. ef. 7-13-90

1 **Development of Confirmed Release List**

2 340-122-074 (1) For the purpose of providing public information, the Director shall develop
3 and maintain a Confirmed Release List of all facilities for which the Director has confirmed a
4 release of a hazardous substance in accordance with OAR 340-122-073.

5 (2) The list shall include, at a minimum, the following items, if known:

6 (a) A general description of the facility;

7 (b) Address or location;

8 (c) Time period during which a release occurred;

9 (d) Name of the current owner and operator and names of any past owners and operators
10 during the time period of a release of a hazardous substance;

11 (e) Type and quantity of a hazardous substance released at the facility;

12 (f) Manner of release of the hazardous substance;

13 (g) Concentration, distribution, and characteristics of a hazardous substance, if any, in
14 groundwater, surface water, air, and soils at the facility; and

15 (h) Status of removal or remedial actions at the facility.

16 (3)(a) At least 60 days before adding a facility to the Confirmed Release List, the Director
17 shall notify the owner and operator, if known, of all or any part of the proposed facility by certified
18 mail or personal service, and shall provide an opportunity to comment on the proposed listing
19 within 45 days after receiving the notice. For good cause shown, the Department may grant an
20 extension of up to 45 days for comment;

21 (b) The Director shall consider relevant and appropriate information submitted to the
22 Department in determining whether to add a facility to the Confirmed Release List.

23
24 Stat. Auth.: ORS 465.400(1), 465.405 & 468.020

25 Hist.: DEQ 29-1990, f. & cert. ef. 7-13-90

26
27 **Development of Inventory**

28 340-122-075 (1) For the purpose of providing public information, the Director shall develop
29 and maintain an Inventory of facilities for which the Director:

30 (a) Has confirmed a release of a hazardous substance in accordance with OAR
31 340-122-073; and

32 (b) Based on a preliminary assessment approved or conducted by the Department, has
33 determined that additional investigation, removal, remedial action, or long-term environmental or
34 institutional controls related to removal or remedial action are required to assure protection of
35 present and future public health, safety and welfare, and the environment.

36 (2) The Inventory shall include, at a minimum, the items required for the Confirmed
37 Release List, described in OAR 340-122-074(2), and the following items, if known:

38 (a) Hazard ranking and narrative information regarding threats to the environment and
39 public health; and

40 (b) Information that indicates whether the remedial action at the facility will be funded
41 primarily by:

42 (A) The Department through the use of moneys in the Hazardous Substance Remedial
43 Action Fund;

44 (B) An owner or operator or other person under an agreement, order, or consent decree
45 under ORS Chapter 465; or

1 (C) An owner or operator or other person under other state or federal authority.

2 (3)(a) At least 60 days before a facility is added to the Inventory the Director shall notify the
3 owner and operator, if known, of all or any part of the facility of the proposed listing by certified
4 mail or personal service. The notice shall include a copy of the preliminary assessment on which
5 the listing is based, and the documentation used to calculate a site score in accordance with OAR
6 340-122-076(1)(a). The notice may reference these documents if they have been previously
7 provided. The notice shall inform the owner and operator of the opportunity to comment on the
8 information contained in the preliminary assessment and on the proposed site score within 45 days
9 after receiving the notice. For good cause shown, the Department may grant an extension of up to
10 45 days for comment.

11 (b) The Director shall consider relevant and appropriate information submitted to the
12 Department in determining whether to add a facility to the Inventory.

13 (4) At least quarterly, the Department shall publish notice of updates to the Inventory. The
14 notice shall include a brief description of the facilities added or removed, and shall be published in
15 the Secretary of State's Bulletin and submitted to local newspapers of general circulation in
16 locations affected by the listings and to interested persons or community organizations.

17
18 Stat. Auth.: ORS 465.000(1), 465.400(1), 465.405, 465.410 & 468.020

19 Hist.: DEQ 29-1990, f. & cert. ef. 7-13-90; DEQ 5-1991, f. & cert. ef. 3-18-91

20
21 **Inventory Ranking**

22 340-122-076 (1)(a) The Department will score facilities placed on the Inventory in
23 accordance with the Site Scoring Procedure set forth in Appendix 1. The Site Scoring Procedure
24 provides criteria for scoring facilities based on the short-term and long-term risks they pose to
25 present and future public health, safety, welfare or the environment;

26 (b) The Department will place facilities in the following categories on the Inventory based
27 on their status in the remedial process:

28
29 Phase I: Facilities where remedial
30 investigation and
31 feasibility studies have
32 not been initiated.

33
34 Phase II: Facilities where remedial
35 investigation or feasibility
36 studies are underway.

37
38 Phase III: Facilities where the remedial
39 investigation and feasibility
40 studies have been completed
41 and remedial design, removal
42 or remedial action is underway.

43
44 Phase IV: Facilities where all necessary
45 removal and remedial action

1 have been completed except
2 for continuing operation
3 and maintenance or
4 other environmental or
5 institutional controls necessary
6 to protect public health, safety,
7 welfare, and the environment.

8
9 The Department will move facilities from one category to the next in quarterly updates of the
10 Inventory as remedial activities progress.

11 (2) Prior to publishing a facility's score on the Inventory, the Department will notify the
12 owners and operators of the facility, if known, and provide an opportunity for them to comment on
13 the facility score and supporting documentation as described in OAR 340-122-075(4).

14 (3) The Department will consider facility scores, among other factors, in prioritizing sites
15 for further investigation, removal, or remedial action at the conclusion of the preliminary
16 assessment or its equivalent. Prior to initiating such action, the Department may rescore a facility if
17 the Department receives additional information that may significantly change a facility's score.

18
19 Stat. Auth.: ORS 465.000(1), 465.410 & 468.020

20 Hist.: DEQ 5-1991, f. & cert. ef. 3-18-91

21
22 **Initiation of Process for Delisting Facilities from the Confirmed Release List and Inventory**

23 340-122-077 (1) An owner or operator of a facility listed on the Confirmed Release List or
24 Inventory, or any other person adversely affected by the listing, may request the Director to remove
25 a facility from the Confirmed Release List or Inventory. The Department may propose to remove a
26 facility on its own initiative.

27 (2)(a) The owner, operator, or other person requesting that a facility be removed from the
28 Confirmed Release List or the Inventory shall submit a written petition to the Director setting forth
29 the basis for such request. The petition shall include sufficient information and documentation to
30 support a determination that:

31 (A) The petitioner is an owner, operator, or person adversely affected by the listing; and

32 (B) The facility meets the respective criteria for delisting from the Confirmed Release List
33 or from the Inventory set forth in OAR 340-122-079(1).

34 (b) A petition to remove from the Confirmed Release List or from the Inventory a facility
35 for which a delisting petition has previously been denied shall demonstrate new information or
36 changed circumstances to support the request.

37
38 Stat. Auth.: ORS 465.400(1), 465.405 & 468.020

39 Hist.: DEQ 29-1990, f. & cert. ef. 7-13-90

1 **Inventory Delisting — Public Notice and Participation**

2 340-122-078 (1) Prior to the approval or denial of a petition to remove a facility from the
3 Inventory submitted pursuant to OAR 340-122-077, the Department shall:

4 (a) Publish a notice and brief description of the proposed action in the Secretary of State's
5 Bulletin, notify a local paper of general circulation, and make copies of the proposed action
6 available to the public;

7 (b) Make a reasonable effort to identify and notify interested persons or community
8 organizations;

9 (c) Provide at least 30 days for submission of written comments regarding the proposed
10 action;

11 (d) Upon written request received within 15 days after agency notice, postpone the date of
12 its intended action no less than ten or more than 90 days in order to allow the requesting person an
13 opportunity to submit information or comments on the proposed action; and

14 (e) Upon written request by ten or more persons or by a group having ten or more members,
15 conduct a public meeting at or near the facility for the purpose of receiving oral comment regarding
16 the proposed action, except for a petition submitted by an owner pursuant to a cleanup action
17 completed in accordance with these rules.

18 (2) Where possible, the Department shall combine public notification procedures for
19 delisting from the Inventory with the public notification procedures for the proposed certification of
20 completion of a removal or remedial action conducted pursuant to ORS Chapter 465.

21 (3) Agency records concerning the removal of a facility from the Inventory shall be made
22 available to the public in accordance with ORS 192.410 to 192.505, subject to exemptions to public
23 disclosure, if any, under ORS 192.501 and 192.502. The Department shall maintain and make
24 available for public inspection and copying a record of pending and completed delisting actions.
25 The records shall be located at the headquarters and regional offices of the Department.

26
27 Stat. Auth.: ORS 465.400(1), 465.405 & 468.020

28 Hist.: DEQ 29-1990, f. & cert. ef. 7-13-90

29
30 **Delisting — Determination by Director**

31 340-122-079 (1) The Director shall consider requests or proposals to remove facilities from
32 the Confirmed Release List or the Inventory submitted in accordance with OAR 340-122-077. The
33 Director shall delist a facility from the Confirmed Release List if the Director determines that a
34 facility does not meet the criteria for inclusion on the Confirmed Release List set forth in OAR
35 340-122-074(1). The Director shall remove a facility from the Inventory if the Director determines
36 the facility does not meet the criteria for inclusion on the Inventory set forth in OAR 340-
37 122-075(1).

38 (2) In determining whether to remove a facility from the Confirmed Release List or from
39 the Inventory, the Director shall consider:

40 (a) Any relevant Confirmed Release List or Inventory delisting petitions submitted pursuant
41 to OAR 340-122-077;

42 (b) Any public comments submitted on the proposed action pursuant to OAR 340-122-078;
43 and

44 (c) Any other relevant information available.

1 (3) The Director shall not remove a facility from the Confirmed Release List or from the
2 Inventory if continuing environmental controls or institutional controls related to removal or
3 remedial action (e.g., alternative drinking water supply, caps, security measures) are needed to
4 assure protection of present and future public health, safety, welfare, and the environment.

5 (4)(a) The Director shall document the basis for approving or denying a request or proposal
6 to remove a facility from the Confirmed Release List or the Inventory;

7 (b) If the Director relies on information described in subsection (2)(a) of this rule to make
8 such determination, the Director shall reference such information in the record.

9 (5) The removal of a facility from the Confirmed Release List or from the Inventory shall
10 be effective immediately upon the Director's determination.

11
12 Stat. Auth.: ORS 465.400(1), 465.405 & 468.020

13 Hist.: DEQ 29-1990, f. & cert. ef. 7-13-90

14
15 **Remedial Investigation and Feasibility Study**

16 340-122-080 (1) If, based upon the Preliminary Assessment, the results of a removal,
17 information gathered under OAR 340-122-045, or other information, the Director determines that
18 remedial action might be necessary to protect public health, safety, or welfare, or the environment,
19 the Director may perform or require to be performed a Remedial Investigation and/or Feasibility
20 Study to develop information to determine the need for and selection of a remedial action.

21 (2) The Remedial Investigation may shall include, but is not limited to, characterization of
22 hazardous substances, characterization of the facility, performance of baseline human health and
23 ecological risk assessments, and collection and evaluation of information relevant to the
24 identification of hot spots of contamination, and an endangerment assessment:

25 (a) The characterization of the hazardous substances may include but is not limited to
26 information regarding:

27 (A) Extent to which the source can be adequately identified and characterized;

28 (B) Amount, form, concentration, toxicity, environmental fate and transport, and other
29 significant characterization of present substances; and

30 (C) Extent to which the substances might be reused or recycled.

31 (3)(b) In the remedial investigation, The characterization of the facility may include, but is
32 not limited to, information regarding:

33 (A) Hazardous substances mixtures present, media of occurrence, and interface zones
34 between media;

35 (a) Waste management history and other past practices that could have led to a release of
36 hazardous substances;

37 (b)(B) Geological and Hydrogeologic factors, including, but not limited to, information
38 regarding topography, soils, sediments, drainage controls, and water resources;

39 (c)(C) Climatologic and meteorologic factors; and

40 (d)(D) Ambient air quality;

41 (e) Current and reasonably anticipated future land use in the locality of the facility,
42 considering:

43 (A) Current land use zoning and other land use designations;

44 (B) Land use plans as established in local comprehensive plans and land use
45 implementing regulations of any governmental body having land use jurisdiction;

- 1 (C) Concerns of the facility owner, neighboring owners, and the community;
2 (D) Any other relevant information such as development patterns and population
3 projections.
4 (f) Current and reasonably likely future beneficial uses of groundwater and surface water
5 in the locality of the facility, considering:
6 (A) Federal, state, and local regulations governing the appropriation and/or use of water;
7 (B) Nature and extent of current groundwater and surface water uses;
8 (C) Suitability of groundwater and surface water for beneficial uses;
9 (D) The contribution of water to the maintenance of aquatic or terrestrial habitat;
10 (E) Any beneficial uses of water which the Water Resources Department or other federal
11 state or local programs is managing in the locality of the facility; and
12 (F) Reasonably likely future uses of groundwater and surface water based on:
13 (i) Historical land and water uses;
14 (ii) Anticipated future land and water uses;
15 (iii) Community and nearby property owners' concerns regarding future water use;
16 (iv) Regional and local development patterns;
17 (v) Regional and local population projections; and
18 (vi) Availability of alternate water sources including, but not limited to, public water
19 supplies, groundwater sources, and surface water sources.
20 (g) Identification of ecological receptors, terrestrial habitats, and aquatic habitats in the
21 locality of the facility; and
22 (h) Other relevant information, as appropriate.
23 ~~(e) The endangerment assessment may include but is not limited to information regarding:~~
24 ~~(A) Potential routes of exposure and concentration;~~
25 ~~(B) Characterization of toxic effects;~~
26 ~~(C) Populations at risk;~~
27 ~~(D) Potential or actual adverse impact on:~~
28 ~~(i) Biological receptors;~~
29 ~~(ii) Present and future uses of the environment;~~
30 ~~(iii) Ecosystems and natural resources; and~~
31 ~~(iv) Aesthetic characteristics of the environment.~~
32 ~~(E) Extent to which substances have migrated or are expected to migrate and the threat such~~
33 ~~migration might pose to public health, safety and welfare or the environment; and~~
34 ~~(F) Potential for release of any substances or treatment residuals that might remain after~~
35 ~~remedial action.~~
36 (4) In the remedial investigation, characterization of hazardous substances may include,
37 but is not limited to, information regarding:
38 (a) Identification and characterization of the source of the release or the threatened release
39 of a hazardous substance;
40 (b) The nature, extent, and concentration of hazardous substances;
41 (c) The propensity for the hazardous substance to bioaccumulate;
42 (d) The propensity for the hazardous substance to persist or degrade;
43 (e) The toxicity of the hazardous substances;
44 (f) The transport and fate of the hazardous substances;

1 (g) The proximity of contamination to surface water, groundwater, wetlands, and
2 sensitive environments; and

3 (h) Other relevant information, as appropriate.

4 (5) In the remedial investigation, characterization of current and reasonably likely future
5 risks posed by hazardous substances shall be based on baseline human health and ecological risk
6 assessments conducted in accordance with OAR 340-122-084, unless the Department determines
7 through screening of available information that no exceedance of acceptable risk levels could
8 occur taking into consideration the nature, extent and toxicity of contamination, the types of
9 human and ecological receptors potentially at risk, and pathways and routes of exposure present
10 or potentially present.

11 (6) The remedial investigation shall identify hazardous substances having a significant
12 adverse effect on beneficial uses of water or waters to which the hazardous substances would be
13 reasonably likely to migrate.

14 (7) The remedial investigation shall identify hot spots of contamination for media other
15 than water.

16
17
18 Stat. Auth.: ORS 465.400(1) & 468.020

19 Hist.: DEQ 26-1988, f. & cert. ef. 9-16-89; DEQ 12-1992, f. & cert. ef. 6-9-92

20
21 **Risk Assessment**

22 340-122-084 This rule establishes a risk protocol for performance of human health and
23 ecological risk assessments, including: general requirements for risk assessments and specific
24 requirements for baseline human health risk assessments, baseline ecological risk assessments,
25 residual risk assessments, and probabilistic risk assessments.

26 (1) General requirements for risk assessments include:

27 (a) Risks assessments shall consider existing and reasonably likely future human exposures
28 and significant adverse effects to ecological receptors in the locality of the facility.

29 (b) Risk assessments may be conducted using either deterministic or probabilistic risk
30 assessment methodologies at the discretion of the party conducting the risk assessment, provided
31 the risk assessment requirements of this rule are met.

32 (c) Sources of toxicity information to be used in a risk assessment may include the
33 following information to the extent it is available and acceptable to the Department at the time a
34 human health or ecological risk assessment is prepared:

35 (A) For human health risk assessments:

36 (i) U.S. EPA IRIS Data Base;

37 (ii) U.S. EPA HEAST Data Base;

38 (iii) HEAST alternative method;

39 (iv) U.S. EPA-NCEA Superfund Health Risk Technical Support Center;

40 (v) Other U.S. EPA documents or databases;

41 (vi) ATSDR Toxicological Profiles; or

42 (vii) Other refereed technical publications.

43 (B) For ecological risk assessments:

44 (i) U.S. EPA AQUIRE Data Base;

45 (ii) U.S. EPA IRIS Data Base;

- (iii) U.S. EPA HEAST Data Base;
- (iv) U.S. EPA ASTER Data Base;
- (v) U.S. EPA PHYTOTOX Data Base;
- (vi) U.S. EPA Terrestrial Toxicity Data Base (TERRATOX);
- (vii) U.S. Fish and Wildlife Service Technical Reports;
- (viii) Oak Ridge National Laboratory Toxicological Benchmark Technical Reports;
- (ix) Other U.S. EPA documents or databases;
- (x) ATSDR Toxicological Profiles; or
- (xi) Other refereed technical publications.

(C) In the absence of toxicity information that is available and acceptable to the Department under paragraph (A) or (B), the Department may require the development of acceptable site-specific toxicity information.

(d) Risk assessments may include use of transport and fate models, subject to Department approval of the model and the data to be used for the parameters specified in the model. The Department shall ensure that any transport and fate model approved for use is capable of simulating all site conditions and contaminant properties that might have a significant impact on site-specific contaminant transport or fate.

(e) The Department shall require appropriate sampling approaches and data quality requirements to support the risk assessment and remedy selection processes.

(f) A plausible upper-bound or high-end exposure for both human health and ecological risk assessments is the 90th percentile upper confidence limit on the arithmetic mean of concentrations of hazardous substances that would be contacted by an exposed receptor and reasonable maximum estimates of the exposure factors used in the risk calculations, unless a greater or lesser best estimate is acceptable to the Department.

(g) The central tendency exposure for both human health and ecological risk assessments is the arithmetic mean of concentrations that would be contacted by an exposed receptor and mean estimates of the exposure factors used in the risk calculations. Risk assessments utilizing only deterministic (single point value) methods shall provide both central tendency and upper-bound estimates of exposure and risk.

(h) The use of population risk estimates in addition to individual risk estimates is provided for as follows:

(A) For human health risk assessments, risk estimates shall be made only at the level of the individual;

(B) For ecological risk assessments, risk estimates shall be made:

(i) At the level of the individual for species present in the locality of the facility if the species is listed as threatened or endangered species pursuant to 16 U.S.C. 1531 et seq. or ORS 496.172; or

(ii) At the level of the population for all other plants or animals in the locality of the facility.

(i) Cumulative risk from multiple hazardous substances will be assessed by assuming additivity of the risk posed separately by individual non-carcinogenic and carcinogenic hazardous substances in the locality of the facility, unless the Department determines that an assumption of synergism, antagonism, or other toxicological response is appropriate or it is demonstrated to the satisfaction of the Department that an assumption other than additivity is appropriate.

- (iii) U.S. EPA HEAST Data Base;
- (iv) U.S. EPA ASTER Data Base;
- (v) U.S. EPA PHYTOX Data Base;
- (vi) U.S. EPA Terrestrial Toxicity Data Base (TERRATOX);
- (vii) U.S. Fish and Wildlife Service Technical Reports;
- (viii) Oak Ridge National Laboratory Toxicological Benchmark Technical Reports;
- (ix) Other U.S. EPA documents or databases;
- (x) ATSDR Toxicological Profiles; or
- (xi) Other refereed technical publications.

(C) In the absence of toxicity information that is available and acceptable to the Department under paragraph (A) or (B), the Department may require the development of acceptable site-specific toxicity information.

(d) Risk assessments may include use of transport and fate models, subject to Department approval of the model and the data to be used for the parameters specified in the model. The Department shall ensure that any transport and fate model approved for use is capable of simulating all site conditions and contaminant properties that might have a significant impact on site-specific contaminant transport or fate.

(e) The Department shall require appropriate sampling approaches and data quality requirements to support the risk assessment and remedy selection processes.

(f) A plausible upper-bound or high-end exposure for both human health and ecological risk assessments is the 90th percentile upper confidence limit on the arithmetic mean of concentrations of hazardous substances that would be contacted by an exposed receptor and reasonable maximum estimates of the exposure factors used in the risk calculations, unless a greater or lesser best estimate is acceptable to the Department.

(g) The central tendency exposure for both human health and ecological risk assessments is the arithmetic mean of concentrations that would be contacted by an exposed receptor and mean estimates of the exposure factors used in the risk calculations. Risk assessments utilizing only deterministic (single point value) methods shall provide both central tendency and upper-bound estimates of exposure and risk.

(h) The use of population risk estimates in addition to individual risk estimates is provided for as follows:

(A) For human health risk assessments, risk estimates shall be made only at the level of the individual;

(B) For ecological risk assessments, risk estimates shall be made:

(i) At the level of the individual for species present in the locality of the facility if the species is listed as threatened or endangered species pursuant to 16 U.S.C. 1531 et seq. or ORS 496.172; or

(ii) At the level of the population for all other plants or animals in the locality of the facility.

(i) Cumulative risk from multiple hazardous substances will be assessed by assuming additivity of the risk posed separately by individual non-carcinogenic and carcinogenic hazardous substances in the locality of the facility, unless the Department determines that an assumption of synergism, antagonism, or other toxicological response is appropriate or it is demonstrated to the satisfaction of the Department that an assumption other than additivity is appropriate.

1 (j) Appropriate sources of exposure factor information may include, but are not limited
2 to, the following information, to the extent it is available and acceptable to the Department at the
3 time human health and ecological risk assessments are prepared:

4 (A) U.S. EPA Risk Assessment Guidance for Superfund. Volume 1. Human Health
5 Evaluation Manual, Part A, 1989;

6 (B) U.S. EPA Risk Assessment Guidance for Superfund Volume 2. Environmental
7 Evaluation Manual, 1989;

8 (C) U.S. EPA Risk Assessment Guidance for Superfund. Volume 1. Human Health
9 Evaluation Manual, Supplemental Guidance - Standard Default Exposure Factors, 1991;

10 (D) U.S. EPA Wildlife Exposure Factors Handbook. Volumes 1 and 2, 1993; and

11 (E) U.S. EPA Exposure Factors Handbook, 1990.

12 (2) Baseline human health risk assessments shall include, but are not limited to, the
13 following information:

14 (a) A conceptual site model describing contaminant sources, release mechanisms, transport
15 routes and media, potential human receptor populations, and relevant exposure scenarios based on
16 current and reasonably likely future land and water uses;

17 (b) Data quality objectives for the human health risk assessment based on the conceptual
18 site model;

19 (c) Exposure analysis including identification and selection of contaminants of concern, a
20 detailed description of potentially exposed populations and exposure routes, and a quantitative
21 estimate of exposure for both current and reasonably likely future land and water use scenarios;

22 (d) Toxicity analysis including a summary of current information regarding the
23 carcinogenic effects, noncarcinogenic effects, bioconcentration potential, bioaccumulation
24 potential, biomagnification potential, and persistence of the identified contaminants of concern as
25 well as current slope factors and reference doses;

26 (e) Risk characterization presenting the quantitative human health risks potentially
27 associated with the facility, a discussion of any available facility-specific human health studies, an
28 explicit discussion of risks associated with the bioconcentration potential, bioaccumulation
29 potential, biomagnification potential, and persistence of each contaminant, and consideration of any
30 other available, published, and peer-reviewed scientific information on other sources of stress as
31 appropriate; and

32 (f) Quantitative and qualitative uncertainty analysis as appropriate for each element of the
33 risk assessment.

34 (3) Baseline ecological risk assessments shall include, but are not limited to, the
35 following information:

36 (a) Problem formulation to include identification of contaminants of ecological interest,
37 potential ecological effects, ecological receptors, relevant exposure pathways, initial definition of
38 assessment and measurement endpoints, all with respect to current and reasonably likely future land
39 and water uses, and described in a conceptual site model;

40 (b) Data quality objectives for the ecological risk assessment based on the conceptual site
41 model, with emphasis on analytical detection limits appropriate for ecological receptors;

42 (c) Exposure analysis to include identification and selection of potential contaminants of
43 ecological concern, identification and selection of target ecological receptors, an exposure pathway
44 model relating target receptors, exposure routes and measurement endpoints, and a quantitative
45 estimate of exposure for both current and reasonably likely future land and water use scenarios;

1 (d) Ecological response analysis including a summary of current information regarding the
2 toxicological effects, ecological effects, bioconcentration potential, bioaccumulation potential,
3 biomagnification potential, and persistence of the identified contaminants of ecological concern, as
4 well as ecological benchmark values;

5 (e) Risk characterization presenting the quantitative ecological risks potentially associated
6 with the facility, identification of contaminants of ecological concern, a discussion of any available
7 facility-specific ecological studies, an explicit discussion of risks associated with the
8 bioconcentration potential, bioaccumulation potential, biomagnification potential, and persistence
9 of each contaminant, and consideration of any other available, published and peer-reviewed
10 scientific information on other sources of stress as appropriate;

11 (f) As appropriate, the potential for significant adverse effects on the health or viability of
12 individual ecological receptors or local populations may be evaluated with a weight-of-evidence
13 analysis or population viability analysis, respectively. These analyses may utilize field studies,
14 laboratory investigations, appropriate population models, or any combination of these or other
15 methods acceptable to the Department; and

16 (g) Quantitative and qualitative uncertainty analysis as appropriate for each element of the
17 risk assessment.

18 (4) Residual risk assessments shall be conducted prior to selection of the remedial action,
19 and shall include:

20 (a) A quantitative assessment of the risk resulting from concentrations of untreated waste
21 or treatment residuals remaining at the facility at the conclusion of any treatment or excavation
22 and offsite disposal activities taking into consideration current and reasonably likely future land
23 and water use scenarios and the exposure assumptions used in the baseline risk assessment; and

24 (b) A qualitative or quantitative assessment of the adequacy and reliability of any
25 institutional or engineering controls to be used for management of treatment residuals and
26 untreated hazardous substances remaining at the facility.

27 (c) The combination of (a) and (b) constitute a residual risk assessment that must
28 demonstrate to the Department that acceptable levels of risk as defined by OAR 340-122-115
29 would be attained in the locality of the facility.

30 (5) Probabilistic techniques may be applied to human health and ecological risk
31 assessments. The purpose of this rule is to establish a minimum level of technical performance
32 for probabilistic risk assessments submitted to the Department.

33 (a) Before the commencement of a probabilistic risk assessment, the following issues
34 shall be addressed:

35 (A) Current and reasonably likely future land and water uses in the locality of the facility;

36 (B) A site-specific preliminary conceptual site model that relates potential receptors,
37 hazardous substances, and exposure pathways;

38 (C) Preliminary assessment endpoints for any ecological risk assessment; and

39 (D) Sources and characteristics of the distributions proposed for use in the assessment.

40 (b) Based on consideration of the items specified in subsection(5)(a) of this rule, a
41 probabilistic risk assessment may be performed in accordance with a work plan approved by the
42 Department.

43 (c) The Department is not obligated to accept the results of a probabilistic risk
44 assessment, unless the information requirements set forth in subsection (5)(d) of this rule or
45 otherwise specified by the Department have been addressed in a manner acceptable to the

1 Department.

2 (d) The probabilistic risk assessment shall include, but not be limited to, information
3 regarding:

4 (A) All formulae used to estimate exposure point values, toxicity (cancer slope factor,
5 reference dose) values, ecological benchmark values, hazard indices, and incremental lifetime
6 cancer risks;

7 (B) The probabilistic risk assessment's use of input parameters expressed as either point
8 estimates or distributions. For each input parameter expressed as a distribution, the following
9 information shall be provided:

10 (i) The shape of the full distribution;

11 (ii) To the extent practicable, the mean, standard deviation, minimum, 5th percentile, 10th
12 percentile, median, 90th percentile, 95th percentile, and maximum of the specified distribution;

13 (iii) Justification for the use of each distribution explaining the rationale for its use and
14 the rejection of other relevant distributions. Justification shall be based on one or more of the
15 following:

16 (I) Distributions presented in a refereed or peer-reviewed publication;

17 (II) Distributions available from the U.S. Environmental Protection Agency or other state
18 or federal government agency, the American Society for Testing and Materials (ASTM), or any
19 distributions designated by the Department as default distributions;

20 (III) Expert or professional judgment; or

21 (IV) Parametric distributions of input variables fit quantitatively to measured data. For
22 such distributions, the following information shall be provided: parametric fits and the data on
23 the same axes; appropriate goodness-of-fit statistics; implications of any important differences
24 between the parametric fits and the data; and influence of the statistical process or underlying
25 mechanism creating the random variable on the selection of the distribution used;

26 (iv) The extent to which input distributions and their parameters capture and separately
27 represent both stochastic variability and knowledge uncertainty. This information shall comprise
28 a portion of, but not be a replacement for, a comprehensive discussion in the body of the baseline
29 risk assessment of the qualitative and quantitative sources of uncertainty.

30 (C) Any correlations between or among input variables that are known or expected to
31 have the practical effect of significantly affecting the risk assessment;

32 (D) For each output distribution resulting from the probabilistic risk assessment, the
33 following information:

34 (i) The shape of the full distribution and location of the acceptable risk level; and

35 (ii) To the extent practicable, the mean, standard deviation, minimum, 5th percentile, 10th
36 percentile, median, 90th percentile, 95th percentile, and maximum of the specified distribution;

37 (E) A probabilistic sensitivity analysis for all key input distributions conducted so as to
38 distinguish, to the extent possible, the effects of variability from the effects of uncertainty in the
39 input variables; and

40 (F) Justification for the selection of any point estimate value incorporated into the
41 probabilistic assessment explaining the rationale for its selection and for the rejection of other
42 relevant point estimate values. Such justification for use shall be based on one or more of the
43 sources specified in subparagraph (5)(d)(B)(iii) of this rule.

44 (e) Probabilistic methods may be applied to:

45 (A) Environmental media contaminant concentration data;

- (B) Transport and fate modeling;
- (C) Exposure estimation;
- (D) Human toxicity estimation;
- (E) Ecological response estimation; or
- (F) Risk characterization.

7 Stat. Auth.: ORS 465.315 & 465.400

8 Hist.:

9
10 **Feasibility Study**

11 340-122-085 (1) If, based upon the remedial investigation, the results of a removal, or
12 other information, the Director determines that remedial action might be necessary to protect
13 public health, safety or welfare or the environment, the Director may perform or require to be
14 performed a feasibility study to develop information for selection or approval of a remedial
15 action.

16 (2) A feasibility study shall develop and evaluate a range of remedial action alternatives
17 acceptable to the Department, including any or all of the following:

- (a) No action;
- (b) Remedial action utilizing engineering and/or institutional controls;
- (c) Remedial action utilizing treatment;
- (d) Remedial action utilizing excavation and offsite disposal; and
- (e) Any combination of the above, as appropriate.

22 (3) Remedial action alternatives may be eliminated from development or evaluation in the
23 feasibility study if, based on the remedial investigation and consideration of factors specified in
24 OAR 340-122-090, the Department determines one or more remedial action alternatives are not
25 protective, feasible or appropriate for the facility.

26 (4) For each remedial action option developed under section (2) of this rule, the
27 feasibility study shall evaluate:

28 (a) The protectiveness of the alternative based upon the standards set forth in OAR 340-
29 122-040;

30 (b) The feasibility of the alternative based upon a balancing of the remedy selection
31 factors set forth in OAR 340-122-090(3) and (4); and

32 (c) The extent to which the remedial action alternative treats hot spots of contamination
33 based upon the criteria set forth in sections (5) and (6) of this rule and OAR 340-122-090(4).

34 (5) For groundwater or surface water in which a significant adverse effect on existing or
35 reasonably likely future beneficial uses has been identified under OAR 340-122-080(6):

36 (a) The feasibility study shall evaluate treatment to concentrations that ensure such
37 significant adverse effects will not occur. Specifically, the following shall be evaluated:

38 (A) Whether treatment is reasonably likely to restore or protect a beneficial use within a
39 reasonable time; and

40 (B) The extent to which treatment is feasible, considering the remedy selection factors set
41 forth in OAR 340-122-090, including application of the higher threshold for evaluating the
42 reasonableness of the cost of treating hot spots of contamination.

43 (b) Where a concentration identified in subsection (5)(a) of this rule is not equivalent to
44 an acceptable risk level:
45

1 (A) The feasibility study shall evaluate the feasibility of treatment to the concentration
2 identified in subsection (5)(a), regardless of whether that level is more or less stringent than the
3 acceptable risk level, applying the higher threshold for reasonableness of the cost of treatment;
4 and

5 (B) Where the acceptable risk level is more stringent than the concentration identified in
6 subsection (5)(a), the feasibility study shall also evaluate the feasibility of treatment to the
7 acceptable risk level, without application of the higher threshold for reasonableness of the cost of
8 treatment. If treatment to a more stringent acceptable risk level is not feasible, the feasibility
9 study shall evaluate other remedial measures providing protection while allowing beneficial use
10 of the water.

11 (6) For contamination of media other than groundwater or surface water, the feasibility
12 study shall evaluate the extent to which the hazardous substances cannot be reliably contained.

13 (7) For hot spots of contamination in media other than groundwater or surface water that
14 have been identified under OAR 340-122-080(7) or section (6) of this rule, the feasibility study
15 shall evaluate:

16 (a) The feasibility of treatment to a point where the concentration or condition making the
17 hazardous substance a hot spot would no longer occur at the facility, based upon a balancing of
18 the remedy selection factors set forth in OAR 340-122-090 and an application of the higher
19 threshold for evaluating the reasonableness of the cost of treating hot spots of contamination; and

20 (b) The feasibility of treatment to the acceptable risk level through comparison to other
21 remedial methods without application of the higher threshold for reasonableness of the cost of
22 the treatment.

23 (8) The feasibility study should recommend a protective and feasible remedial action
24 from the remedial action alternatives developed and evaluated in the feasibility study. For any
25 recommended remedial action, the feasibility study shall:

26 (a) Identify the extent to which the remedial action alternative would be conducted onsite;

27 (b) Identify all state or local permits, licenses, or other authorizations or procedural
28 requirements that would be exempted pursuant to ORS 465.315(3);

29 (c) Describe any consultation with affected state or local government bodies; and

30 (d) Identify applicable substantive requirements of the affected state or local laws and
31 how they would be addressed.

32
33 Stat. Auth.: ORS 465.315 & 465.400

34 Hist.:

35
36 **Selection or Approval of the Remedial Action**

37 340-122-090 (1) Based on the administrative record, the Director shall select or approve a
38 remedial action that:

39 (a) Is protective of present and future public health, safety and welfare and of the
40 environment, as specified in OAR 340-122-040;

41 (b) Is based on balancing of remedy selection factors, as specified in section (3) of this
42 rule; and

43 (c) Treats hot spots of contamination to the extent feasible, as specified in section (4) of
44 this rule.

45 (2) A remedial action may achieve protection through:

1 (a) Treatment;

2 (b) Excavation and offsite disposal;

3 (c) Engineering controls;

4 (d) Institutional controls;

5 (e) Any other method of protection; or

6 (f) A combination of the above.

7 (3) In determining the appropriate method of remediation for a specific facility, the
8 Director shall select or approve a protective remedial action that balances the following factors:

9 (a) Effectiveness. Each remedial action option shall be assessed for its effectiveness in
10 achieving protection, by considering the following, as appropriate:

11 (A) Magnitude of risk from untreated waste or treatment residuals remaining at the
12 facility absent any risk reduction achieved through onsite management of exposure pathways,
13 as determined in OAR 340-122-084(4)(a). The characteristics of the residuals shall be
14 considered to the degree that they remain hazardous, taking into account their volume, toxicity,
15 mobility, propensity to bioaccumulate, and propensity to degrade;

16 (B) Adequacy of any engineering and institutional controls necessary to manage the risk
17 from treatment residuals and untreated hazardous substances remaining onsite, as determined in
18 OAR 340-122-084(4)(b);

19 (C) With respect to hot spots of contamination in water, the extent to which the remedial
20 action restores or protects existing and reasonably likely future beneficial uses of water;

21 (D) Adequacy of treatment technologies in meeting treatment objectives;

22 (E) Time until the remedial action objectives would be achieved; and

23 (F) Any other information relevant to effectiveness.

24 (b) Long term reliability. Each remedial action alternative shall be assessed for its long-
25 term reliability, by considering the following, as appropriate:

26 (A) Reliability of treatment technologies in meeting treatment objectives;

27 (B) Reliability of engineering and institutional controls necessary to manage the risk from
28 treatment residuals and untreated hazardous substances, taking into consideration the
29 characteristics of the hazardous substances to be managed and the effectiveness and
30 enforceability over time of engineering and institutional controls in preventing migration of
31 contaminants and in managing risks associated with potential exposure remaining onsite, as
32 determined under OAR 340-122-084(4)(b);

33 (C) Nature, degree, and certainties or uncertainties of any necessary long-term
34 management (e.g., operation, maintenance, and monitoring); and

35 (D) Any other information relevant to long-term reliability.

36 (c) Implementability. Each remedial action alternative shall be assessed for the ease or
37 difficulty of implementing the remedial action, by considering the following, as appropriate:

38 (A) Practical, technical, and legal difficulties and unknowns associated with the
39 construction and implementation of a technology, engineering control, or institutional control,
40 including potential scheduling delays;

41 (B) The ability to monitor the effectiveness of the remedy;

42 (C) Consistency with federal, state and local requirements; activities needed to coordinate
43 with other agencies; and the ability and time required to obtain any necessary authorization from
44 other governmental bodies;

1 (D) Availability of necessary services, materials, equipment, and specialists, including the
2 availability of adequate offsite treatment, storage, and disposal capacity and services, and
3 availability of prospective technologies; and

4 (E) Any other information relevant to Implementability.

5 (d) Implementation Risk. Each remedial action alternative shall be assessed for the risk
6 from implementing the remedial action, by considering the following, as appropriate:

7 (A) Potential impacts on the community during implementation of the remedial action
8 and the effectiveness and reliability of protective or mitigative measures;

9 (B) Potential impacts on workers during implementation of the remedial action and the
10 effectiveness and reliability of protective or mitigative measures;

11 (C) Potential impacts on the environment during implementation of the remedial action
12 and the effectiveness and reliability of protective or mitigative measures;

13 (D) Time until the remedial action is complete; and

14 (E) Any other information related to implementation risk.

15 (e) Reasonableness of Cost. Each remedial alternative shall be assessed for the
16 reasonableness of the cost of the remedial action, by considering the following, as appropriate:

17 (A) Cost of the remedial action including:

18 (i) Capital costs, including both direct and indirect costs;

19 (ii) Annual operation and maintenance costs;

20 (iii) Costs of any periodic review requirements; and

21 (iv) Net present value of all of the above;

22 (B) Degree to which the costs of the remedial action are proportionate to the benefits to
23 human health and the environment created through risk reduction or risk management;

24 (C) With respect to hot spots of contamination in water, the degree to which the costs of
25 the remedial action are proportionate to the benefits created through restoration or protection of
26 existing and reasonably likely future beneficial uses of water;

27 (D) The degree of sensitivity and uncertainty of the costs; and

28 (E) Any other information relevant to cost-reasonableness.

29 (4) The Director shall select or approve a protective remedial action in accordance with
30 the following:

31 (a) Treatment of hot spots of contamination to the extent feasible considering the
32 treatment criteria in OAR 340-122-085(5) and (7) and the factors set forth in OAR 340-122-
33 090(3);

34 (b) The cost of a remedial action shall not be considered reasonable if the costs are
35 disproportionate to the benefits created through risk reduction or risk management;

36 (c) A higher threshold shall be applied in evaluating the reasonableness of costs for
37 treating hot spots of contamination, whether such treatment occurs onsite or in conjunction with
38 excavation and offsite disposal; and

39 (d) Subject to the preference for treatment of hot spots of contamination, where two or
40 more remedial action alternatives are protective, the least expensive alternative shall be preferred,
41 unless the additional cost of a more expensive remedial action alternative is justified by
42 proportionately greater benefits within one or more of the factors set forth in OAR 340-122-
43 090(3).

44 (5) Any person responsible for undertaking the remedial action who proposes one
45 remedial action alternative over another shall have the burden of demonstrating to the Director

1 through the remedial investigation and feasibility study that such remedial action alternative
2 fulfills the requirements of OAR 340-122-090.

3 (6) Subject to the remedy selection factors specified in section (3) of this rule, in selecting
4 or approving a protective remedial alternative, the Director shall consider current and reasonably
5 anticipated future land uses at the facility and surrounding properties, taking into account:

6 (a) Current land use zoning;

7 (b) Other land use designations;

8 (c) Land use plans as established in local comprehensive plans and land use
9 implementing regulations of any governmental body having land use jurisdiction; and

10 (d) Concerns of the facility owner, neighboring owners, and the community.

11 (7) The Director may incorporate into the selection or approval of a remedial action:

12 (a) Such periodic review or inspections as are necessary to ensure protection of present
13 and future public health, safety and welfare and of the environment;

14 (b) A delineation of the extent to which the remedial action occurs onsite, for purposes of
15 ORS 465.315(3); and

16 (c) Designation of points of compliance for measuring attainment of any remedial action
17 objective. Designation of points of compliance shall consider proximity to the source of the
18 release and exposure pathways evaluated in the baseline risk assessment. Points of compliance
19 shall be established as close as possible to the source of the release, and may also be established
20 at other points relevant to exposure pathways and receptors.

21
22 ~~(1) "Protection" and "Feasibility" Requirements. Based on the administrative record, the Director~~
23 ~~shall select a remedial action. Such remedial action shall:~~

24 ~~—— (a) Be protective of present and future public health, safety, and welfare and the~~
25 ~~environment; and~~

26 ~~—— (b) To the maximum extent practicable:~~

27 ~~—— (A) Use permanent solutions and alternative technologies or resource recovery~~
28 ~~technologies;~~

29 ~~—— (B) Be cost effective;~~

30 ~~—— (C) Be effective; and~~

31 ~~—— (D) Be implementable.~~

32 ~~(2) Background, Specified Cleanup Levels or Lowest Concentration Levels. The remedial~~
33 ~~action shall attain:~~

34 ~~—— (a) The concentration levels specified in OAR 340-122-045 when appropriate; or~~

35 ~~—— (b) The Background Level of the hazardous substances, unless the Director determines that~~
36 ~~Background Level does not satisfy the "feasibility" requirements set forth in subsection (1)(b) of~~
37 ~~this rule, in which case the Director shall select a remedial action that attains the lowest~~
38 ~~concentration level of the hazardous substances that satisfies the "protection" and "feasibility"~~
39 ~~requirements set forth in section (1) of this rule.~~

40 ~~—— (3) Other Measures to Supplement Cleanup. The Director may require other measures, such~~
41 ~~as engineering and institutional controls, (e.g., environmental hazard notice, alternate drinking~~
42 ~~water supply, caps, security measures, etc.) to supplement cleanup of hazardous substances to~~
43 ~~Background Level, concentration levels in accordance with OAR 340-122-045, or the lowest~~
44 ~~concentration level in accordance with section (2) of this rule, where such supplementary measures~~

1 are necessary to satisfy the "protection" and "feasibility" requirements set forth in section (1) of
2 this rule.

3 ~~———— (4) Other Measures to Substitute for Cleanup. The Director may require other measures to~~
4 ~~substitute for cleanup of hazardous substances to Background Level, concentration levels under~~
5 ~~OAR 340-122-045 or the lowest concentration level under section (2) of this rule, provided that:~~

6 ~~———— (a) The Director determines that there is no remedial action under section (2) of this rule,~~
7 ~~combined with supplementary measures under section (3) of this rule, that satisfies the~~
8 ~~"protection" and "feasibility" requirements of section (1) of this rule;~~

9 ~~———— (b) Any such substitute measures, as appropriate, include provision for long term care and~~
10 ~~management, including monitoring and operation and maintenance, and periodic review to~~
11 ~~determine whether a remedial action satisfying the "protection" and "feasibility" requirements of~~
12 ~~section (1) of this rule has become available; and~~

13 ~~———— (c) Any proposed use of substitute measures be subject to public notice and participation~~
14 ~~under OAR 340-122-100.~~

15 ~~———— (5) Protection:~~

16 ~~———— (a) In determining whether a remedial action assures protection of the present and future~~
17 ~~public health, safety, and welfare and the environment under the "protection" requirement of~~
18 ~~subsection (1)(a) of this rule, only Background Level shall be presumed to be protective for all~~
19 ~~contaminants in all media. In soils only, cleanup activities that meet the eligibility criteria and attain~~
20 ~~concentration levels at or below those specified in the table of OAR 340-122-045 are remedial~~
21 ~~actions presumed to be protective of human health and the environment. These presumptions may~~
22 ~~be rebutted by information showing that higher concentration levels are also protective;~~

23 ~~———— (b) In determining whether a concentration level higher than the Background Level is~~
24 ~~protective, the Director may consider:~~

25 ~~———— (A) The characterization of hazardous substances and the facility, and the endangerment~~
26 ~~assessment;~~

27 ~~———— (B) Other relevant cleanup or health standards, criteria, or guidance;~~

28 ~~———— (C) Relevant and reasonably available scientific information; and~~

29 ~~———— (D) Any other information relevant to the protectiveness of a remedial action.~~

30 ~~———— (e) When comparing between potential concentration levels, a concentration level lower~~
31 ~~than another shall generally be considered to be more protective and preferable. This presumption~~
32 ~~may be rebutted by information showing that a higher concentration level is also protective;~~

33 ~~———— (d) Any person responsible for undertaking the remedial action who proposes that the~~
34 ~~remedial action attain a concentration level higher than Background Level on the basis of protection~~
35 ~~shall have the burden of demonstrating to the Director through the Remedial Investigation and~~
36 ~~Feasibility Study that such concentration level is protective.~~

37 ~~———— (6) Permanent Solutions and Alternative or Resource Recovery Technologies. In~~
38 ~~determining whether to select a remedial action that uses a permanent solution and alternative or~~
39 ~~resource recovery technologies under subsection (1)(b) of this rule:~~

40 ~~———— (a) Permanent solutions shall be preferred over other remedies;~~

41 ~~———— (b) Remedial action options in which resource recovery or alternative technology is a~~
42 ~~principal element shall be preferred over remedial action options not involving such technology;~~

43 ~~———— (c) Subject to subsection (6)(a) of this rule, the offsite transport and secure disposition of~~
44 ~~hazardous substances or contaminated materials without treatment may be preferred where~~
45 ~~alternative treatment technologies are not available or feasible;~~

1 ~~_____ (d) Subject to subsections (6)(e) and (f) of this rule, and notwithstanding the availability of~~
2 ~~feasible alternative treatment technologies as provided in subsection (6)(e) of this rule, offsite~~
3 ~~transport and secure disposition of hazardous substances or contaminated materials may be~~
4 ~~preferred when the disposal method would significantly expedite the cleanup or would achieve a~~
5 ~~total cleanup, especially at sites with hazardous substances of small quantity or low toxicity;~~

6 ~~_____ (e) The transport and secure disposition offsite of a hazardous waste under ORS 466.005 in~~
7 ~~a treatment, storage, or disposal facility shall meet the requirements of Sections 3004(c) to (g), (m),~~
8 ~~(o), (p), (u) and (v) and 3005(c) of the federal Solid Waste Disposal Act, as amended, Public Law~~
9 ~~96-482 and 98-616; and~~

10 ~~_____ (f) The transport and secure disposition of hazardous substances or contaminated materials,~~
11 ~~other than hazardous wastes, at an offsite facility may be allowed provided that the transport and~~
12 ~~secure disposition of such hazardous substances or contaminated materials, in the Director's~~
13 ~~determination, is adequate to protect the public health, safety, and welfare and the environment.~~

14 ~~_____ (7) Cost effectiveness:~~

15 ~~_____ (a) In determining whether a remedial action is cost effective under subsection (1)(b) of this~~
16 ~~rule, the Director may consider:~~

17 ~~_____ (A) Costs of the remedial action relative to the costs of another remedial action option, if~~
18 ~~any, that achieves the same concentration level;~~

19 ~~_____ (B) Extent to which the remedial action's short term and long term incremental costs are~~
20 ~~proportionate to its incremental results;~~

21 ~~_____ (C) Extent to which the remedial action's short term and long term total costs are~~
22 ~~proportionate to its total results; and~~

23 ~~_____ (D) Any other criterion relevant to cost effectiveness of the remedial action.~~

24 ~~_____ (b) Costs that may be considered include but are not limited to:~~

25 ~~_____ (A) Capital costs;~~

26 ~~_____ (B) Operation and maintenance costs;~~

27 ~~_____ (C) Costs of periodic reviews, where required;~~

28 ~~_____ (D) Net present value of capital and operation and maintenance costs; and~~

29 ~~_____ (E) Potential future remedial action costs.~~

30 ~~_____ (8) Effectiveness. In determining whether a remedial action is effective under subsection~~
31 ~~(1)(b) of this rule, the Director may consider:~~

32 ~~_____ (a) Expected reduction in toxicity, mobility, and volume of the hazardous substances;~~

33 ~~_____ (b) Short term risks that might be posed to community, workers, and the environment~~
34 ~~during implementation, including potential threats to human health and the environment associated~~
35 ~~with excavation, transport, and redisposal or containment;~~

36 ~~_____ (c) Length of time until full protection is achieved;~~

37 ~~_____ (d) Magnitude of residual risks in terms of amounts and concentrations of hazardous~~
38 ~~substances remaining following implementation of a remedial action, including consideration of the~~
39 ~~persistence, toxicity, mobility, and propensity to bioaccumulate of such hazardous substances and~~
40 ~~their constituents;~~

41 ~~_____ (e) Type and degree of long term management required, including monitoring and operation~~
42 ~~and maintenance;~~

43 ~~_____ (f) Long term potential for exposure of human and environmental receptors to remaining~~
44 ~~contaminants;~~

- 1 ~~_____ (g) Long term reliability of engineering and institutional controls, including long term~~
 2 ~~uncertainties associated with land disposal, treated or untreated waste, and residuals;~~
 3 ~~_____ (h) Potential for failure of the remedial action or potential need for replacement of the~~
 4 ~~remedy; and~~
 5 ~~_____ (i) Any other criterion relevant to effectiveness of the remedial action.~~
 6 ~~_____ (9) Implementability. In determining whether a remedial action is implementable under~~
 7 ~~subsection (1)(b) of this rule, the Director may consider:~~
 8 ~~_____ (a) Degree of difficulty associated with implementing the technology;~~
 9 ~~_____ (b) Expected operational reliability of the technology;~~
 10 ~~_____ (c) Need to coordinate with and obtain necessary approvals or permits from other agencies;~~
 11 ~~_____ (d) Availability of necessary equipment and specialists;~~
 12 ~~_____ (e) Available capacity and location of needed treatment, storage, and disposal services; and~~
 13 ~~_____ (f) Any other criterion relevant to implementability of the remedial action.~~
 14 ~~_____ (10) Any person responsible for undertaking the remedial action who proposes one remedial~~
 15 ~~action option over another on the basis of one or more of the elements of subsection (1)(b) of this~~
 16 ~~rule shall have the burden of demonstrating to the Director through the remedial investigation and~~
 17 ~~feasibility study that such remedial action option fulfills the requirements of subsections (1)(a) and~~
 18 ~~(b) of this rule.~~

19
 20 Stat. Auth.: ORS 465.400(1), Ch. 466 & 468.020

21 Hist.: DEQ 26-1988, f. & cert. ef. 9-16-89; DEQ 12-1992, f. & cert. ef. 6-9-92

22
 23 **Public Notice and Participation**

24 **340-122-100 (1) The Department may solicit public input for any of the activities specified**
 25 **in OAR 340-122-050. Such input may include, but is not limited to, information related to:**

- 26 (a) Current and reasonably likely land use;
 27 (b) Current and reasonably likely beneficial uses of water;
 28 (c) Ecological assessment endpoints; and
 29 (d) Remedial action goals.

30 ~~(2)(1)~~ The Department shall, prior to selection or approval of a remedial action:

- 31 (a) Provide notice and opportunity for comment and a public meeting regarding the
 32 proposed remedial action, in accordance with ORS 465.320; and
 33 (b) Make a reasonable effort to identify and notify interested and affected community
 34 organizations and other parties.

35 ~~(3)(2)~~ Any notice under ~~subsection (2)(1)(b)~~ of this rule shall include but not be limited to a
 36 brief description of the Department's proposed remedial action alternative option, if known, and
 37 information regarding where a copy of the full proposal may be inspected and copied.

38 ~~(4)(3)~~ The Director shall consider any comments received during the public comment
 39 period and any public meeting before approving the remedial action.

40 ~~(5)(4)~~ In the Director's discretion, the Department may provide public notice and
 41 opportunity for comment and a public meeting regarding a proposed removal and shall consider
 42 any comments received during such public comment period or any public meeting.

43 ~~(6)(5)~~ Agency records concerning removal or remedial actions and related investigations
 44 shall be made available to the public in accordance with ORS 192.410 to 192.505, subject to
 45 exemptions to public disclosure, if any, under ORS 192.501 and 192.502. The Department shall

1 maintain and make available for public inspection and copying a record of pending and completed
2 removals, remedial actions, and related investigations, to be located at the headquarters ~~and~~ or
3 regional offices of the Department.

4
5 Stat. Auth.: ORS 465.400(1), 465.405, Ch. 466 & 468.020

6 Hist.: DEQ 26-1988, f. & cert. ef. 9-16-88; DEQ 29-1990, f. & cert. ef. 7-13-90

7
8 **Administrative Record**

9 **340-122-110** (1) For purposes of the Director's selection or approval of a removal or
10 remedial action, and enforcement, cost recovery, or review, if any, related to the Director's action,
11 the administrative record shall consist of the following types of documents generated for a facility
12 up to the time of the Director's action:

- 13 (a) Factual information, data, and analyses that form a basis for the Director's action;
14 (b) ~~The Preliminary Assessment, and Remedial Investigational and Feasibility Study,~~
15 as applicable;
16 (c) Orders, consent decrees, settlement agreements, work plans, and other decision
17 documents;
18 (d) Guidance documents and technical literature that form a basis for the Director's action;
19 and
20 (e) Public comments and other information received by the Department prior to the
21 Director's action, and Department responses to significant comments.

22 (2) Unless expressly designated part of the administrative record by the Director, the
23 administrative record shall not include:

- 24 (a) Draft documents and internal memoranda;
25 (b) Documents relating to the liability of persons potentially liable under ORS 465.255;
26 (c) Documents relating to state remedial action costs; and
27 (d) Documents privileged under law or confidential under ORS 192.501 or 192.502.

28
29 Stat. Auth.: ORS 465.400(1), 465.405, Ch. 466 & 468.020

30 Hist.: DEQ 26-1988, f. & cert. ef. 9-16-88; DEQ 29-1990, f. & cert. ef. 7-13-90

1 Definitions

2 340-122-115 Terms not defined in this rule have the meanings set forth in ORS 465.200.

3 Additional terms are defined as follows unless the context requires otherwise:

4 (1) "Acceptable risk level" with respect to the toxicity of hazardous substances has the
5 meaning set forth in ORS 465.315(1)(b)(A) and (B) and is comprised of the acceptable risk level
6 definitions provided for carcinogenic exposures, noncarcinogenic exposures, and ecological
7 receptors in sections (2) through (6) of this rule.

8 (2) "Acceptable risk level for human exposure to individual carcinogens" means:

9 (a) For deterministic risk assessments, a lifetime excess cancer risk of less than or equal
10 to one per one million for an individual at an upper bound exposure; or

11 (b) For probabilistic risk assessments, a lifetime excess cancer risk for each carcinogen of
12 less than or equal to one per one million at the 90th percentile, and less than or equal to one per
13 one hundred thousand at the 95th percentile, each based upon the same distribution of lifetime
14 excess cancer risks for an exposed individual.

15 (3) "Acceptable risk level for human exposure to multiple carcinogens" means the
16 acceptable risk level for human exposure to individual carcinogens and:

17 (a) For deterministic risk assessments, a cumulative lifetime excess cancer risk for
18 multiple carcinogens and multiple exposure pathways of less than or equal to one per one
19 hundred thousand at an upper bound exposure; or

20 (b) For probabilistic risk assessments, a cumulative lifetime excess cancer risk for
21 multiple carcinogens and multiple exposure pathways of less than or equal to one per one
22 hundred thousand at the 90th percentile and less than or equal to one per ten thousand at the 95th
23 percentile, each based upon the same distribution of cumulative lifetime excess cancer risks for
24 an exposed individual.

25 (4) "Acceptable risk level for human exposure to noncarcinogens" means:

26 (a) For deterministic risk assessments, a hazard index ~~number~~ less than or equal to one for
27 an individual at an upper-bound exposure; or

28 (b) For probabilistic risk assessments, a hazard index less than or equal to one at the 90th
29 percentile, and less than or equal to ten at the 95th percentile, each based upon the same
30 distribution of hazard index numbers for an exposed individual.

31 (5) "Acceptable risk level for individual ecological receptors" applies only to species
32 listed as threatened or endangered pursuant to 16 USC 1531 et seq. or ORS 465.172, and means:

33 (a) For deterministic risk assessments, a toxicity index less than or equal to one for an
34 individual ecological receptor at an upper-bound exposure, where the toxicity index is the sum of
35 the toxicity quotients attributable to systemic toxicants with similar endpoints for similarly-
36 responding species and the at the 100th percentile of a distribution of toxicity quotient is the ratio
37 of the exposure point value to the ecological benchmark value; or

38 (b) For probabilistic risk assessments, a toxicity index less than or equal to one at the 90th
39 percentile and less than or equal to 10 at the 95th percentile, each based on the same distribution
40 of toxicity index numbers for an exposed individual ecological receptor; or

41 (c) The probability of important changes in such factors as growth, survival, fecundity, or
42 reproduction related to the health and viability of an individual ecological receptor that are
43 reasonably likely to occur as a consequence of exposure to hazardous substances is *de minimis*.

44 (6) "Acceptable risk level for populations of ecological receptors" means a 10 percent
45 chance, or less, that no more than 20 percent of the total local population will be exposed to an

1 exposure point value greater than the ecological benchmark value for each contaminant of
2 concern and no other observed significant adverse effects on the health or viability of the local
3 population.

4 (7) "Assessment endpoint" means an explicit expression of a specific ecological receptor
5 and an associated function or quality that is to be maintained or protected. Assessment endpoints
6 represent ecological receptors directly or as their surrogates for the purposes of an ecological risk
7 assessment.

8 (8) "Background level" means the concentration of hazardous substance, if any, existing
9 in the environment in the location of the facility before the occurrence of any past or present
10 release or releases.

11 (9) "Beneficial uses of water" means any current or reasonably likely future beneficial
12 uses of groundwater or surface water by humans or ecological receptors.

13 (10) "Carcinogen" means any substance or agent that produces or tends to produce
14 cancer in humans.

15 (11) "Cleanup level" for purposes of OAR 340-122-045, means the residual
16 concentration of a hazardous substance in a medium that is determined to be protective of public
17 health, safety and welfare, and the environment under specified exposure conditions.

18 (12) "Commission" means the Environmental Quality Commission.

19 (13) "Confirmed release" means a release of a hazardous substance into the environment
20 that has been confirmed by the Department in accordance with OAR 340-122-073.

21 (14) "Confirmed release list" means a list of facilities for which the Director has
22 confirmed a release of a hazardous substance.

23 (15) "Contaminant of concern" means a hazardous substance that is present in such
24 concentrations that the contaminant poses a threat or a potentially unacceptable risk to public
25 health, safety or welfare, or the environment considering:

26 (a) The toxicological characteristics of the hazardous substance that influence its ability
27 to affect adversely human health, ecological receptors or the environment relative to the
28 concentration of the hazardous substance at the facility;

29 (b) The chemical and physical characteristics of the hazardous substance that govern its
30 tendency to persist in the environment, move through environmental media, or accumulate
31 through food webs;

32 (c) The background level of the hazardous substances;

33 (d) The thoroughness of the testing for the hazardous substance at the facility;

34 (e) The frequency that the hazardous substance has been detected at the facility; and

35 (f) Degradation by-products of the hazardous substances.

36 (16) "Critical endpoint" or "Critical effect" means the adverse health effect used as the
37 basis for the derivation of the reference dose (RfD). Exposure to a given chemical may result in a
38 variety of toxic effects (e.g., liver defects, kidney defects, or blood defects). The critical endpoint
39 is selected from the different adverse health effects produced by a given chemical, and is the
40 adverse health effect with the lowest dose level that produced toxicity.

41 (17) "Department" means the Oregon Department of Environmental Quality.

42 (18) "Deterministic risk assessment" means a risk assessment that produces a point value
43 estimate of risk for a specific set of exposure assumptions.

44 (19) "De minimis release" means a release of a hazardous substance that, because of the
45 quantity or characteristics of the hazardous substance released and the potential for migration and

1 exposure of human or environmental receptors, can reasonably be considered to pose no
2 significant threat to public health, safety or welfare, or the environment.

3 (20) "Director" means the Director of the Department of Environmental Quality or the
4 Director's authorized representative.

5 (21) "Ecological benchmark value" means the highest no-observed-adverse-effect-level
6 (NOAEL) for individual ecological receptors considering effects on reproductive success or the
7 median lethal dose or concentration (LD50 or LC50) for populations of ecological receptors. If a
8 NOAEL, LD50 or LC50, as applicable, is not available for ecological receptors considered in the
9 risk assessment, the ecological benchmark value may be derived from other toxicological
10 endpoints for those receptors or appropriate surrogates for those receptors, adjusted with
11 uncertainty factors to equate to a NOAEL, LD50 or LC50. The ecological benchmark value shall
12 be based, to the extent practicable, on studies whose routes of exposure and duration of exposure
13 were commensurate with the expected routes and duration of exposure for ecological receptors
14 considered in the risk assessment, or appropriate surrogates for those receptors.

15 (22) "Ecological receptor" means a population of plants or animals in the locality of the
16 facility (excluding domestic animals and cultivated plants) or an individual member of any
17 species listed as threatened or endangered pursuant to 16 U.S.C. 1532 et seq. or ORS 496.172.

18 (23) "Engineering control" means a remedial method used to prevent or minimize
19 exposure to hazardous substances, including technologies that reduce the mobility or migration
20 of hazardous substances. Engineering controls may include, but are not limited to, capping,
21 horizontal or vertical barriers, hydraulic controls, and alternative water supplies.

22 (24) "Environment" includes ecological receptors, the waters of the state, any drinking
23 water supply, any land surface and subsurface strata, sediments, saturated soils, subsurface gas,
24 or ambient air or atmosphere.

25 (25) "Exposure point value" means the concentration or dose of a hazardous substance
26 occurring at a location of potential contact between a human receptor and the hazardous
27 substance, or between an ecological receptor and the hazardous substance.

28 (26) "Facility" or "Site" means any building, structure, installation, equipment, pipe or
29 pipeline including any pipe into a sewer or publicly owned treatment works, well, pit, pond,
30 lagoon, impoundment, ditch, landfill, storage container, above ground tank, underground storage
31 tank, motor vehicle, rolling stock, aircraft, or any site or area where a hazardous substance has
32 been deposited, stored, disposed of, or placed, or otherwise come to be located and where a
33 release has occurred or where there is a threat of a release, but does not include any consumer
34 product in consumer use or any vessel.

35 (27) "Groundwater" means any water, except capillary moisture, beneath the land
36 surface or beneath the bed of any stream, lake, reservoir or other body of surface water within the
37 boundaries of the state, whatever may be the geological formation or structure in which such
38 water stands, flows, percolates or otherwise moves.

39 (28) "Hazard index" means a number equal to the sum of the hazard quotients
40 attributable to systemic toxicants with similar toxic endpoints.

41 (29) "Hazard quotient" means the ratio of the exposure point value to the reference dose,
42 where the reference dose is typically the highest dose causing no adverse effects on survival,
43 growth or reproduction in human populations.

44 (30) "Hazardous substance" means:

45 (a) Hazardous waste as defined in ORS 466.005;

1 (b) Any substance defined as a hazardous substance pursuant to section 101(14) of the
2 federal Comprehensive Environmental Response, Compensation and Liability Act, P.L. 96-510,
3 as amended, and P.L. 99-499;

4 (c) Oil as defined in ORS 465.200(18); and

5 (d) Any substance designated by the commission under ORS 465.400.

6 (31) "Hot spots of contamination" means:

7 (a) For groundwater or surface water, hazardous substances having a significant adverse
8 effect on beneficial uses of water or waters to which the hazardous substances would be
9 reasonably likely to migrate and for which treatment is reasonably likely to restore or protect
10 such beneficial uses within a reasonable time, as determined in the feasibility study; and

11 (b) For media other than groundwater or surface water, (e.g., contaminated soil, debris,
12 sediments, and sludges; drummed wastes; "pools" of dense, non-aqueous phase liquids
13 submerged beneath groundwater or in fractured bedrock; and non-aqueous phase liquids floating
14 on groundwater), if hazardous substances present a risk to human health or the environment
15 exceeding the acceptable risk level, the extent to which the hazardous substances:

16 (A) Are present in concentrations exceeding risk-based concentrations corresponding to:

17 (i) 100 times the acceptable risk level for human exposure to each individual;

18 (ii) 10 times the acceptable risk level for human exposure to each individual

19 noncarcinogen; or

20 (iii) 10 times the acceptable risk level for exposure of individual ecological receptors or
21 populations of ecological receptors to each individual hazardous substance;

22 (B) Are reasonably likely to migrate to such an extent that the conditions specified in
23 subsection (a) or paragraphs (b)(A) or (b)(C) would be created; or

24 (C) Are not reliably containable, as determined in the feasibility study.

25 (32) "Institutional control" means a legal or administrative tool or action taken to reduce
26 the potential for exposure to hazardous substances. Institutional controls may include, but are
27 not limited to, use restrictions, environmental monitoring requirements, and site access and
28 security measures.

29 (33) "Inventory" means a list of facilities for which the Director has confirmed a release
30 of a hazardous substance and, based on a preliminary assessment or equivalent information, has
31 determined that additional investigation, removal, remedial action, or long term engineering or
32 institutional controls related to removal or remedial action are required to assure protection of the
33 present and future public health, safety and welfare, and the environment.

34 (34) "Locality of the facility" means any point where a human or an ecological receptor
35 contacts, or is reasonably likely to come into contact with, facility-related hazardous substances,
36 considering:

37 (a) The chemical and physical characteristics of the hazardous substances;

38 (b) Physical, meteorological, hydrogeological, and ecological characteristics that govern
39 the tendency for hazardous substances to migrate through environmental media or to move and
40 accumulate through food webs;

41 (c) Any human activities and biological processes that govern the tendency for hazardous
42 substances to move into and through environmental media or to move and accumulate through
43 food webs; and

44 (d) The time required for contaminant migration to occur based on the factors described
45 in subsections (34)(a) through (c) of this rule.

1 (35) "Measurement endpoints for ecological receptors" are quantitative expressions of an
2 observed or measured response in ecological receptors exposed to hazardous substances.

3 (36) "Noncarcinogen" means hazardous substances with adverse health effects on
4 humans other than cancer.

5 (37) "Onsite", for purposes of ORS 465.315(3), means the areal extent of contamination
6 and all suitable areas in close proximity to the contamination necessary for implementation of a
7 removal or remedial action.

8 (38) "Permitted or authorized release" means a release that is from an active facility and
9 that is subject to and in substantial compliance with a current and legally enforceable permit
10 issued by an authorized public agency.

11 (39) "Population" and "Local population", for purposes of evaluating ecological
12 receptors, means a group of individual plants, animals, or other organisms of the same species
13 that live together and interbreed within a given habitat, including any portion of a population of a
14 transient or migratory species that uses habitat in the locality of the facility for only a portion of
15 the year or for a portion of their lifecycle.

16 (40) "Practical quantification limit" or "POL" means the lowest concentration that can
17 be reliably measured within specified limits of precision, accuracy, representativeness,
18 completeness, and comparability when testing field samples under routine laboratory operating
19 conditions using Department-approved methods.

20 (41) "Preliminary assessment" means an investigation conducted in accordance with
21 OAR 340-122-072 for the purpose of determining whether additional investigation, removal,
22 remedial action, or related engineering or institutional controls are needed to assure protection of
23 public health, safety and welfare, and the environment.

24 (42) "Probabilistic risk assessment" means a risk assessment that produces a credible
25 range or distribution of possible risk estimates by taking into consideration the variability and
26 uncertainty in the exposure and toxicity data used to make the assessment.

27 (43) "Release" means any spilling, leaking, pumping, pouring, emitting, emptying,
28 discharging, injecting, escaping, leaching, dumping or disposing into the environment including
29 the abandonment or discarding of barrels, containers and other closed receptacles containing any
30 hazardous substance, or any threat thereof, but excludes:

31 (a) Any release which results in exposure to a person solely within a workplace, with
32 respect to a claim that the person may assert against the person's employer under ORS Chapter
33 656;

34 (b) Emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel or
35 pipeline pumping station engine;

36 (c) Any release of source, by product or special nuclear material from a nuclear incident,
37 as those terms are defined in the Atomic Energy Act of 1954, as amended, if such release is
38 subject to the requirements with respect to financial protection established by the Nuclear
39 Regulatory Commission under Section 170 of the Atomic Energy Act of 1954, as amended, or,
40 for the purposes of ORS 465.260 or any other removal or remedial action, any release of source
41 by product special nuclear material from any processing site designated under Section
42 102(a)(1) or 302(a) of the Uranium Mill Tailings Radiation Control Act of 1978; and

43 (d) The normal application of fertilizer.

44 (44) "Remedial action" and "Removal" have the meanings set forth in ORS 465.200
45 (22) and (24), respectively, and, for purposes of these rules, may include investigations,

1 treatment, excavation and offsite disposal, engineering controls, institutional controls, any
2 combination thereof.

3 (45) "Remediated" means implementation of a removal or remedial action.

4 (46) "Residual risk assessment" means both:

5 (a) A quantitative assessment of the risk resulting from concentrations of untreated waste
6 or treatment residuals remaining at the conclusion of any treatment and offsite disposal taking
7 into consideration current and reasonably likely future land and water use scenarios and the
8 exposure assumptions used in the baseline risk assessment; and

9 (b) A qualitative or quantitative assessment of the adequacy and reliability of any
10 institutional or engineering controls to be used for management of treatment residuals and
11 untreated hazardous substances.

12 (47) "Risk" means the probability that a hazardous substance, when released into the
13 environment, will cause adverse effects in exposed humans or ecological receptors.

14 (48) "Risk assessment" means the process used to determine the probability of an
15 adverse effect due to the presence of hazardous substances. A risk assessment includes
16 identification of the hazardous substances present in the environmental media; assessment of
17 exposure and exposure pathways; assessment of the toxicity of the hazardous substances;
18 characterization of human health risks; and characterization of the impacts or risks to the
19 environment.

20 (49) "Sensitive environment", for purposes of OAR 340-122-045, means an area of
21 particular environmental value where a hazardous substance could pose a greater threat than in
22 other non-sensitive areas. Sensitive environments include but are not limited to: Critical habitat
23 for federally endangered or threatened species; National Park, Monument, National Marine
24 Sanctuary, National Recreational Area, National Wildlife Refuge, National Forest Campgrounds,
25 recreational areas, game management areas, wildlife management areas; designated federal
26 Wilderness Areas; wetlands (freshwater, estuarine, or coastal); wild and scenic rivers; state
27 parks; state wildlife refuges; habitat designated for state endangered species; fishery resources;
28 state designated natural areas; county or municipal parks; and other significant open spaces and
29 natural resources protected under Goal 5 of Oregon's Statewide Planning Goals.

30 (50) "Significant adverse effect on beneficial uses of water" means current or reasonably
31 likely future exceedance of:

32 (a) Applicable or relevant federal, state or local water quality standards, criteria,
33 guidance;

34 (b) In the absence of applicable or relevant water quality standards, criteria, or guidance,
35 the acceptable risk level; or

36 (c) If subsections (a) and (b) of this section do not apply, the concentration of a hazardous
37 substance indicated by available published peer-reviewed scientific information to have a
38 significant adverse effect on a current or reasonably likely future beneficial use of water.

39 (51) "Soil" means a mixture of organic and inorganic solids, air, water, and biota which
40 exists on the earth surface above bedrock, including materials of anthropogenic sources such as
41 slag and sludge.

42 (52) "Surface water" means lakes, bays, ponds, impounding reservoirs, springs, wells,
43 rivers, streams, creeks, estuaries, wetlands, inlets, canals, the Pacific Ocean within the territorial
44 limits of the State of Oregon, and all other bodies, natural or artificial, inland or coastal, fresh or
45 salt, public or private (except those private waters which do not combine or effect a junction with

1 natural surface waters), which are wholly or partially within or bordering the state or within its
2 jurisdiction.

3 (53) "Total excess cancer risk" means the upper bound on the estimated excess cancer
4 risk associated with exposure to multiple hazardous substances and multiple exposure pathways.

5 (54) "Treatment" means to permanently and substantially eliminate or reduce the
6 toxicity, mobility or volume of hazardous substances with the use of either *in-situ* or *ex-situ*
7 remedial technologies.

8
9 Stat. Auth.: ORS 465.315 & 465.400

10 Hist.:

11
12
13 **Purpose**

14 ~~340-122-410 These rules establish the criteria and procedures for implementation of a~~
15 ~~hazardous substances site discovery program pursuant to ORS 465.215 through 465.245 and~~
16 ~~465.405, including a process for evaluation and preliminary assessment of releases of hazardous~~
17 ~~substances, and a process for developing and maintaining a statewide list of confirmed releases and~~
18 ~~an inventory of sites requiring investigation, removal, remedial action, or related long term~~
19 ~~environmental or institutional controls.~~

20
21 Stat. Auth.: ORS 465.400(1), 465.405 & 468.020

22 Hist.: DEQ 29-1990, f. & cert. ef. 7-13-90

23
24 **Scope and Applicability**

25 ~~340-122-415 (1) These rules apply to releases of hazardous substances regardless of the~~
26 ~~applicability of other statutes and administrative rules.~~

27 ~~(2) Nothing in these rules, including listing on the Confirmed Release List or the Inventory,~~
28 ~~shall be construed to be a prerequisite to or otherwise affect the liability of any person or the~~
29 ~~authority of the Director to undertake, order, or authorize a removal, remedial, or other action under~~
30 ~~ORS Chapter 465 or other applicable law.~~

31
32 Stat. Auth.: ORS 465.400(1), 465.405 & 468.020

33 Hist.: DEQ 29-1990, f. & cert. ef. 7-13-90

34
35 **Definitions**

36 ~~340-122-420 These definitions apply to OAR 340-122-410 through 340-122-470. Terms not~~
37 ~~defined in this rule have the meanings set forth in ORS 465.200 and OAR 340-122-020:~~

38 ~~(1) "Background Level" means the concentration of hazardous substance, if any, existing in~~
39 ~~the environment at a facility before the occurrence of any past or present release or releases.~~

40 ~~(2) "Confirmed Release" means a release, as defined in ORS 465.200(14), of a hazardous~~
41 ~~substance into the environment that has been confirmed by the Department in accordance with~~
42 ~~OAR 340-122-427.~~

43 ~~(3) "Confirmed Release List" means a list of facilities for which the Director has confirmed~~
44 ~~a release of a hazardous substance.~~

1 (4) "~~De Minimis Release~~" means a release of a hazardous substance which because of the
2 quantity or characteristics of the hazardous substance released and the potential for migration and
3 exposure of human, biological, or environmental receptors can reasonably be considered to pose no
4 significant threat to public health, safety, welfare, or the environment.

5 (5) "~~Director~~" means the Director of the Department of Environmental Quality or the
6 Director's authorized representative.

7 (6) "~~Environment~~" includes the waters of the state, any drinking water supply, any land
8 surface or subsurface strata, sediments, saturated soils, subsurface gas, or ambient air or
9 atmosphere.

10 (7) "~~Facility~~" means any building, structure, installation, equipment, pipe or pipeline
11 including any pipe into a sewer or publicly owned treatment works, well, pit, pond, lagoon,
12 impoundment, ditch, landfill, storage container, above ground tank, underground storage tank,
13 motor vehicle, rolling stock, aircraft, or any site or area where a hazardous substance has been
14 deposited, stored, disposed of, or placed, or otherwise come to be located and where a release has
15 occurred or where there is a threat of a release, but does not include any consumer product in
16 consumer use or any vessel.

17 (8) "~~Inventory~~" means a list of facilities for which the Director has confirmed a release of a
18 hazardous substance and, based on a preliminary assessment, has determined that additional
19 investigation, removal, remedial action, or long term environmental or institutional controls related
20 to removal or remedial action are required to assure protection of the present and future public
21 health, safety, welfare, and the environment.

22 (9) "~~Permitted or Authorized Release~~" means a release that is from an active facility and
23 that is subject to and in substantial compliance with a current and legally enforceable permit issued
24 by the Department, the United States Environmental Protection Agency, or the Lane Regional Air
25 Pollution Authority; is in conformance with Department rules or a control regulation in a State
26 Implementation Plan; or is otherwise in conformance with the provisions of a State Implementation
27 Plan.

28 (10) "~~Preliminary Assessment~~" means an investigation conducted in accordance with OAR
29 340-122-426 for the purpose of determining whether additional investigation, removal, remedial
30 action, or related long term environmental or institutional controls are needed to assure protection
31 of public health, safety, welfare, and the environment.

32 (11) "~~Release~~" means any spilling, leaking, pumping, pouring, emitting, emptying,
33 discharging, injecting, escaping, leaching, dumping or disposing into the environment including the
34 abandonment or discarding of barrels, containers and other closed receptacles containing a
35 hazardous substance, or threat thereof, but excludes:

36 (a) Any release which results in exposure to a person solely within a workplace, with respect
37 to a claim that the person may assert against the person's employer under ORS Chapter 656;

38 (b) Emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel or
39 pipeline pumping station engine;

40 (c) Any release of source, by product or special nuclear material from a nuclear incident, as
41 those terms are defined in the Atomic Energy Act of 1954, as amended, if such release is subject to
42 requirements with respect to final protection established by the Nuclear Regulatory Commission
43 under Section 170 of the Atomic Energy Act of 1954, as amended, or, for the purposes of ORS
44 465.250 or any other removal or remedial action, any release of source by product or special

1 nuclear material from any processing site designated under Section 102(a)(1) or 302(a) of the
2 Uranium Mill Tailings Radiation Control Act of 1978; and

3 ~~(d) The normal application of fertilizer.~~

4 ~~(12) "Remedial Action" and "Removal" have the meanings set forth in ORS~~
5 ~~465.200(15) and (17), respectively, and, for purposes of these rules, may include investigations,~~
6 ~~cleanups, and related actions under any federal or state statute or regulation.~~

7 ~~(13) "Site" has the same meaning as set forth for "facility" in section (7) of this rule.~~

8
9 Stat. Auth.: ORS 465.400(1), 465.405 & 468.020

10 Hist.: DEQ 29-1990, f. & cert. ef. 7-13-90

11 12 Site Evaluation

13 ~~340-122-425 (1) When the Department receives information about a release or potential~~
14 ~~release of a hazardous substance, the Department shall evaluate the information and document its~~
15 ~~conclusions. The purpose of the evaluation is to decide whether a release has or may have occurred~~
16 ~~and whether the release may pose a significant threat to public health, safety, welfare, or the~~
17 ~~environment.~~

18 ~~———— (2) The Department may request or gather additional information to complete the site~~
19 ~~evaluation.~~

20 ~~———— (3) After an evaluation is completed, the Department will determine whether a preliminary~~
21 ~~assessment, removal, remedial action, other action, or no further action is needed at the facility.~~

22
23 Stat. Auth.: ORS 465.400(1), 465.405 & 468.020

24 Hist.: DEQ 29-1990, f. & cert. ef. 7-13-90

25 26 Preliminary Assessments

27 ~~340-122-426 (1) The Department shall conduct a preliminary assessment or approve a~~
28 ~~preliminary assessment conducted by another person in accordance with section (4) of this rule if~~
29 ~~the Department determines that a release of a hazardous substance poses a significant threat to~~
30 ~~public health, safety, welfare, or the environment. The Department may conduct or approve a~~
31 ~~preliminary assessment without such determination. The Department may determine that existing~~
32 ~~information constitutes the equivalent of all or part of a preliminary assessment.~~

33 ~~———— (2) Prior to conducting a preliminary assessment, the Director shall notify the owner and~~
34 ~~operator of the facility, if known, of the Department's intent to conduct the assessment, and allow~~
35 ~~the owner or operator to submit relevant information to the Department or to request to conduct the~~
36 ~~preliminary assessment. The Department may accept or deny such request.~~

37 ~~———— (3) The purpose of a preliminary assessment is to develop sufficient information to~~
38 ~~determine whether additional investigation, removal, remedial action, or long term environmental~~
39 ~~or institutional controls related to removal or remedial action are needed at a facility to assure~~
40 ~~protection of present and future public health, safety, welfare, and the environment.~~

41 ~~———— (4) A preliminary assessment shall include sufficient on-site observations, maps, facility~~
42 ~~data, sampling, and other information to accomplish the purposes of a preliminary assessment as~~
43 ~~described in section (3) of this rule including, as appropriate:~~

1 ~~_____ (a) Description of historical operations at the facility, including past and present generation,~~
2 ~~management, and use of hazardous substances; compliance with relevant environmental~~
3 ~~requirements; and investigations or cleanups of releases of hazardous substances;~~

4 ~~_____ (b) Identity and characteristics of hazardous substances that are being or might have been~~
5 ~~released and, if available, an estimate of the quantities released, the concentrations in the~~
6 ~~environment, and extent of migration;~~

7 ~~_____ (c) Documentation of releases of hazardous substances to the environment;~~

8 ~~_____ (d) Identification of present and past owners and operators of the facility;~~

9 ~~_____ (e) A description of the facility, including sites name, and a site map identifying property~~
10 ~~boundaries, the location of known or suspected releases of hazardous substances, and significant~~
11 ~~topographic features;~~

12 ~~_____ (f) A description of potential pathways for migration of known or suspected releases of~~
13 ~~hazardous substances, including surface water, groundwater, air, soils, and direct contact;~~

14 ~~_____ (g) A description of receptors, including human, biological, and environmental receptors~~
15 ~~potentially affected by releases of hazardous substances;~~

16 ~~_____ (h) A description of any other physical factors that might be relevant to assessing short and~~
17 ~~long term exposure to releases of hazardous substances; and~~

18 ~~_____ (i) An evaluation of present and future threats to public health, safety, welfare, and the~~
19 ~~environment.~~

20 ~~_____ (5) After completion of a preliminary assessment, the Director shall make one or more of~~
21 ~~the following determinations regarding a facility:~~

22 ~~_____ (a) Additional investigation, removal, remedial action, or long term environmental or~~
23 ~~institutional controls related to removal or remedial action are needed to assure protection of~~
24 ~~present and future public health, safety, welfare, and the environment;~~

25 ~~_____ (b) Current regulatory action under another state or federal agency program is adequate to~~
26 ~~protect public health, safety, welfare, and the environment;~~

27 ~~_____ (c) Other actions are necessary to assure protection of present and future public health,~~
28 ~~safety, welfare, and the environment; or~~

29 ~~_____ (d) No further action is needed to assure protection of present and future public health,~~
30 ~~safety, welfare, and the environment.~~

31 ~~_____ (6) When the preliminary assessment is completed, the Director shall provide a copy to the~~
32 ~~owner and operator, if known, and shall notify them of any determination made pursuant to section~~
33 ~~(5) of this rule.~~

34
35 Stat. Auth.: ORS 465.400(1), 465.405, Ch. 466 & 468.020

36 Hist.: DEQ 26-1988, f. & cert. ef. 9-16-89; Renumbered from 340-122-060; DEQ 29-1990, f. & cert. ef.
37 7-13-90

38 39 Confirmation of a Release

40 340-122-427 (1) The Director shall determine that a release of a hazardous substance has
41 been confirmed for the purposes of listing a facility on the Confirmed Release List or the Inventory
42 if the Director determines that the release meets the criteria in subsections (a) and (b) of this
43 section:

44 ~~_____ (a) The release has been documented by:~~

45 ~~_____ (A) An observation made and documented by a qualified government inspector or agent;~~

1 ~~———— (B) A written statement or report from an owner, operator, or representative authorized by an~~
2 ~~owner or operator stating that the release has occurred; or~~

3 ~~———— (C) Laboratory data indicating the hazardous substance has been detected at levels greater~~
4 ~~than background levels.~~

5 ~~———— (b) The release is not excluded under section (2) of this rule.~~

6 ~~———— (2) A release shall not be defined as a “confirmed release” pursuant to section (1) of this rule~~
7 ~~if, based on the information available at the time a final listing decision is made, the Director~~
8 ~~determines that the release meets any of the following criteria:~~

9 ~~———— (a) The release is de minimis release;~~

10 ~~———— (b) The release by its nature rapidly dissipates to undetectable or insignificant levels and~~
11 ~~poses no significant threat;~~

12 ~~———— (c) The release is a permitted or authorized release, but not including deposition,~~
13 ~~accumulation, or migration of substances resulting from an otherwise permitted or authorized~~
14 ~~release;~~

15 ~~———— (d) The release is a pesticide product registered under the Federal Insecticide, Fungicide,~~
16 ~~and Rodenticide Act (7 U.S.C. 136) and applied for its intended purpose in accordance with label~~
17 ~~directions, but not including deposition, accumulation, or migration of substances resulting from an~~
18 ~~otherwise authorized release;~~

19 ~~———— (e) The release has been cleaned up to a level that is consistent with rules adopted by the~~
20 ~~Commission under ORS 466.553 (1987) or ORS Chapter 466 or that poses no significant threat to~~
21 ~~present or future public health, safety, welfare, or the environment; or~~

22 ~~———— (f) The release otherwise requires no additional investigation, removal, remedial action, or~~
23 ~~long term environmental or institutional controls related to removal or remedial action to assure~~
24 ~~protection of present and future public health, safety, welfare, and the environment.~~

25 ~~———— (3) A release shall not be excluded pursuant to section (2) of this rule if continuing~~
26 ~~environmental or institutional controls related to removal or remedial action are required to assure~~
27 ~~protection of present and future public health, safety, welfare, and the environment.~~

28
29 **[Publications: The publication(s) referred to or incorporated by reference in this rule are available**
30 **from the Department of Environmental Quality.]**

31
32 Stat. Auth.: ORS 465.400(1), 465.405 & 468.020

33 Hist.: DEQ 29-1990, f. & cert. ef. 7-13-90

34 35 **Development of Confirmed Release List**

36 ~~340-122-430 (1) For the purpose of providing public information, the Director shall develop~~
37 ~~and maintain a Confirmed Release List of all facilities for which the Director has confirmed a~~
38 ~~release of a hazardous substance in accordance with OAR 340-122-427.~~

39 ~~———— (2) The list shall include, at a minimum, the following items, if known:~~

40 ~~———— (a) A general description of the facility;~~

41 ~~———— (b) Address or location;~~

42 ~~———— (c) Time period during which a release occurred;~~

43 ~~———— (d) Name of the current owner and operator and names of any past owners and operators~~
44 ~~during the time period of a release of a hazardous substance;~~

45 ~~———— (e) Type and quantity of a hazardous substance released at the facility;~~

- 1 ~~(f) Manner of release of the hazardous substance;~~
- 2 ~~(g) Concentration, distribution, and characteristics of a hazardous substance, if any, in~~
- 3 ~~groundwater, surface water, air, and soils at the facility; and~~
- 4 ~~(h) Status of removal or remedial actions at the facility.~~
- 5 ~~(3)(a) At least 60 days before adding a facility to the Confirmed Release List, the Director~~
- 6 ~~shall notify the owner and operator, if known, of all or any part of the proposed facility by certified~~
- 7 ~~mail or personal service, and shall provide an opportunity to comment on the proposed listing~~
- 8 ~~within 45 days after receiving the notice. For good cause shown, the Department may grant an~~
- 9 ~~extension of up to 45 days for comment;~~
- 10 ~~(b) The Director shall consider relevant and appropriate information submitted to the~~
- 11 ~~Department in determining whether to add a facility to the Confirmed Release List.~~

12
13 Stat. Auth.: ORS 465.400(1), 465.405 & 468.020
14 Hist.: DEQ 29-1990, f. & cert. ef. 7-13-90

1 **Development of Inventory**

2 ~~340-122-440 (1) For the purpose of providing public information, the Director shall develop~~
3 ~~and maintain an Inventory of facilities for which the Director:~~

4 ~~— (a) Has confirmed a release of a hazardous substance in accordance with OAR 340-122-427;~~
5 ~~and~~

6 ~~— (b) Based on a preliminary assessment approved or conducted by the Department, has~~
7 ~~determined that additional investigation, removal, remedial action, or long term environmental or~~
8 ~~institutional controls related to removal or remedial action are required to assure protection of~~
9 ~~present and future public health, safety, welfare, and the environment.~~

10 ~~— (2) The Inventory shall include, at a minimum, the items required for the Confirmed~~
11 ~~Release List, described in OAR 340-122-430(2), and the following items, if known:~~

12 ~~— (a) Hazard ranking and narrative information regarding threats to the environment and~~
13 ~~public health; and~~

14 ~~— (b) Information that indicates whether the remedial action at the facility will be funded~~
15 ~~primarily by:~~

16 ~~— (A) The Department through the use of moneys in the Hazardous Substance Remedial~~
17 ~~Action Fund;~~

18 ~~— (B) An owner or operator or other person under an agreement, order, or consent decree~~
19 ~~under ORS Chapter 465; or~~

20 ~~— (C) An owner or operator or other person under other state or federal authority.~~

21 ~~— (3)(a) At least 60 days before a facility is added to the Inventory the Director shall notify the~~
22 ~~owner and operator, if known, of all or any part of the facility of the proposed listing by certified~~
23 ~~mail or personal service. The notice shall include a copy of the preliminary assessment on which~~
24 ~~the listing is based, and the documentation used to calculate a site score in accordance with OAR~~
25 ~~340-122-450(1)(a). The notice may reference these documents if they have been previously~~
26 ~~provided. The notice shall inform the owner and operator of the opportunity to comment on the~~
27 ~~information contained in the preliminary assessment and on the proposed site score within 45 days~~
28 ~~after receiving the notice. For good cause shown, the Department may grant an extension of up to~~
29 ~~45 days for comment;~~

30 ~~— (b) The Director shall consider relevant and appropriate information submitted to the~~
31 ~~Department in determining whether to add a facility to the Inventory.~~

32 ~~— (4) At least quarterly, the Department shall publish notice of updates to the Inventory. The~~
33 ~~notice shall include a brief description of the facilities added or removed, and shall be published in~~
34 ~~the Secretary of State's Bulletin and submitted to local newspapers of general circulation in~~
35 ~~locations affected by the listings and to interested persons or community organizations.~~

36
37 Stat. Auth.: ORS 465.000(1), 465.400(1), 465.405, 465.410 & 468.020

38 Hist.: DEQ 29-1990, f. & cert. ef. 7-13-90; DEQ 5-1991, f. & cert. ef. 3-18-91

39
40 **Inventory Ranking**

41 ~~340-122-450 (1)(a) The Department will score facilities placed on the Inventory in~~
42 ~~accordance with the Site Scoring Procedure set forth in Appendix 1. The Siting Scoring Procedure~~
43 ~~provides criteria for scoring facilities based on the short term and long term risks they pose to~~
44 ~~present and future public health, safety, welfare or the environment;~~

1 ~~_____ (b) The Department will place facilities in the following categories on the Inventory based~~
2 ~~on their status in the remedial process:~~

3
4 ~~Phase I: _____ Facilities where remedial~~
5 ~~investigation and~~
6 ~~feasibility studies have~~
7 ~~not been initiated.~~

8
9 ~~Phase II: _____ Facilities where remedial~~
10 ~~investigation or feasibility~~
11 ~~studies are underway.~~

12
13 ~~Phase III: _____ Facilities where the remedial~~
14 ~~investigation and feasibility~~
15 ~~studies have been completed~~
16 ~~and remedial design, removal~~
17 ~~or remedial action is underway.~~

18
19 ~~Phase IV: _____ Facilities where all necessary~~
20 ~~removal and remedial action~~
21 ~~have been completed except~~
22 ~~for continuing operation~~
23 ~~and maintenance or~~
24 ~~other environmental or~~
25 ~~institutional controls necessary~~
26 ~~to protect public health, safety,~~
27 ~~welfare, and the environment.~~

28
29 ~~The Department will move facilities from one category to the next in quarterly updates of the~~
30 ~~Inventory as remedial activities progress.~~

31 ~~_____ (2) Prior to publishing a facility's score on the Inventory, the Department will notify the~~
32 ~~owners and operators of the facility, if known, and provide an opportunity for them to comment on~~
33 ~~the facility score and supporting documentation as described in OAR 340-122-440(4).~~

34 ~~_____ (3) The Department will consider facility scores, among other factors, in prioritizing sites for~~
35 ~~further investigation, removal, or remedial action at the conclusion of the preliminary assessment or~~
36 ~~its equivalent. Prior to initiating such action, the Department may rescure a facility if the~~
37 ~~Department receives additional information that may significantly change a facility's score.~~

38
39 Stat. Auth.: ORS 465.000(1), 465.410 & 468.020

40 Hist.: DEQ 5-1991, f. & cert. ef. 3-18-91

1 **Initiation of Process for Delisting Facilities from the Confirmed Release List and Inventory**

2 ~~340-122-460 (1) An owner or operator of a facility listed on the Confirmed Release List or~~
3 ~~Inventory, or any other person adversely affected by the listing, may request the Director to remove~~
4 ~~a facility from the Confirmed Release List or Inventory. The Department may propose to remove a~~
5 ~~facility on its own initiative.~~

6 ~~———— (2)(a) The owner, operator, or other person requesting that a facility be removed from the~~
7 ~~Confirmed Release List or the Inventory shall submit a written petition to the Director setting forth~~
8 ~~the basis for such request. The petition shall include sufficient information and documentation to~~
9 ~~support a determination that:~~

10 ~~———— (A) The petitioner is an owner, operator, or person adversely affected by the listing; and~~

11 ~~———— (B) The facility meets the respective criteria for delisting from the Confirmed Release List~~
12 ~~or from the Inventory set forth in OAR 340-122-470(1).~~

13 ~~———— (b) A petition to remove from the Confirmed Release List or from the Inventory a facility for~~
14 ~~which a delisting petition has previously been denied shall demonstrate new information or~~
15 ~~changed circumstances to support the request.~~

16
17 Stat. Auth.: ORS 465.400(1), 465.405 & 468.020

18 Hist.: DEQ 29-1990, f. & cert. ef. 7-13-90

19
20
21 **Inventory Delisting — Public Notice and Participation**

22 ~~340-122-465 (1) Prior to the approval or denial of a petition to remove a facility from the~~
23 ~~Inventory submitted pursuant to OAR 340-122-460, the Department shall:~~

24 ~~———— (a) Publish a notice and brief description of the proposed action in the Secretary of State's~~
25 ~~Bulletin, notify a local paper of general circulation, and make copies of the proposed action~~
26 ~~available to the public;~~

27 ~~———— (b) Make a reasonable effort to identify and notify interested persons or community~~
28 ~~organizations;~~

29 ~~———— (c) Provide at least 30 days for submission of written comments regarding the proposed~~
30 ~~action;~~

31 ~~———— (d) Upon written request received within 15 days after agency notice, postpone the date of~~
32 ~~its intended action no less than ten or more than 90 days in order to allow the requesting person an~~
33 ~~opportunity to submit information or comments on the proposed action; and~~

34 ~~———— (e) Upon written request by ten or more persons or by a group having ten or more members,~~
35 ~~conduct a public meeting at or near the facility for the purpose of receiving oral comment regarding~~
36 ~~the proposed action, except for a petition submitted by an owner pursuant to a cleanup action~~
37 ~~completed in accordance with these rules.~~

38 ~~———— (2) Where possible, the Department shall combine public notification procedures for~~
39 ~~delisting from the Inventory with the public notification procedures for the proposed certification of~~
40 ~~completion of a removal or remedial action conducted pursuant to ORS Chapter 465.~~

41 ~~———— (3) Agency records concerning the removal of a facility from the Inventory shall be made~~
42 ~~available to the public in accordance with ORS 192.410 to 192.505, subject to exemptions to public~~
43 ~~disclosure, if any, under ORS 192.501 and 192.502. The Department shall maintain and make~~
44 ~~available for public inspection and copying a record of pending and completed delisting actions.~~
45 ~~The records shall be located at the headquarters and regional offices of the Department.~~

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Stat. Auth.: ORS 465.400(1), 465.405 & 468.020
Hist.: DEQ 29-1990, f. & cert. ef. 7-13-90

Delisting — Determination by Director

~~340-122-470(1) The Director shall consider requests or proposals to remove facilities from the Confirmed Release List or the Inventory submitted in accordance with OAR340-122-460. The Director shall delist a facility from the Confirmed Release List if the Director determines that a facility does not meet the criteria for inclusion on the Confirmed Release List set forth in OAR340-122-430(1). The Director shall remove a facility from the Inventory if the Director determines the facility does not meet the criteria for inclusion on the Inventory set forth in OAR340-122-440(1).~~

~~(2) In determining whether to remove a facility from the Confirmed Release List or from the Inventory, the Director shall consider:~~

~~(a) Any relevant Confirmed Release List or Inventory delisting petitions submitted pursuant to OAR340-122-460;~~

~~(b) Any public comments submitted on the proposed action pursuant to OAR340-122-465; and~~

~~(c) Any other relevant information available.~~

~~(3) The Director shall not remove a facility from the Confirmed Release List or from the Inventory if continuing environmental controls or institutional controls related to removal or remedial action (e.g., alternative drinking water supply, caps, security measures) are needed to assure protection of present and future public health, safety, welfare, and the environment.~~

~~(4)(a) The Director shall document the basis for approving or denying a request or proposal to remove a facility from the Confirmed Release List or the Inventory;~~

~~(b) If the Director relies on information described in subsection (2)(a) of this rule to make such determination, the Director shall reference such information in the record.~~

~~(5) The removal of a facility from the Confirmed Release List or from the Inventory shall be effective immediately upon the Director's determination.~~

32 Stat. Auth.: ORS 465.400(1), 465.405 & 468.020
33 Hist.: DEQ 29-1990, f. & cert. ef. 7-13-90

Attachment B

**SUPPORTING PROCEDURAL DOCUMENTATION
RULEMAKING STATEMENTS FOR
PROPOSED REVISIONS TO
DIVISION 122 RULES:
HAZARDOUS SUBSTANCE REMEDIAL ACTION**

NOTICE OF PROPOSED RULEMAKING HEARING

Department of Environmental Quality

Waste Management and Cleanup

OAR Chapter 340-122

<u>DATE</u>	<u>TIME</u>	<u>LOCATION</u>
October 22, 1996	Noon and 7 p.m.	Portland: 811 SW 6th Avenue, Room 3A
October 23, 1996	7 p.m.	Coos Bay: 500 Central Avenue, City Council Chambers
October 24, 1996	7 p.m.	Bend: Central OR Community College, Grandview Rm. 107
October 24, 1996	7 p.m.	LaGrande: 1000 Adams Avenue, City Hall
October 28, 1996	Noon and 7 p.m.	Eugene: 125 East 8th Avenue, Harris Hall
October 29, 1996	7 p.m.	Corvallis: OSU, LaSells Stewart Center, Ag Leaders Rm.
October 30, 1996	7 p.m.	Medford: 10 S. Oakdale, Jackson Co. Auditorium

HEARINGS OFFICER(s): DEQ staff
STATUTORY AUTHORITY: ORS 468.20 & ORS 465.315
STATUTES IMPLEMENTED: ORS 465.315

ADOPT: 340-122-047, 340-122-084, 340-122-085, 340-122-115

AMEND: 340-122-010, 340-122-030, 340-122-040, 340-122-045, 340-122-050, 340-122-070,
340-122-080, 340-122-090, 340-122-100

REPEAL: 340-122-020, 340-122-046

RENUMBER: 340-122-425, 340-122-426, 340-122-427, 340-122-430, 340-122-440, 340-122-450, 340-
122-460, 340-122-465, 340-122-470 renumbered to 340-122-071 thru 340-122-079
respectively

AMEND & RENUMBER: None

- This hearing notice is the initial notice given for this rulemaking action.
 This hearing was requested by interested persons after a previous rulemaking notice.
 Auxiliary aids for persons with disabilities are available upon advance request.

SUMMARY:

This rulemaking covers three primary subjects under the state's environmental cleanup law: (1) risk protocol for risk assessment; (2) definition of "hot spots"; (3) remedy selection balancing criteria. Changes were made in the rule throughout the division; major changes were in 340-122-040, 340-122-080, 340-122-084 (new), 340-122-085 (new), 340-122-090, and 340-122-115 (new and renumbered definitions).

LAST DATE FOR COMMENT: November 15, 1996
AGENCY RULES COORDINATOR: Susan M. Greco, (503) 229-5213
AGENCY CONTACT FOR THIS PROPOSAL: Jeff Christensen
ADDRESS: 811 S. W. 6th Avenue, Portland, OR 97204
TELEPHONE: (503) 229-6391 / 1-800-452-4011
E-MAIL: jeff.christensen@state.or.us

Interested persons may comment on the proposed rules orally or in writing at the hearing. Written comments will also be considered if received by the date indicated above.

DATE: 9/13/96 SIGNATURE: Susan M. Greco

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal
for
Revised Environmental Cleanup Rules

Fiscal and Economic Impact Statement

Introduction

This rulemaking responds to the requirements of HB 3352, the amendments to the state's environmental cleanup law. The amended environmental cleanup law specifically requires rulemaking in three subject areas:

- ◆ Risk protocol for risk assessment
- ◆ Definition of "hot spots"
- ◆ Remedy selection balancing factors

Each of the preceding constitutes a substantive and important change to the state's environmental cleanup rules, and will have associated fiscal and economic impacts. The goal of the environmental cleanup law amendments and the proposed rules is to protect public health and the environment while simultaneously reducing the cost of cleanups at facilities where a release of hazardous substances has occurred. This statement summarizes the economic impact of the proposed rules on the general public, large businesses, small businesses, local governments, state agencies, and cleanups generally.

General Public

The proposed regulations do not directly affect the general public. However, there may be the following positive and negative indirect impacts on the general public:

1) Argument for positive fiscal and economic impacts: At some sites, the public will be impacted positively, because previously contaminated sites (which may be vacant or underutilized in whole or in part because of the expense of cleaning up contamination under existing rules), will be addressed under the new regulations. Moreover, these sites will be addressed in a manner which protects public health and the environment while permitting new residential, commercial, industrial, public use and other land use developments.

2) Argument for negative fiscal and economic impacts: At some sites, the public may be impacted negatively, because site treatment of contamination might be less compared to requirements under the existing rules. Also, at more sites, protection of public health and the environment will entail restrictions upon uses of land or water which would otherwise not be required. Some remedies will include fencing, posting of signs or other risk management components designed to eliminate or reduce human exposure. These risk management measures might potentially reduce real estate values for adjacent properties. Finally, public health, safety or welfare, or the environment could be adversely affected if measures designed to manage risk fail to perform as designed.

During the rule development process, DEQ and its advisory committee discussed the types of costs which appropriately should be considered by the Director when selecting or approving remedies¹. The proposed rules indicate that the appropriate costs for consideration during the remedy selection process are those costs incurred by the responsible party for implementation [see proposed OAR 340-122-090(3)(e)]. Other potential, indirect costs (such as a perceived reduction in neighboring property values) will not be considered directly as part of the remedy selection balancing factors, but, if applicable, could be relevant as part of the public comment process. The rules do not materially modify the state's public participation requirements, although DEQ anticipates a need for earlier and more extensive opportunities for public participation at many sites undergoing remedial action work.

In conclusion, the goal of the proposed rules is to provide for environmental cleanup of more sites to levels determined to be protective of human health and the environment. On balance, DEQ believes the proposed rules will have a modest fiscal and economic impact upon the general public, and that the overall impact will be positive.

Large Businesses

The indirect fiscal and economic impacts outlined above for the general public are also generally applicable to large businesses. In addition, large businesses will be directly affected in at least three ways:

- 1) Businesses own and operate facilities which may require environmental cleanup due to past practices or future releases. One of the express purposes of the amended statute was to reduce costs of responsible parties for remediating releases of hazardous substances. The proposed rules implement the statute and therefore should reduce remediation costs for many sites requiring environmental cleanup;
- 2) A number of large businesses provide environmental, engineering, legal or other services to responsible parties. To the extent the proposed rules require less work at individual sites, these

¹ "Cost, Cost Reasonableness and Cost Evaluation", Oregon Department of Environmental Quality, March 1996.

businesses may be impacted by reduced revenue from individual projects. However, additional sites (that would not have been addressed under the existing environmental cleanup rules) may be cleaned up once the proposed rules are enacted. The net effect of the proposed rules on environmental service

businesses is uncertain. It is possible that the new rules will not have a material effect on the environmental service industry as a whole, or that the new rules will have a positive effect on industry growth; and

3) Proponents of HB 3352 have argued that new environmental cleanup rules, such as the ones proposed, will stimulate redevelopment of "brownfields". Brownfields are previously used industrial land that are currently vacant, or underutilized, where suspected or confirmed releases of hazardous substances are one of several factors limiting redevelopment. Underutilization of brownfields implies a host of fiscal, economic and social impacts including: pressure to use previously unused developable sites ("greenfields") for siting of new facilities; inefficient use of public facilities; loss of economic development opportunities; urban sprawl and urban blight; and, reduced tax bases.

The "brownfields" problem is currently attracting considerable federal, state and local environmental and economic development attention because some of these sites pose public health and environmental problems and many of them are underutilized relative to their economic potential. A 1995 study by DEQ provided a preliminary estimate of the magnitude of the size of the problem using available information. It suggested that Oregon has at least 129 potential brownfield sites, averaging slightly under 40 acres apiece. These brownfield sites are widely distributed throughout the state, with 25 of the 36 counties in the state having at least one potential brownfield.² The proposed rules may contribute to redevelopment of some of these identified sites (for residential, commercial, industrial or other purposes).

Small Businesses

The direct and indirect economic and fiscal impacts identified for large businesses are also generally applicable to small businesses, with the following additional comments:

1) Costs associated with site cleanup may range from tens of thousands to millions of dollars. In general, current and past owners and operators of facilities with a release of hazardous substances are liable for cleanup costs. These facilities may include traditionally smaller businesses such as a variety of manufacturing and services. Site remediation typically requires extensive technical, financial and legal resources for responsible parties and this may be beyond the capability of small businesses. Therefore, through lower overall costs, the proposed rules may assist small businesses that might otherwise be incapable of completing cleanup; and

² "Oregon Brownfields Report", Oregon Department of Environmental Quality, August 1995.

2) A large percentage of environmental service businesses are classified as "small businesses", having 50 or fewer employees. These environmental service businesses, including a variety of consultants, attorneys, analytical laboratories, and others, will be directly affected by the proposed rules in the same manner as described above (Large Businesses (2)).

Local Governments

The direct and indirect economic and fiscal impacts identified for the general public and for businesses are also generally applicable to local governments. Local government impacts include:

- 1) Local governments own and operate facilities, some of which may require environmental cleanup under the proposed rules.
- 2) Local governments may acquire property (including property subject to tax foreclosure) which may require environmental cleanup before it can be returned to productive use;
- 3) Local governments own and operate public drinking water systems, which may be directly impacted by contamination and therefore, may be impacted by remedies selected or approved by the Director;
- 4) Under Oregon law, local governments have primary responsibility for land use planning activities consistent with statewide planning goals. Current and reasonably likely land use (and water use) are important factors in evaluating risk and determining remedies, and the proposed rules provide for substantial local government input relevant to assessment of risk and the selection of remedies; and
- 5) Local governments have other substantial and diverse interests in promoting public health, safety and welfare including economic development and environmental interests.

State Agencies

The direct and indirect economic and fiscal impacts identified for the general public, businesses and local governments are also generally applicable to state government and its agencies. In particular, some state agencies own and operate facilities, or acquires properties, which might require environmental cleanup under the proposed rules. Other state agencies--for example, Oregon Economic Development Department--provide technical and/or financial assistance which may be impacted by facilities requiring cleanup under these rules. To the extent the proposed rules will encourage redevelopment of underutilized properties, these rules generally augment resources for technical and financial economic development assistance through lower overall cleanup costs. Also, some state agencies such as the Oregon Health Division and the State Water Resources

Division regulate activities which may be indirectly impacted by environmental cleanup decisions and these rules.

The most directly impacted state agency will be DEQ. DEQ has administered the state's environmental cleanup programs since adoption of the original state environmental cleanup law in 1987. DEQ's environmental cleanup program includes programs for Orphan sites (high priority sites for which there are no responsible parties), as well as sites for which DEQ oversees cleanup by responsible parties via the Site Response and Voluntary Cleanup programs. Since commencement of the program, DEQ has completed or overseen completion of more than 92 interim actions, removals and final remedies at sites contaminated by hazardous substances³. The preceding figures do not include sites cleaned up in the Underground Storage Tank Cleanup program, which addresses petroleum releases from regulated storage tanks, a program responsible for overseeing the cleanup of more than 1,653 sites, partly based upon the existing environmental cleanup rules. Underground Storage Tank cleanups are also regulated by rules specifically enacted for tank cleanups.

The Department projects that staff resources authorized by the 1995 Legislature as a result of HB 3352 are sufficient to perform the increased level of effort necessitated by the legislation and proposed rules. In order to effectively implement the proposed rules, DEQ must:

- 1) Develop guidance for a wide range of subjects including defining hot spots, conducting risk assessments, and identification of generic remedies;
- 2) Provide technical assistance to responsible parties, local government representatives and others in application of the new rules, processes and protocols, most notably probabilistic risk assessment;
- 3) Interpret and apply the new rules in specific circumstances;
- 4) Perform required site-specific tasks, such as reviewing remedial investigations, risk assessments, and feasibility studies; and
- 5) Coordinate activities and consult with local jurisdictions, community organizations and affected neighbors, to review current and reasonably likely land use, current and reasonably likely water uses, and remedial activities in general.

Revenue for the increased costs will be provided from cost recovery on specific projects, either as indirect or direct costs, as appropriate.

³ "Seventh Annual Environmental Cleanup Report, Oregon Department of Environmental Quality, January 1996.

Cleanups Generally

Remediation of Hot Spots

The proposed rules provide a preference for treatment of "hot spots" of contamination to the point where the contamination no longer has the characteristics of a hot spot. Existing rules have a preference for treatment of all areas of contamination and require remediation to "background or the lowest feasible concentration". One of the factors DEQ considered when defining a hot spot was the economic impact, or cost of the cleanup to the responsible party, as a result of the definition. DEQ evaluated the environmental and economic effect of a range of potential definitions of hot spots of contamination for soil at six sites, which already have been addressed under the existing rules.⁴ DEQ chose a definition which falls within the middle of the continuum of potential costs associated with treatment of a hot spot. Thus, the economic impact on the cost of cleanups with hot spots should be positive.

Remedy Selection Balancing Factors

The proposed rules amend the cleanup goals for contaminated sites. Specifically, the existing rules require treatment to background or the lowest feasible concentration (except for eligible soil-only contaminated sites which may achieve specific numeric soil cleanup levels, pursuant to OAR 340-122-045). Under the proposed rules, remedies must be "protective" in terms of meeting the acceptable risk levels (10^{-6} , etc.) as defined by the risk protocol rules. This change stems from the amended statute.

Under the proposed rules, commonly-used remedy selection factors have been modified by the preference for treatment of hot spots of contamination only, and the requirement to choose the least expensive remedy at non-hot spots, unless other benefits outweigh any additional costs. The specific remedy selection balancing factors include:

- * effectiveness in achieving protection;
- * long-term reliability;
- * implementability;
- * implementation risk; and
- * cost reasonableness.

These requirements might reduce the cost of cleanups for most sites because it may be less costly to "manage" risk versus reduce the contamination.

⁴ "Hot Spot Evaluation Report", PRC Environmental Management, Inc. for Oregon Department of Environmental Quality, August 8, 1996.

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal
for
Environmental Cleanup Law Amendments
Modifies OAR 340-122 throughout

Land Use Evaluation Statement

1. Explain the purpose of the proposed rules.

In accordance with House Bill 3352 (Chapter 662 of Oregon Laws 1995, amending ORS 465.315, .325, .327, and .333), this rulemaking modifies the rules, guidance and procedures for cleaning up hazardous substances released into the environment. The modifications relate to three major areas: (1) basing remedial action decisions on risk; (2) preferring treatment only at "hot spots" of contamination; and (3) consideration of balancing factors, including reasonableness of cost, when selecting a remedial action.

Specific portions of the law that relate to land use include the following:

- The DEQ Director is to approve or select remedial actions that are foremost protective of human health and the environment. Before making a remedial action decision, the Director must have considered current and reasonable anticipated future land uses at the facility and surrounding properties. (See ORS 465.315 (1)(g).)
- For remedial actions approved by the Director and conducted on site, all state and local permits, authorizations or procedural requirements can be waived. Substantive requirements and federal requirements still apply, but even here, the Director has the discretion to waive what would otherwise be DEQ substantive requirements of federally-delegated programs as long as human health and the environment are protected. The party conducting the removal/remedial action must notify the affected state and local agencies of this waiver and pay the appropriate fees if requested. (See ORS 465.315(3).)
- The DEQ may release a party from potential liability to facilitate cleanup of contamination (prospective purchaser agreement) if the action is needed to protect public health; if redevelopment will not exacerbate contamination or increase health risks; and if the action provides a substantial public benefit. When evaluating the reduction of potential health risks and other public benefits, DEQ must consult local planning and consider reasonably anticipated land uses at the facility and surrounding property before entering into an agreement. (See ORS 465.327.)

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

No. In the last update of the DEQ State Agency Coordination Program, DEQ evaluated the agency's remedial action authorities and programs. Given the overriding need to base decisions on public health and safety criteria, it was determined that the program did not meet the Department of Land Conservation and Development criteria in order to be determined a program that "significantly" affects land use. The DEQ concludes that this program remains exempt. DEQ will consult with local government land use officials for the purpose of fulfilling statutory requirement ORS 465.315, not for the purpose of fulfilling consistency with local land use plans.

While DEQ still believes that categorical exemption is correct, in light of the statute's specific language to consider land use, DEQ will coordinate and consult with local government to ensure sound and appropriate decision making.

- a. **If yes, identify existing program/rule/activity:** Not applicable
- b. **If yes, do the existing statewide goal compliance and local plan compatibility procedures adequately cover the proposed rules?** Not applicable

Yes ___ No ___ (if no, explain):

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

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

The above criterion must be applied in conjunction with the following two guidelines in the assessment of land use significance:

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

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

It is DEQ's determination that the agency's current policy on remedial action related activities applies to the proposed rules modifications, and therefore the proposed rules do not significantly affect land use.

DEQ does not believe that remedial action decisions will have significant effects on either resources or present or future land uses in acknowledged comprehensive plans. This is due to the primary obligation of DEQ to base its decisions on scientific data that support the protection of public health, safety and environment. The "consideration" of land use for DEQ will be to consider the potential health impacts that might result from different exposure scenarios based on current and reasonably likely future land use. DEQ will take into account multiple factors (including, but not limited to, land use) when evaluating potential risk and measures to eliminate or reduce that risk.

In addition to the proposed rules themselves, to comply with the legislative directive to "consider" future land uses in these decisions, the DEQ proposes to use a *Request for Information* letter to obtain this information and other information on related issues from local governments, and to inform them of the legislative waiver of state and local permit and related authorities. This procedure provides a clear process for DEQ to utilize in fulfilling its legislative directive to: "*consider current and reasonable anticipated future land uses at the facility and surrounding properties, taking into account current land use zoning, other land use designations, land use plans as established in local comprehensive plans and land use implementing regulations of any governmental body having land use jurisdiction, and concerns of the facility owner, neighboring owners and the community.*"

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

Not applicable.

Management Services
Division

Robert G.
Intergovernmental Coord.

9/11/96
Date

Questions to be Answered to Reveal Potential Justification for Differing from Federal Requirements

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

No. Environmental cleanup is not a federally delegable program. As such, there are no federal requirements that are directly applicable to these proposed rules.

The analogous cleanup program for the nation is the federal Superfund program. Because the cleanup program is not federally delegable, the federal program is not directly applicable to the state program. The state environmental cleanup law and associated rules may be considered under federal law as applicable or relevant and appropriate requirements (ARARs). Thus, while federal requirements are not "applicable" to the state law, cleanups conducted in Oregon under federal authority may look to state law for relevant and appropriate standards.

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

The federal requirements are not directly applicable to the state program. The analogous federal Superfund requirements, like the state requirements, are both performance and technology based.

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

Yes, the analogous federal requirements generally address hazardous material disposal and cleanup issues that are of concern to Oregon. The federal program is designed to remedy the nation's worst contaminated sites, leaving the remaining sites to the state programs; there are only 12 federal sites in Oregon. The federal cleanups in Oregon adequately address the issues of concern in Oregon since the federal cleanups are conducted in a manner which results in protection of human health and the environment.

Specific issues of concern in Oregon which are addressed in the proposed rules, and a comparison to the analogous federal requirements are summarized as follows:

Risk Protocol

The proposed cleanup rules provide procedures and define acceptable risk levels for both deterministic and probabilistic risk assessments. These risk assessments are to be based on current and reasonably likely future land and water use. The federal program generally allows only deterministic risk assessments with conservative default

assumptions. Oregon's approach is more flexible and will allow different results that are based on site-specific conditions.

Hot Spots of Contamination

Oregon's proposed rules specifically define hot spots of contamination, and requires that hot spots be remediated through treatment, if feasible. Under the proposed rules, there is a preference for treatment of hot spots of contamination only. Other contaminated areas, if they require remedial action, may be addressed in the least expensive protective manner unless there are significant benefits in risk reduction, reliability or other factors specified in the proposed rules. The federal program usually requires treatment of any contamination requiring cleanup. Oregon's new law does not follow the "treatment at all costs" approach, allowing more flexibility toward making reasonable site-specific determinations.

Remedy Selection

There are four key issues related to remedy selection under the proposed rules. First, the proposed rules require water to be evaluated and remediated based on its current and reasonably likely future beneficial uses. The federal program is different in that it typically requires groundwater to be protected to its potential beneficial use, generally assumed to be drinking water.

Second the proposed rules require that all remedies achieve a protective risk level [for example, for individual carcinogens, protection is defined as 1×10^{-6} (one in one million excess cancer risk)]. The federal program requires that remedies for the nation's most seriously contaminated sites achieve a protective risk level within a range of 1×10^{-6} to 1×10^{-4} . However, the proposed risk protocol rules allow less stringent assumptions to be used when calculating risk, therefore the numbers between the federal and state program cannot accurately be compared since they are based on different assumptions.

Third, the federal program requires that all remedies meet applicable and relevant and appropriate federal, state and local requirements (ARARs). The proposed cleanup rules do not require cleanups to meet ARARs, *per se*. However, applicable or relevant federal, state or local water quality standards, criteria, guidance or specifications are used in defining a hot spot of contamination in water and are used as a treatment goal in evaluating remedies.

Fourth, the proposed rules require that all remedies balance five factors including: effectiveness in achieving protection; long-term reliability; implementability; short-term risks; and cost-reasonableness. Similarly, the federal program requires that remedies balance five factors including: long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; implementability; short term effectiveness; and cost. The federal and state programs differ in the preferences given to remedial options. Under the federal program, there is a preference in most instances of contamination for remedial action options which utilize treatment methods. The same is true under the state program for hot spots. For non-hot spots, in most cases the proposed rules provide for selection of the least costly remedial action option, unless there are proportionately greater benefits with a more costly remedy. In all instances, under both

the federal and state programs, the level of cleanup must be protective of human health and the environment.

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

Yes, the proposed rules will improve the ability of the regulated community to comply in more cost effective ways. One of the purposes of the statutory amendments, for which these proposed rules have been written, was to develop methods for achieving less costly and more streamlined remedial options at contaminated sites. As discussed in question three, the proposed rules provide greater flexibility and thus a more cost effective approach to investigation and cleanup as a result of the following:

- increased use of risk management as compared to cleanup activities
- establishment of an acceptable risk level as a single cleanup endpoint
- incorporation of cost reasonableness into remedy selection
- the use of less conservative risk assumptions and reasonably likely land and water use scenarios for risk assessment

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

No, there is not a timing issue which might justify changing the time frame for implementation of federal requirements; the federal and state requirements operate independent of one another because the federal program has not been delegated. Oregon's statute requires that the state's rules be adopted by January, 1997.

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

Yes, remediation decisions will be based, in part, on current and reasonably likely future land use and beneficial water use. Both the statute and the proposed rules are designed to take into account reasonably likely changes which may include the estimates on future growth.

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

Yes, the rules provide the framework for how risk assessments are conducted and how remedy selections will be made. The provisions apply the same to all parties, and the existence of this framework makes all parties aware of the cleanup process and requirements.

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

This is not a more stringent rule. The changes made to the state's cleanup program are changes made with the intention of decreasing costs by streamlining the remedy selection process and making the cleanup process more flexible by accommodating site specific factors.

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

Yes, the proposed rules have different procedural and monitoring requirements as compared to the analogous federal program. There are no reporting requirements in the proposed rules.

Different monitoring requirements result from the necessity of allowing for site-specific determinations with regard to appropriate and necessary monitoring activities. Both the federal and state program rely on site-specific monitoring requirements. The procedural requirements differ because the federal statute and state cleanup statutes establish different cleanup procedures, preferences, methods of risk analysis, etc. For example, the proposed rules explicitly require consideration of current and reasonably likely future land and water uses, and tailors the risk assessment and selected remedy to current and reasonably likely future exposures. The intent of these provision is to allow opportunities for implementation of less costly, yet still protective, remedial actions. The federal program does not have similar provisions. The state has the authority to promulgate different standards under this program since it is not a federally delegated program.

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

Yes, treatment technologies are available to comply with the proposed rules. Technologies available include those to treat the contamination, remove the contamination, contain the contamination, and restrict access to the contamination. All of these "technologies" are components of remedial options that may be used under the proposed rules.

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

Yes, the proposed requirements will address the pollution problem posed by contamination of the environment with hazardous substances. The proposed rules address cleaning up the contamination to a level which is protective of human health and the environment. The requirements are also designed so that cleanups will be more cost effective than they were under previous (existing) rules.

**State of Oregon
Department of Environmental Quality**

Memorandum

Date: September 17, 1996
To: Interested and Affected Public
Subject: Rulemaking Proposal and Rulemaking Statements - Environmental Cleanup Rules Mandated by 1995 Amendments to Environmental Cleanup Law

This memorandum contains information on a proposal by the Department of Environmental Quality (DEQ) to adopt new rules/rule amendments regarding environmental cleanup. Pursuant to ORS 183.335, this memorandum also provides information about the Environmental Quality Commission's intended action to adopt a rule.

This proposal would revise and amend Oregon's environmental cleanup rules. The 1995 amendments to the cleanup law mandated rulemaking for three subject areas:

- Risk protocol for risk assessments;
- Definition of "hot spots"; and
- Remedy selection balancing factors.

The Department has the statutory authority to address this issue under Chapter 662 of 1995 Oregon Laws and pre-existing authority under ORS 465.420.

What's in this Package?

Attachments to this memorandum provide details on the proposal as follows:

- | | |
|--------------|--|
| Attachment A | The official statement describing the fiscal and economic impact of the proposed rule. (required by ORS 183.335) |
| Attachment B | A statement providing assurance that the proposed rules are consistent with statewide land use goals and compatible with local land use plans. |
| Attachment C | Questions to be Answered to Reveal Potential Justification for Differing from Federal Requirements. |
| Attachment D | The actual language of the proposed rule (amendments). |
| Attachment E | Additional attachments: <ul style="list-style-type: none">E - 1 List of Advisory Committee MembersE - 2 List of Risk Protocol Technical Workgroup MembersE - 3 List of Remedy Selection Technical Workgroup MembersE - 4 Reference List of DocumentsE - 5 Executive Summary for Hot Spot Evaluation Report |

A summary of the proposed rules has been included to facilitate the reading of this package.

Hearing Process Details

A total of nine public hearings have been scheduled. Prior to each public hearing, an information session will be held. DEQ staff will provide an overview of the proposed rules and answer any questions about the proposed rules. You are invited to review these materials and present written or oral comment on the proposed rules.

Written Testimony

Written comments should be submitted to: Jeff Christensen, Oregon DEQ, Waste Management and Cleanup Division, 811 SW 6th Ave., Portland, OR 97204. Written comments may also be sent via the internet to: jeff.christensen@state.or.us

Oral Testimony

The following is a schedule of the public hearings:

Date: October 22, 1996

Time: Two sessions: Noon and 7 p.m.

Place: DEQ Headquarters, 811 SW 6th Avenue, Room 3A, Portland, OR

Date: October 23, 1996

Time: 7 p.m.

Place: 500 Central Avenue, City Council Chambers, Coos Bay, OR

Date: October 24, 1996

Time: 7 p.m.

Place: Central Oregon Community College, Grandview Room 107, Bend, OR

Date: October 24, 1996

Time: 7 p.m.

Place: 1000 Adams Avenue, City Hall, LaGrande, OR

Date: October 28, 1996

Time: 2 Sessions: Noon and 7 p.m.

Place: University of Oregon, 125 East 8th Avenue, Harris Hall, Eugene, OR

Date: October 29, 1996

Time: 7 p.m.

Place: OSU, LaSells Stewart Center, Agriculture Leaders Room, Corvallis, OR

Date: October 30, 1996

Time: 7 p.m.

Place: 10 S. Oakdale, Jackson Co. Auditorium, Medford, OR

Deadline for submittal of Written Comments: November 15, 1996

In accordance with ORS 183.335(13), no comments from any party can be accepted after the deadline for submission of comments has passed. Thus if you wish for your comments to be considered by the Department in the development of these rules, your comments must be received prior to the close of the comment period. The Department recommends that comments are submitted as early as possible to allow adequate review and evaluation of the comments submitted.

A DEQ staff person will be the Presiding Officer at the hearings. Following close of the public comment period, the Presiding Officer will prepare a report which summarizes the oral testimony presented and identifies written comments submitted. The Environmental Quality Commission (EQC) will receive a copy of the Presiding Officer's report and all written comments submitted. The public hearing will be tape recorded, but the tape will not be transcribed.

If you wish to be kept advised of this proceeding and receive a copy of the recommendation that is presented to the EQC for adoption, you should request that your name be placed on the mailing list for this rulemaking proposal.

What Happens After the Public Comment Period Closes

The EQC will consider the Department's recommendation for rule adoption during one of their regularly scheduled public meetings. The targeted meeting date for consideration of this rulemaking proposal is January 9, 1997. This date may be delayed if needed, to provide additional time for evaluation and response to testimony received in the hearing process. You will be notified of the time and place for final EQC action if you present oral testimony at a hearing or submit written comment during the comment period or ask to be notified of the proposed final action on this rulemaking proposal.

The EQC expects testimony and comment on proposed rules to be presented **during** the hearing process so that full consideration by the Department may occur before a final recommendation is made. In accordance with ORS 183.335(13), no comments can be accepted after the public comment period has closed by either the EQC or the Department. Thus the EQC strongly encourages people with concerns regarding the proposed rule to communicate those concerns to the Department prior to the close of the public comment period so that an effort may be made to

Memo To: Interested and Affected Public
Environmental Cleanup Rule Revisions and Amendments
Page 4

understand the issues and develop options for resolution where possible.

Background on Development of the Rulemaking Proposal

Why is there a need for the rule?

The 1995 amendments to the environmental cleanup law mandated rule changes in three areas:

- ◆ Risk protocol for risk assessments;
- ◆ Definition of "hot spots"; and
- ◆ Remedy selection balancing factors

The 1995 amendments changed the "foundation" of the cleanup law. DEQ no longer prefers treatment for all contamination, but still prefers treatment for "hot spots"; cleanups will now have a specific protective level; containment of contamination will be considered co-equally with treatment in many situations. Because of these shifts, numerous sections of the rules were changed. The most significant changes are the following:

- **080 Remedial Investigation** (including characterization of "hot spots")
- **084 Risk Assessment** (including rules for ecological and human health risk assessments and use of probabilistic risk assessments)
- **085 Feasibility Study** (now a separate section including the feasibility of treating "hot spots");
- **090 Selection or Approval of Remedial Action** (including the balancing factors); and
- **115 Definitions** (including numerous terms necessary for conducting risk assessments and for defining "hot spots").

How was the rule developed?

The 1995 amendments require that rules be adopted within 18 months after passage of the law (i.e., adopted by January, 1997). DEQ convened a 13-member Central Advisory Committee (CAC) in November, 1995 and formed two external Technical Workgroups (TWGs, one for risk protocol and one for remedy selection). The CAC met every three weeks; the TWGs met every other week. Additionally, DEQ held Community Discussion Groups at seven different locations around the state to explain the new environmental cleanup law and to receive input from citizens, local governments, and business representatives.

DEQ staff drafted rule language which was reviewed and discussed in the various advisory committee and technical workgroup meetings. DEQ staff incorporated numerous advisory committee and technical workgroup changes throughout the process and believes the proposed rule reflects a consensus on all of the significant policy and technical issues.

Whom does this rule affect including the public, regulated community or other agencies, and how does it affect these groups?

The primary impact of the rules will be on those people responsible for site cleanup and the Department. The rules change the ultimate protectiveness standards. The rules spell out how some of the concepts in the law (e.g., "hot spots," new risk assessment methods, consideration of land use and beneficial uses of water) will be implemented at cleanup sites.

The public will continue to have an important role in the cleanup process. All elements of the existing public participation process have been retained in the new rules, or in the case of rules for development of generic remedies, expanded. Due to the need for basing cleanup decisions on factors such as current and reasonably likely future land use, DEQ anticipates an even greater and earlier role for citizen input in the cleanup process.

Other governmental agencies will also have an enhanced role in the cleanup process. Local government will always be involved with land use determinations, and other state governmental agencies will be involved as appropriate for technical assistance including determining current and reasonably likely future beneficial uses of water and assessment of ecological risk associated with hazardous substance releases. Because the rules provide for more flexibility in the process, it is anticipated that there will be broader involvement of interested stakeholders during a site cleanup.

How will the rule be implemented?

Portions of the 1995 amendments to the statute are self-implementing (e.g., the waiver of local permits for approved remedial actions on-site). However, the rules on risk assessment, "hot spots," and remedy selection balancing factors will require both guidance and training.

DEQ has used a "site clearinghouse" approach to resolve site specific issues on an as needed basis. This has enabled the Department to arrive at timely, definitive resolutions to amendment/rule-related issues during the rule development process. The site clearinghouse will continue after adoption of the rules.

Additional guidance and field training for Department representatives and affected parties will also be required. Guidance development will include participation by regional staff and will include those issues of highest priority for both staff and affected parties. For example, Oregon is at the forefront in use of probabilistic risk assessments as an available tool for evaluating risk at sites, and DEQ and consultants assisting responsible parties interested in use of probabilistic risk assessments will need to stay abreast of technical developments in this area.

Are there time constraints?

Yes. The 1995 amendments to the law require that rules be developed by January, 1997. Elements of the amendments were implemented "to the extent practicable" in the interim, but the rules should be in place to meet the statutory deadline.

Contact for more information

If you would like more information on this rulemaking proposal, or would like to be added to the mailing list, please contact:

Jeff Christensen
Oregon DEQ
Waste Management and Cleanup Division
811 SW 6th Ave.
Portland, OR 97204
(503) 229-6391
jeff.christensen@state.or.us

Please see pages 7 and 8 for short summary of proposed rules

Summary of Rule Changes

As noted earlier in this document, there are three major subject areas (risk assessment, hot spots, and remedy selection) incorporated in to the proposed rules. The rule changes are quite extensive; what follows below is a very short summary of the major rule changes. For a more extensive summary, please refer to the "Summary of Proposed Environmental Cleanup Rules" enclosed with this package.

040 Standards

This section eliminated the previous standards of "background" and "lowest feasible concentration" and replaced them with risk-based standards. The "acceptable risk levels" may be achieved by reducing the concentration of the hazardous substance or by blocking or preventing exposure.

080 Remedial Investigation

The remedial investigation section has been placed into a section separate from the feasibility section. The characterization of the site, including the identification of "hot spots," is a critical component in this section. This is also the "stage setting" section for looking at current and reasonably likely land uses and beneficial water uses. What was termed the "endangerment assessment" in the former RI/FS section has been given a separate section: 084 Risk Assessment.

084 Risk Assessment

This is a new and highly technical rule section; the enabling statute required this level of detail. The section includes specifics on how to conduct human health and ecological risk assessments and how probabilistic methods might be used for either. Sources for risk information are provided, and many terms have highly technical meanings that are included in the new definitions section.

085 Feasibility Study

This section was split from the combined remedial investigation/feasibility section in the existing rules. The range of remedial action options are evaluated under this section of the proposed rules. Under the existing rules, there was a preference for treatment for all releases; under the new law and proposed rules, there is a preference for treatment at "hot spots" only. All remedies are evaluated using a set of balancing criteria, including cost, however at hot spots, there is a "higher threshold" when considering the cost of treatment. This section of the proposed rules also details certain "feasibility" aspects of water "hot spots" and treatment goals for those "hot spots."

090 Selection of a Remedial Action

This section details the balancing factors that are to be used when evaluating remedial options. As under the previous rules, all remedies must be "protective," however as per the amended statute, "protective" has been redefined. Section 090 requires evaluation of effectiveness, reliability, implementability, implementation risk, and cost reasonableness. Note again, that cost is weighted differently for hot spots than it is for non-hot spots.

115 Definitions

As noted in 084, there are numerous new, technical definitions. Many of these definitions relate to risk assessment and hot spots. In the past, many of these issues were left to guidance, but here there were explicit statutory mandates to include the issues (and hence the definitions critical to the issues) in rules. The new definition section also retains many of the definitions from the former rule sections 020, 046, and 420.

Renumbered Sections

Some rules have been renumbered in order to allow for the rules to follow the sequence of events as occur with cleanups. That is, the site evaluation sections (including listing) are before the more detailed requirements of the remedial investigation or risk assessment.

Attachment C

**PUBLIC COMMENTS CONCERNING
PROPOSED REVISIONS TO
DIVISION 122 RULES:
HAZARDOUS SUBSTANCE REMEDIAL ACTION**

State of Oregon
Department of Environmental Quality

Memorandum

To: Environmental Quality Commission

Date: November 20, 1996

From: Carl Nadler

Subject: Presiding Officer's Report for Rulemaking Hearing

Hearing Date and Time: October 24, 1996, 8:00 PM

Hearing Location: La Grande City Hall

Title of Proposal:

Proposed revisions to Division 122: Hazardous Substance Remedial Action Rules. These rules were drafted in response to Oregon's amended environmental cleanup law (House Bill 3352).

Introduction:

The rulemaking hearing on the proposed revisions to the Hazardous Substance Remedial Action rules began at 8:00 PM. This followed a one hour information session which outlined major aspects of the rule revisions and included a question and answer session. People were asked to sign witness registration forms if they wished to present testimony. People were also advised that the hearing was being recorded and of the procedures to be followed.

Six people signed the attendance sheet:

Heidi Hoffmann
Claude Hand
Harry Moran
Kevin Rogers
Suzanne Achilles
Dan Moore

In addition, the following DEQ personnel were in attendance:

Eric Blischke
Dick Pedersen
John Blevins
John Dadoly

Other individuals were observed entering the hearing but did not sign the attendance sheet.

Summary of Oral Testimony:

Mr. Harry Moran, 1407 South Avenue, LaGrande, Oregon

Mr. Moran testified that he lived within a contaminated area in LaGrande. The contamination was caused by the railroad. Mr. Moran addressed two points. The first point was with respect to protection of human health and the environment. Mr. Moran questioned who decides what is protective of a community. Although there was new methodology for assessing risk, there were no guidelines on how to go to the community. Mr. Moran noted that half of LaGrande had been contaminated by the railroad but no testing of his well had been performed by DEQ. Mr. Moran also noted that people in LaGrande had contracted cancer and other illnesses but yet no one has heard from DEQ. Mr. Moran suggested that it was DEQ's responsibility to test the communities soil and determine whether there was a problem.

Mr. Moran's second point was who and how is it decided when an acceptable cleanup level is reached. DEQ told the railroad that they had completed their cleanup and could shut down their groundwater cleanup system. However, within a year, his well became recontaminated. The contaminant plume had left the railroad's property and migrated onto private property. Mr. Moran stated that the new provisions may determine when cleanup is OK but that it obviously did not work in the past, why would it work now. Better guidelines are needed.

Mr. Kevin Rogers, 2804 Greenwood, LaGrande, Oregon

Mr. Rogers testified that he felt the public had been left in the dark with respect to the contamination in La Grande. He suggested that more public contact in the affected area was needed. Mr. Rogers asked if it was beyond reason to ensure that affected people were told what was going on. The public should be informed of the risks and dangers so that they be part of the solution. Has cleanup been completed or hasn't it. More communication is required.

Summary of Written Testimony:

No written testimony was submitted.

There was no further testimony and the hearing was closed at approximately 8:30 PM.

WILLIAM C. CORNIUS

P.O. BOX 4220

8 RIVER ROAD
SUNRIVER, OREGON 97707

(503) 593-6563

10-28-96

Oregon DEQ

I attended a DEQ meeting last Thursday in Bend and would like say thank you for putting on these meetings. I was impressed by the presentation - it was informative and allowed a free exchange of ideas and questions -

There are a couple of thoughts I have regarding our Oregon DEQ Program. On page 10 (Balancing Factors) a 6th factor might be added like elimination of the source of contamination - ie removal of all tanks - pipe lines - valves etc. This may also fit in to Risk Protocol (page 9) also -

Another procedure I would like the new DEQ to adopt is the notification of the property owner of any spill or environmental problem that might arise on his property

I am immensely interested in the environment and will

send my thoughts to you from time to time
Again my appreciation for being included in
the Bend meeting - Jerran Christensen, Toby Scott and
John MacKeller were great -

Bill Cornius

Intel Corporation
5200 N.E. Elam Young Parkway
Hillsboro, Oregon
97124



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November 11, 1996

Waste Management & Cleanup Division
Department of Environmental Quality

Jeff Christensen
Oregon Department of Environmental Quality
811 SW Sixth
Portland, OR 97204

Re: Proposed Environmental Cleanup Regulations

Dear Mr. Christensen:

Intel Corporation is pleased to offer comments on the above referenced draft regulations. While Intel only has one facility in Oregon under the DEQ voluntary program, certain sections of the proposed regulations warrant discussion, especially in regards to certain administrative steps, as well as the investigation and report criteria. These items are discussed below in general terms in three broad categories; public comment, listing criteria, and data evaluation. Several sections of the proposed rule discussing items in these categories contain either duplicative language or appear to require administrative processes which do not add value. The processes, therefore, would only serve to retard the investigation and remediation processes while adding cost; results contrary to the justification for developing these regulations.

Specific comments and suggested re-writes are included as an attachment to this letter, organized by citation.

Public Concerns

In general, concerns of the community and opportunity for public comment are important parts of the success of a remedial action. As part of the remedial investigation occurring at the Intel Aloha facility, Intel voluntarily elected to discuss the project with neighbors and interested parties at appropriate project phases. The draft regulations, however, include several ambiguous references to public involvement, which could serve both to slow down the investigation and remedial process, as well as force involvement of the public where no clear goal or outcome is present. At several points in the regulations, specific comment procedures are well outlined, such as the procedure for delisting a facility from the Confirmed Release List (340-122-078). In other cases, public involvement is ambiguously discussed; using terms such as "concerns of...neighboring owners" (340-122-080(3)(e)(C)), or possibly implying that remedial actions are subject to public participation after completion (340-122-047 (3)). While specific suggestions for changing or re-wording each of these citations is included in the attachment to this letter, Intel suggests the Department consider accepting public comment at logical decision points in the remedial investigation and cleanup process. Public comment would add value prior to implementing a selected corrective action technology, as well as prior to removing a facility from the Confirmed Release List. It is further suggested that the public involvement and comment process be more specifically outlined, as it is in 340-122-078. This will allow consistency from project to project.

Site Listing Criteria

While the need for an inventory of sites is understood, defining sites as potentially requiring "removal, remedial action, or long term environmental or institutional controls related to the removal or remedial action are required to assure protection of the present and future public health, safety, and welfare, and the environment" based solely on a preliminary assessment is inappropriate and potentially places an unwarranted stigma on a facility. This is especially the case when further investigation reveals that cleanup actions may not even be required. The specific citations containing this definition are included in the attachment to this letter, but in general, it is suggested that any such site be defined as requiring additional investigation to assure public health and protection of the environment. The Department may wish to consider separate categories for sites in the initial investigation stage, and those for which an investigation has determined that further corrective action is required.

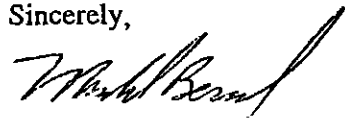
Data Evaluation and Collection

The first concern with data collection is somewhat related to public involvement. In determining both appropriate property classification as well as possible remedial actions, the term "public concerns" is probably too broad to be of value in determining such factors as beneficial use of water. For example, if someone says they are concerned about water quality because they *might* drill a well, what has been learned? One already knew they *might* drill a well; therefore, no new information has come to light. The converse is also true; if a property owner says they have no concerns because they will never drill a well, but two months later the property is sold, then the new owner may decide they *might* want to drill a well. In short, no uncertainties are resolved and the facility owner and the DEQ have both wasted resources going through this exercise at the risk of inflaming the public on a nonexistent issue. It is suggested that relevant data, such as documented trends, patterns, and projections of use be requested in determining appropriate and beneficial uses.

A second concern related to data collection is more specific and is related to establishing background conditions (340-122-073(1)(a)(C)). This citation can be read as requiring collection of site specific data for purposes of determining background conditions. In many cases, relevant data already exist at government agencies or may be available through technical journals or similar resources. The flexibility to use these data in establishing background conditions could serve to both expedite the investigation process, as well as eliminate unjustified or duplicative expense.

Please call me at 591-4725 if you have any questions regarding these comments or the attached suggestions for modifications of the proposed regulations.

Sincerely,



Michael Bernard
Sr. Environmental Engineer
Intel Corporation

**Comments to Draft DEQ Cleanup Regulations
Intel Corporation**

340-122-045-7(c)

The basis for the 100-meter setback appears somewhat arbitrary and is not justified. This standard would force application of the residential criteria if insufficient buffer were available, regardless of whether appropriate controls were available to eliminate possibilities of exposure. This does not appear to allow any flexibility in determining applicability under this section subject to site specific conditions and planned uses.

Suggested rewrite: "Uses of the facility and uses and zoning of properties do not warrant application of the residential standard."

340-122-047(3)

This language is too broad and suggests that public comments apply to completed remedial actions; in other words, that completed remedial actions can be reopened by public comment. Checking this against the wording in 340-122-100, it is clear that what is actually meant is that the public have a formal opportunity for comment before the remedial action is selected and implemented, not after it is completed. It would be appropriate to only reference the public comment section, rather than include ambiguous language which could be construed as requiring an additional public process.

Suggested rewrite: "The selection of remedial actions to be undertaken under this rule are subject the public participation requirements provided under ORS 465.320 and OAR 340-122-100."

340-122-072(3)

The language used to define the purpose of a preliminary assessment is misleading in that it conveys the impression that the mere completion of a preliminary assessment will mean that some sort of additional action or cleanup would be required to protect the health and welfare of the surrounding public and environment, when in fact an assessment may conclude that no further work is warranted. The language thus risks placing an unwarranted stigma on a facility before all the facts are in.

Suggested rewrite: "The purpose of a preliminary assessment is to develop sufficient information to determine if additional investigation is needed to assure protection of present and future public health, safety, welfare, and the environment."

340-122-073(1)(a)(C)

The definition of background conditions is not clear in this statement; in fact, the statement implies that background can only be established with site specific analytical data. As an alternative to establishing background conditions solely by means of site specific analyses, relevant literature should also be allowed as an option in establishing these conditions. Background conditions could be defined or referenced by an acceptable literature source. Information from sources such as the USGS, state agencies, or other professional publications and sources can assist in accurately establishing background conditions.

Suggested rewrite: Add the following to (1)(a)(C). "Background conditions are determined either by site specific analytical data or relevant published documentation or data."

340-122-075(1)(b)

The basis for developing an inventory of sites, as defined by this rule, is a site which both has confirmed a hazardous material release and has performed a preliminary assessment of the site. These criteria alone can not determine whether a site requires "removal, remedial action, or long term environmental or institutional controls related to the removal or remedial action are required to assure protection of the present and future public health, safety, and welfare, and the environment". Such requirements cannot be typically determined by a preliminary assessment and, as such, it is inappropriate to convey that remediation may be required when further investigation may not confirm this. The qualification for listing a facility should instead focus on whether further investigation is required.

Suggested rewrite: "Based on a preliminary assessment approved or conducted by the Department, has determined that additional investigation is required to assure protection of the present and future public health, safety, and welfare, and the environment".

340-122-080(3)(e)(C) and 340-122-080(3)(f)(D)(iii)

The requirements in these rules for identification of the concerns of the facility owner, neighboring owners, and the community regarding land use and beneficial use are too vague and are an invitation to unproductive work for both the facility owner and the DEQ. This is because the notion of "concerns" is too broad to be of predictive value. A concern of a neighboring property owner would be valid only as long as that individual owns the property, and can apply to what the owner may or may not do. Conversely, if no concern is expressed, the property may later change hands to an owner who may express concerns given the opportunity. For this reason, it would be more constructive to address beneficial use through more quantifiable means, such as historical trends, patterns, and projections of population and water use. This is particularly a sensitive point for those cases where a facility owner may wish to undertake the most protective cleanup possible; in this case, inquiries as to public concerns do not add value. The rules should make it clear that addressing community concerns is necessary only if less protective cleanups are proposed.

Suggested rewrite for 340-122-080(3)(e)(C): Strike -080(3)(e)(C), renumber -080(3)(e)(D) as -080(3)(e)(C), and rewrite it as follows: "Any other relevant information such as development trends, patterns, and population projections."

Suggested rewrite for 340-122-080(3)(f)(D)(iii): Strike this and renumber following (iv) through (vi).



November 12, 1996

Mr. Jeff Christiansen
Oregon Department of Environmental Quality
811 SW Sixth Ave.
Portland, OR 97204

RECEIVED
NOV 15 1996

RE: Public Comments on Proposed Cleanup Rules

Waste Management & Cleanup Division
Department of Environmental Quality

Dear Mr. Christiansen:

Weyerhaeuser Company appreciates the opportunity to offer comments to DEQ on the proposed revisions to the Oregon cleanup rules. By our membership association, we endorse and support written comments submitted by the Associated Oregon Industries and the Northwest Pulp and Paper Association.

We applaud the effort taken by DEQ to seek substantial public comment regarding this rulemaking, even though the Oregon Recycled Lands Bill (HB 3352) was a consensus piece of legislation. We also acknowledge that DEQ staff worked very effectively with multiple advisory committees to develop acceptable regulatory language. As you know, Weyerhaeuser participated in several of those committees.

Throughout this process, the sole purpose of our participation was to make the revised cleanup rules more practical and cost effective, yet still protective of human health and the environment. We believe these complimentary objectives can generally be met by applying a risk management based regulatory approach to conducting cleanups. Generally, the proposed rules embrace this key regulatory concept. However, some significant aspects of the proposed rules appear to depart from this approach.

Briefly, are concerns include the following:

- The Ecological Risk Assessment process appears to impose on every site a comprehensive set of quantitative risk assessment elements and requirements. As proposed, most sites will likely be burdened with a significant ecological risk assessment exercise. We believe that only a screening level assessment should be necessary at most sites and that for the standard industrial site the process should allow for a limited ecological screening approach. We suggest that DEQ contact Washington State Department of Ecology and discuss Ecology's ecological screening level approach. Although still in the developmental stage, this screening level assessment methodology holds promise as an initial regulatory approach. DEQ should now consider adding regulatory language that allows for a screening level assessment prior to conducting a baseline ecological risk assessment. The objective would be that

the screening process would provide a regulatory "off-ramp" for the majority of sites and preclude the need to conduct a baseline ecological risk assessment.

- For Soil Hot Spots, the regulation fails to allow for removal and off-site disposal *without treatment* when that may be the most protective remedy at a given site. In some situations the source area may be small in size and can quickly and easily be removed and disposed. In other situations, leaving hazardous substances exposed in the environment while treatability and feasibility studies and economic evaluations are undertaken may result in unnecessary risks being incurred. We suggest that language be added in the Feasibility Study to allow, on a case-by-case basis, a determination that soil hot spots need not be treated--even if the higher threshold for cost reasonableness is not met--once the Department determines that removal and disposal either expedites a cleanup or results in a more protective remedial action.
- The definition of Significant Adverse Effect on Beneficial Use of Water includes any exceedence of any applicable or relevant "federal state or local water quality standards, criteria, guidance or specification." This language is found to be so potentially broad that it lacks the basic premise of regulatory "fair warning." Many of the water quality criteria, guidance and specifications have not been established by rule, yet alone by policies that conform to basic administrative procedures, like public participation. We are concerned that any governmental agency could assert whatever specification it wants as an acceptable level of contamination in water, whether or not the specification is either health or risk based and/or based upon science. We suggest that DEQ revise the definition to include " applicable or relevant federal or state water quality standards or criteria established by rule."
- The application of probabilistic or site specific risk assessment should not be limited to only "large" projects. DEQ has stated in workshops, and perhaps only in an anecdotal context, an expectation that probabilistic or site specific risk assessments would be applied only on a limited number of large projects. Although we recognize that resource constraints are a serious concern for the Agency, a more serious consequence of limiting the use of these scientific tools is that actual risk may be either over- or under-estimated, and the certainty of the actual risk may not be understood. This could result in already scarce resources being used unwisely, or sites being assessed as having no risk when they may actually pose a threat. By encouraging the use of these scientific tools, DEQ will likely achieve remedial action decisions and provide information to the public based on reasonable assessments of the actual risk to the public, as noted in the preamble to HB3352.

* * * * *

November 12, 1996

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In closing, we want to publicly recognize the efforts of all parties who have provided input during this process. Starting at the legislative level and throughout the rule making process, many stakeholders have worked together to make the Oregon Recycled Lands Act a practical and cost effective solution to a complex situation. As noted above, we continue to have some concerns, but believe that all stakeholders will be receptive to the comments we have raised.

Please accept these comments in the cooperative manner in which they are intended and thank you once again for the opportunity to participate in the rulemaking.

Sincerely, -

A handwritten signature in cursive script, appearing to read "Kevin Godbout".

Kevin Godbout

Oregon Environmental Affairs Manager

PGE Portland General Electric Company

RECEIVED

November 13, 1996

NOV 14 1996

Jeff Christensen
Oregon DEQ
Waste Management and Cleanup Division
811 SW 6th Avenue
Portland, OR 97204

Waste Management & Cleanup Division
Department of Environmental Quality

Subject: Comments on the Revised Environmental Cleanup Rules

In general, I find the new rules a great improvement over the existing rules. I would like to raise one issue dealing with exemptions to the rules. Section 340-122-030, which is mainly a carryover from the existing rules, does not include an exemption for spills cleaned up following the Environmental Protection Agency (EPA) PCB rules (40 CFR 761.120 through 135). The utility group that is working with the DEQ to develop a PCB generic remedy is suggesting that this issue be addressed in the generic remedy (see attached letter). I raise the issue now because it may be more appropriate to put an exemption in the new rules that would address cleanups conducted following the EPA cleanup policy. It is important to the regulated community because we need clarity about which rules apply to new spill cleanups and which rules apply to old spills.

The electric utility industry has been following the EPA policy since approved on May 7, 1987. Although the policy addresses new spills of oil containing > 50 ppm PCB, PGE and most other utilities apply the cleanup policy to all new spills of oil from electrical equipment. The EPA is in the final steps of revising and incorporating the revised cleanup policy into the PCB rules.

We propose that the generic remedy apply to old PCB spills; those spills that occurred prior to May 7, 1987. The old PCB spill would have to meet the other requirements specified in the generic remedy to be cleaned up using the PCB generic remedy. All other old PCB spills will have to be cleaned up following the other options available to the regulated community ie. the DEQ environmental cleanup rules, the EPA Superfund rules or do an independent cleanup. It has been our understanding that the DEQ informally has adopted this EPA policy for new spills. We would like to have the DEQ formally adopt or approve the EPA cleanup policy. This could be accomplished by exempting new PCB spills cleaned up following the EPA cleanup policy.

Sincerely,



Rick Hess
Environmental Specialist
Attachments

121 SW Salmon Street, Portland, Oregon 97204

Attachment C



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November 14, 1996

Mr. Jeff Christensen
Oregon Department of Environmental Quality
Waste Management and Cleanup Division
811 S.W. Sixth Avenue
Portland, Oregon 97204

Waste Management & Cleanup Division
Department of Environmental Quality

RE: Submittal of Comments on Proposed Revisions to the Oregon DEQ "Hazardous Substance Remedial Action Rules," OAR 340-122-010 to 340-122-115

Dear Mr. Christensen:

The comments of Mr. Christopher C. Wohlers regarding the above-referenced proposed revised rules are submitted both as a representative of Wohlers Environmental Services, Inc. ("Wohlers Environmental") and as the Chair of the Oregon Petroleum Marketers Association's (OPMA's) Environmental Affairs Committee. OPMA representatives were significantly involved in the final stages of development of HB3352, and our representatives have attended the Central Advisory Committee and workgroup meetings over the past 18 months. Given the potential for the proposed revisions and related regulatory efforts to affect our petroleum marketer members, we submit the following comments.

Complexity of the Proposed Revised Rules

OPMA members are petroleum marketers representing over half the gasoline, over 60% of the diesel fuel, and over 90% of the heating oil fuel sold in the State of Oregon. Our members and our Association have been deeply involved in the development of Underground Storage Tank (UST) and related environmental regulations in the state over the past 10 years, and we continue to search for cost-effective and environmentally-responsible solutions to those environmental issues affecting our industry. In this context, it is our opinion that the level of complexity in the proposed revised rules does not reflect our understanding of the original legislative intent, which was to provide a streamlined and cost-effective approach to identifying low-risk environmental cleanup sites. As written, the proposed revisions to the Hazardous Substance Remedial Action Rules are so complex as to be beyond the understanding of even a well-informed property owner/operator faced with an environmental assessment under these rules.

Specifically, we recommend that the Oregon Department of Environmental Quality (DEQ) review the revisions to eliminate wordy and confusing/circular definitions, and prepare an easy-to-understand synopsis of the main changes to the rules, and the implications of these rules to facility owners and operators.

Mr. Jeff Christensen
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Present and Future Land Use/Beneficial Use Determinations

OPMA members and other petroleum-oriented facility owners and operators have expended significant resources over the past ten years on petroleum-related soil and ground water cleanup. Many UST owners/operators, in particular, have believed that in too many instances these cleanup resources were unnecessarily expended on soil and/or ground water impacts that posed little or no threat to human health and the environment. In many cases, OPMA members and other petroleum marketers/retailers have been required to implement ground water cleanup actions that treat petroleum-impacted ground water to drinking water standards, as if all ground water was or would be used for drinking water. This presumption is clearly not logical or resource-conserving, and the proposed revised rules should better present the argument against this presumption, and more clearly define the circumstances in which present and future uses of shallow ground water will not likely include high-end beneficial uses (such as drinking water).

Our concern with application of beneficial use decisions at corrective action sites is specifically addressed to proposed revisions to section 340-122-080 ("Remedial Investigation") and section 340-122-085 ("Feasibility Study"). Such decisions will have significant impact on the types and nature of exposure pathways identified at such sites, and these impacts must be both reasonable and protective. It is our opinion that as the proposed revised rules are currently written, and with seeming vague and ambiguous definition of present and future land use/beneficial use determinations, confusion and differences in application throughout the DEQ regions may be expected to occur.

Applicability at Leaking UST Sites

Over 90% of our members' cleanup activities fall under the leaking UST program office located in the various DEQ region offices throughout the state. Given the complexity of the proposed revised rules, and the clearly enormous potential costs associated with activities completed under these rules, OPMA member sites are better-addressed under existing leaking UST program rules. This issue is appropriately referenced in the exceptions section of the proposed revised rules (see OAR 340-122-030(4)) where Corrective Action associated with UST sites are placed in a general exception category. As noted above, the vast majority of petroleum-related cleanups should logically be completed outside of the complex and costly framework of the proposed revised rules.

In April 1996, the Oregon DEQ issued guidance for Risk-Based Corrective Action (RBCA) activities at leaking UST sites. The RBCA guidance establishes protocols for assessment of risk to human health at leaking UST sites. Adoption of the proposed revised rules should not limit or otherwise complicate RBCA risk assessment decision making associated with leaking UST sites. This includes application of unreasonably complex and costly risk assessment protocols at leaking UST sites, particularly associated with site-by-site ecological assessments.

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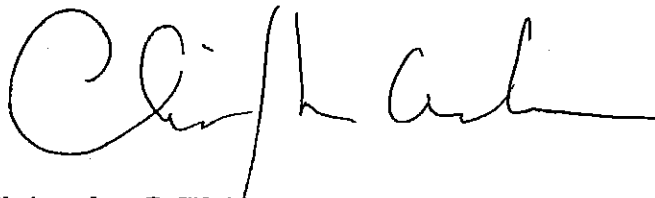
Summary

Wohlers Environmental Services, Inc. and the Oregon Petroleum Marketers Association urge the Oregon DEQ to consider simplifying what appears to be an overly-complex set of proposed revisions to the Hazardous Substance Remedial Action Rules. Such simplification would allow impacted property owners and operators an opportunity to comprehend the nature and objectives of the risk assessment process, assist in reducing confusion within the consulting community regarding rule interpretation, and may help to promote consistent application by Oregon DEQ Region Offices. The Oregon DEQ should emphasize the importance of consideration of present/future beneficial uses, particularly as these decisions impact the nature and cost of cleanups. This issue is particularly relevant when considering ground water cleanup of shallow ground water aquifers not likely to be used in the present or the future as drinking water sources. Finally, the Oregon DEQ should recognize that the complex and costly risk assessment protocols contained in the proposed revised rules are generally not applicable at leaking UST sites, and at petroleum cleanup sites in general. Existing risk assessment protocols for leaking UST sites incorporated under RBCA guidance issued by the Oregon DEQ in April 1996 should continue to be refined and revised as a petroleum-specific risk assessment approach without adverse impact on these efforts by application of the proposed revised rules. Simplified approaches, as exemplified by the Soil Matrix Cleanup Rules (OAR 340-122-305 to 340-122-360), should continue to be available for application at leaking UST sites regardless of adoption of the proposed revised rules.

Thank you for the opportunity to present these comments on behalf of Wohlers Environmental Services, Inc. and the Oregon Petroleum Marketers Association.

Sincerely,

WOHLERS ENVIRONMENTAL SERVICES, INC.



Christopher C. Wohlers
Senior Consultant, Wohlers Environmental Services, Inc.
Chair, Environmental Affairs Committee, Oregon Petroleum Marketers Association

cc: Mr. Steve O'Toole, Executive Director, Oregon Petroleum Marketers Association
Mr. Neal Arntson, President, Board of Directors, OPMA

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NEAL A. HUESKE

E-Mail Address: nah@schwabe.com

November 13, 1996

VIA HAND DELIVERY

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NOV 14 1996

Mr. Jeff Christiansen
Oregon Department of Environmental Quality
811 S.W. Sixth Ave.
Portland, OR 97204

Waste Management & Cleanup Division
Department of Environmental Quality

Re: Comments to Proposed Cleanup Rules

Dear Mr. Christiansen:

Pope & Talbot, an Oregon wood products company, and the Port of St. Helens, an Oregon public port authority, submit these comments jointly to address certain concerns with the Department's proposed environmental cleanup rules. Currently, Pope & Talbot and the Port are engaged in a significant remedial investigation at the site of a former wood treating facility located on Port property. This work is being performed pursuant to a consent order issued by the Department's Northwest Region Environmental Cleanup Division in 1995.

Pope & Talbot and the Port appreciate this opportunity to provide comments on this important and complicated rulemaking. On the whole, we believe the Department has made great strides in improving Oregon's Cleanup Law and adding a measure of logic to the program. However, after reviewing the proposed rules, and after working with the Department on our project to apply specific statutory provisions enacted through HB 3352, we are concerned that some aspects of the rules may actually impede or complicate remedial action projects in Oregon, contrary to the clear dictates of HB 3352. Furthermore, we are concerned that instead of allowing flexibility at cleanup projects, many of the proposed changes will actually impose more rigid requirements.

Like much of the regulated community, Pope & Talbot's and the Port's biggest area of concern deal with the rules prescribing methods for an ecological risk assessment. Rather than repeat the same arguments, and except to the extent they are incompatible with these comments, Pope & Talbot and the Port fully support and hereby incorporate by reference the full set of comments submitted on behalf of Associated Oregon Industries, which primarily address ecological risk assessment issues.

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Aside from our concerns with the ecological risk assessment rules, we would also like to make additional, more particular comments.

I. The proposed rules are overly complex.

While Pope & Talbot and the Port acknowledge the difficulty the Department has faced in drafting the required rulemaking, the proposed rules are far too complex to be readily understood and followed. Most cleanups simply are not big enough to justify the expense that will be required simply to work through the rules. Even for the larger cleanup sites, such as our project at the Port of St. Helens, the rules provide a frustrating morass of opportunities for misunderstanding, misinterpretation and disagreement between the responsible parties and the Department. Each disputed step will add costs to the project. Further, the complexity is likely to create inconsistency between different project managers.

It is our position that HB 3352 required rulemaking in only two areas: to define hot spots and to establish a risk protocol for conducting risk assessments. ORS 465.315(2). The statute spells out specific requirements for risk assessments, but does not require that the regulations prescribe every detail of an acceptable risk assessment.

Pope & Talbot and the Port of St. Helens urge the Department to investigate ways to make these rules more accessible to the persons who will be using them. We fear that rather than expedite cleanups, the proposed rules will actually slow them down.

II. The level of detail in the definitions of the regulations is confusing and unwieldy; definitions which provide regulatory limits, such as "acceptable risk levels," should be moved to a separate regulation.

The level of detail in the definitions makes working through the regulations difficult and confusing. Responsible parties will almost certainly miss some of the key components of the program because many of the regulatory limits are in the form of definitions, which might easily be overlooked. A solution would be to insert all definitions relating to "acceptable risk levels" (definitions (1) through (6)) in their own regulation entitled "Acceptable Risk Levels."

Other definitions which would more properly fit in with the body of the regulations are those for "locality of the facility;" "population" and "local population;" "ecological receptor;" and "significant adverse effect on beneficial uses of water." Additionally, the three definitions relating to "generic feasibility study," "generic remedy," and "generic risk

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assessment" could be located at a separate regulation entitled "Generic Site Cleanups."

III. The lists of factors to be considered when characterizing a facility as part of a Remedial Investigation should clarify that all listed elements are not required for approval by DEQ.

Pope & Talbot and the Port suggest that the words "all, a combination of less than all, or only one of the following factors" be added after "regarding" and before the colon in paragraph OAR 340-122-080(3).

OAR 340-122-080(2) provides that the RI may include, but is not limited to, a characterization of hazardous substances, a characterization of the facility, performance of baseline human health and ecological risk assessments, and collection and evaluation of information relevant to determine hot spots. The second of these components (characterization of the facility) is then addressed by a separate subparagraph that states that "characterization of the facility may include, but is not limited to, . . ." a list of eight specific items, some with sub-items. OAR 340-122-080(3). While the "may include, but is not limited to" phrase makes clear that additional items may be considered during characterization of a facility, it is not clear that fewer than all listed items may be approved as a satisfactory characterization.

This is inconsistent with the use of appropriate clarifying language in OAR 340-122-050(2) which states that the Director may determine that "all, a combination of less than all, or only one" of the listed response activities may be necessary at a particular site. Therefore, to make the rule more clear and consistent with other rule language, OAR 340-122-080(3) should read:

In the remedial investigation, characterization of the facility may include, but is not limited to, information regarding all, a combination of less than all, or only one of the following factors:

The same revision should be made to paragraph OAR 340-122-080(4).

IV. The definitions of "locality of the facility" and "ecological receptor" are overinclusive and circular.

An ecological receptor is partly defined in the proposed rules as a "population of plants or animals in the locality of the facility." OAR 340-122-115(22). The "locality of the facility" is defined as "any point" where a human or an ecological receptor "contacts, or is reasonably likely to come into contact with, facility-related hazardous substances." OAR

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340-122-115(38). In other words, to determine whether a specific population of plants or animals is an ecological receptor which must be considered during the ecological risk assessment and during remedy selection, the Department looks to see if the population is within the locality of the facility. To see if it is within the locality of the facility, the Department determines if it is at a point where it contacts, or is reasonably likely to come into contact with, facility related hazardous substances.

This is circular and over-expansive. There is no statutory authority to include as part of the ecological risk assessment a consideration of the impact on any population which contacts or is reasonably likely to come into contact with any hazardous substances from the facility. This is not a meaningful limit on the extent of the ecological risk assessment.

V. The definition of "locality of the facility" is inappropriate for a consideration of current and reasonably anticipated future land use.

When characterizing the facility, a responsible party is required to consider or weigh "current and reasonably anticipated future land use in the locality of the facility." OAR 340-122-080(3)(e). "Locality of the facility" is defined in the rules in a manner which inappropriately extends the reach of the land use consideration. OAR 340-122-115(38).

In other words, a responsible party should not be required to consider land use at a location remote from the subject site, even if an ecological receptor has come into contact with a facility-related hazardous substance. The obvious example is downstream contact with ecological receptors such as fish or wildlife from a port or other streamside facility. We do not think it reasonable to require the RI to include characterization or consideration of the land use at a site two miles downstream from the facility, or even further if airborne materials come to be deposited at a more distant spot.

The list of issues identified in subparagraphs (a) through (d) of OAR 340-122-080(3) apply only to determining whether facility-related hazardous substances are "reasonably likely" to come into contact with certain receptors; they are not considered if the contact has already been made. Once there is contact between a receptor and the hazardous substance, the point where the contact occurs is considered the "locality of the facility," and the responsible party must then consider the current and reasonably anticipated future land uses of that point in the RI.

In contrast to the breadth of the proposed regulation, the statute requires the Director to consider "current and reasonably anticipated future land uses at the facility and

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surrounding properties." ORS 465.315(1)(g). The statute does not extend the consideration to non-surrounding points linked only by the chance contact of a receptor with facility-related substances. The relevant statutory definition of "facility" includes any building or structure or other listed locale "where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located and where a release has occurred." ORS 465.200(12) (emphasis added). This is a two-pronged definition which requires not only the deposition of the hazardous substance but also a site where a release has occurred. A site where contamination has passively come to rest does not constitute a "facility" under this definition. Therefore, the extension of land use considerations to any point at which a potential receptor comes into contact with hazardous substances exceeds the authority granted by the statute.

The same argument applies to the requirement that a responsible party (1) consider current and reasonably likely future beneficial uses of groundwater and surface water in the locality of the facility (OAR 340-122-080(3)(f)); and (2) identify ecological receptors, terrestrial habitats and aquatic habitats in the locality of the facility (OAR 340-122-080(3)(g)). In fact, the former requirement is quite circular in that a facility must identify ecological receptors within the "locality of the facility," while the locality itself is defined by what ecological receptors are coming into contact, or are reasonably likely to come into contact, with facility-related hazardous substances. This results in the impermissible requirement that the facility identify all reasonably likely ecological receptors, regardless of the proximity to the facility.

Pope & Talbot and the Port suggest that the definition of "locality of the facility" be restricted to the facility and adjacent properties, or properties which are within a certain, rationally determined radius from the facility (one quarter mile, for instance).

VI. Consideration of reasonably anticipated future land use should be based on readily available information and "reasonable" scenarios.

The Port and Pope & Talbot are also concerned that the issue of reasonably anticipated future land use may be given an unwarranted and intrusive role in the remedial investigation process. The proposed rule, OAR 340-122-080(3)(e), enumerates four matters that may be "considered" in determining current and future land use. These matters include "concerns of the facility owner, neighboring owners, and the community . . ." The rules should be modified to make it clear that the current land use, zoning and other land use designations, and the owner's plans for the property (including willingness of the current owner to

Mr. Jeff Christiansen
November 13, 1996
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impose restrictions on the future uses of the property) are the most important factors to be considered.

In most cases, the determination of reasonably anticipated future land use will be easily made, based on information which is readily available for local land use planning authorities and the facility owner. Not all of the enumerated factors must be considered in determining current and future land use, and the analysis or reasonably anticipated future land use does not require that the Department conduct a public opinion survey or hold a hearing.

VII. A consideration of "reasonably likely future exceedances" of applicable water quality standards or guidelines is unreasonable.

OAR 340-122-080(6) states that the RI shall identify hazardous substances having a significant adverse effect on existing or reasonably likely future beneficial uses of water, "based on current or reasonably likely future exceedance of" water quality standards, criteria, guidance or specifications. This requirement is not based on the statute and creates a standard based entirely on speculation. Further, the language is ambiguous: it is not clear whether "reasonably likely future exceedance" encompasses future exceedances of criteria or standards existing at the time of the RI, or if it means exceedances of criteria or standards which are reasonably likely to be applicable in the future. Either interpretation extends the scope of whether the substance is having a significant adverse impact without clear statutory authority.

The RI should be required to identify hazardous substances having a significant adverse impact on current and future beneficial uses of water based only on exceedances of currently applicable federal, state or local water quality standards, criteria, guidance or specifications, or of the acceptable risk level as defined in the regulations.

Furthermore, the consideration raised by subparagraph (c) is inappropriate. Using "available published peer-reviewed scientific information" to determine whether a hazardous substance may or may not have a significant adverse impact on water resources will involve technical disputes over what is and what is not acceptable or credible information. These are the types of disputes already encountered by DEQ and which are more suited to a forum debating appropriate water quality criteria. To raise such issues during the RI process will hinder the overall progress of the site.

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VIII. The regulations wrongfully require a responsible party to "propose" to DEQ state or local permits for which it wishes an exemption.

ORS 465.315(3) unequivocally states that "no state or local permit, license, or other authorization shall be required for" the portion of a remedial action or removal action conducted on-site where the action is approved by DEQ, unless the permit or other requirement is necessary for authorization of the applicable state program. There is no discretion granted to the Department whether to require or to exempt such permits; rather, they are exempted as a matter of law.

In contrast, the proposed regulations at OAR 340-122-085(8)(b) require the feasibility study to identify all state or local permits, licenses, or other authorizations "proposed to be exempted." This rule implies that a facility will propose to the Department which permits from which it wants to be exempted, leaving it to DEQ whether the exemption will be granted. This is contradictory to the statute.

Pope & Talbot and the Port propose that OAR 340-122-085(8)(b) should read: "Identify all state or local permits, licenses, or other authorizations or procedural requirements which are exempt pursuant to ORS 465.315(3)."

IX. Considering the effectiveness of remedial action in restoring or protecting beneficial uses of water must include a reasonable time requirement.

In order to assess the effectiveness of a remedial action option in achieving protection, with respect to hot spots of contamination in water, the Department and the responsible party must consider the "extent to which the remedial action restores or protects existing and reasonably likely future beneficial uses of water." OAR 340-122-090(3)(a)(C). To this paragraph should be added the words "within a reasonable time" in order to be consistent with the definition of a hot spot in water at ORS 465.315(2)(b)(B).

X. A Feasibility Study should not be required in order to demonstrate that an area of contamination is not a hot spot of contamination.

The proposed definition of "hot spots of contamination" for groundwater or surface water includes a requirement that the determination of whether an area is a hot spot be made as part of the feasibility study. OAR 340-122-115(35)(a). The feasibility study, for purposes of these rules, is a specific procedural requirement with detailed contents and approval points. This provision is beyond the authority of the statutory definition of a hot spot, which allows an area which otherwise might be a hot

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spot to fall outside of the definition if treatment is not reasonably likely to restore or protect the beneficial use within a reasonable time. ORS 465.315(2)(b)(B).

For example, a certain area of contamination might, by virtue of concentration of contaminants alone, be considered a potential hot spot because it had a significant adverse affect on a beneficial use of groundwater. However, ORS 465.315 provides that such an area is not a hot spot if it cannot be restored or protected within a reasonable amount of time. There is no requirement that this determination be made as part of a feasibility study, and, in fact, it is quite reasonable to presume that such determinations could be made at the outset of an investigation, depending on the facts.

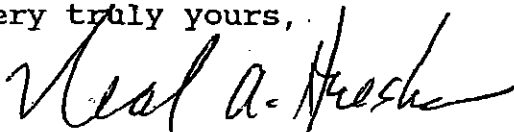
An example would be a contaminant with high toxicity for which no amount of treatment will suffice to restore or protect an identified beneficial use within a reasonable time, such as drinking water. If it is apparent early in the investigation that such a situation exists, the facility should not be required to spend the resources to prove through a feasibility study that which was apparent at the earlier time. In such a case, that area should not be considered for treatment, and the responsible party would do better to concentrate on non-treatment alternatives.

Similarly, some vehicle short of a full-blown feasibility study might adequately demonstrate that treatment would not restore or protect an assumed hot spot within a reasonable time. Such a determination could be made through a preliminary or focused feasibility study, for instance, which does not satisfy all of the requirements of OAR 340-122-085.

For these reasons, the words "as determined in the feasibility study" should be removed from OAR 340-122-115(35)(a).

Pope & Talbot and the Port of St. Helens again thank you for the opportunity to provide these comments.

Very truly yours,



Neal A. Hueske
Schwabe Williamson & Wyatt
Pope & Talbot



Ian K. Whitlock
Lane Powell Spears Lubersky
Port of St. Helens

NAH:

cc: Peter Williamson, Port of St. Helens
Art Vosburg, Pope & Talbot

Attachment C

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November 14, 1996

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Re: Proposed Cleanup Rule Revisions

Dear Mr. Christiansen:

Associated Oregon Industries appreciates this opportunity to comment on the proposed revisions to the Oregon cleanup rules. As you know, AOI authored the Oregon Recycled Lands Act (HB 3352) and worked with the Department and environmental groups to develop consensus support for its passage. Accordingly, we are keenly interested in the development of regulations consistent with the intent of the legislation. After a careful review of the proposed rules, we believe they are consistent with many of the fundamental goals of the legislation and we applaud the efforts of the Department and its advisory committees in sorting through difficult issues. Some aspects of the rules, however, continue to concern us--in some regards we are very concerned that the rules may actually defeat the intent of HB 3352 to streamline the process and produce more practical and cost effective remedies.

As you know, we have submitted comments to the Department and the Central Advisory Committee throughout the course of the rulemaking. Many of our comments have already been addressed. In other cases, however, no changes have been made to the proposed rules to address the concerns we have raised. Rather than repeating the comments and analysis we have previously provided, we have simply listed below our prior comments for which we would appreciate your reconsideration:

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Department of Environmental Quality
Cleanup Division

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- Letter from Richard M. Butrick, AOI, to Mike Rosen, DEQ (June 21, 1996) and attachments;
- Letter from J. Mark Morford, Stoel Rives, to Mike Rosen, DEQ (July 23, 1996); and
- Letter from Richard D. Bach, Stoel Rives, to Mike Rosen, DEQ (July 23, 1996).

Please include these prior comments in the administrative record for this rulemaking.

With these points in mind, we offer the following additional comments. For ease of reference to the proposed rule, we have cited the various provisions by section number (but not chapter or division numbers) as they appear in the proposed rule.

I. Complexity

The concern we have heard most from our members is that the rules are too complex and dense to be easily understood. In drafting HB 3352, we attempted to write into the statute the criteria with which most cleanup decisions could be made. We had hoped that relatively little rulemaking would be necessary and that the Department would have the flexibility to exercise reasonable discretion within the bounds of the statutory criteria. The statute contemplates that the Environmental Quality Commission would adopt rules only with respect to the definition of hot spots and the development of risk assessment protocols. Although other revisions were necessary to the rule to conform them to the statute, we had anticipated that the statutory language would simply replace the rule language.

Somehow this goal of simplicity has been lost. The proposed rules are so complex logically, if not conceptually, that few readers will have the patience or skill necessary to really understand them. Such complexity is likely to foster misunderstanding of the rules by both the regulators and the regulated and is likely to result in inconsistent application. On the other hand, to the extent the rules are understandable, they may impose rigidity, rather than the flexibility that is necessary for the Department and responsible parties to respond to the unique facts of each site.

We encourage the Department to explore ways to simplify the proposed rules. The readability of the rules could be dramatically improved by combining or eliminating many of the definitions. In several instances, we found definitions four orders beyond the primary term used in the body of the rules. In other words, to understand a term used in the rules the reader must consult definitions of terms used in a definition of a term used in a definition of a term used in a definition. In some cases, the reader must perform this exercise several times within the definition of a single primary term. Most of us simply are not able to discern or retain the concepts imbedded in such complex drafting logic. Upon a closer examination of these definitions, we believe those in the third and fourth orders could be melded into the higher order definitions. For example the terms "toxicity quotient,"

"toxicity index," and "exposure point value" appear to be used only once, and then only in definitions of higher order terms. Rather than forcing the reader to flip pages to find five or six defined terms, all these terms could be combined into a simpler single definition.

The rule also could be simplified by eliminating duplicative provisions. For example, all the criteria that define a hot spot are included in the hot spot definition. Yet these same criteria are repeated for soil in 080(7). In this case, the complexity could be eliminated by using the defined term "hot spot" in the operative portion of the rule (at page 22, simply add a period at the end of line 23 and delete lines 24 through 32).

II. Ecological Risk Assessment

A. Only a Screening Level Assessment Should be Necessary at Most Sites

Throughout this rulemaking, the Department and the other stakeholders have agreed conceptually that the full panoply of ecological risk assessment should not be required at every site. The proposed rule, however, would impose on every site subject to remedial investigation a uniform and comprehensive set of risk assessment requirements. Specifically, 080(5) requires characterization of risks to be based on risk assessments "conducted in accordance with OAR 340-122-084." In turn, 084(3) rigidly specifies that the ecological risk assessment "shall include" a comprehensive set of assessment elements. These elements include problem formulation, data quality objectives, exposure analysis, ecological response analysis and risk characterization presenting quantitative data, weight-of-the-evidence analysis, and a long list of other scientific studies and evaluations. According to the ecologists, biologists and other scientists we have consulted, producing these requisite elements would require an extraordinary amount of study, potentially costing a million dollars or more at every site. Based on our discussions with Bruce Hope, we understand this is not the Department's intent, but the proposed rule as written does not allow the Department any flexibility to require less.

Our foremost concern is we want to ensure that the average industrial site is not burdened by having to perform more than minimal screening for ecological impacts. The typical site subject to the cleanup statute is industrial property located in industrialized urban areas. At most of these sites, there is no meaningful wildlife habitat and all vegetation is either cultivated or common weeds. After no more than a quick glance at such sites, the Department should be able to conclude that NO ecological risk assessment is necessary. Even at sites where there may be some natural habitat, the size of the site's habitat relative to the size of similar habitat in the vicinity of the site typically is so small that any impact from the site on ecological receptors can only be trivial.

Department representatives have stated publicly on numerous occasions that very few sites should warrant a full ecological risk assessment and that ecological considerations should be inconsequential at most sites. We understand that the Department believes, and we agree, that comprehensive ecological risk assessment should be the exception rather than the rule. In order to avoid unnecessary and unproductive ecological risk assessment, the rule should allow the Department to exercise reasonable discretion to require ecological risk assessment when specified subjective factors warrant it. In all other cases, the rule should not require ecological risk assessment.

In this regard, we suggest adding the following to the end of 080(5):

The Department shall require a baseline ecological risk assessment only when it determines that one or more of the following factors are present at the site, based on information collected during the site evaluation, preliminary assessment or remedial investigation:

- (a) Threatened or endangered species or their critical habitat are present at the site;
- (b) Other ecological receptors are present at the site and the site encompasses an important portion of the habitat for a population in the locality of the site, taking into consideration the size of the available habitat at the site and the extent to which other similar habitat is available for the local population; or
- (c) Any other factors indicating that site conditions may have an significant adverse impact on the health or viability of a population of ecological receptors.

Even where the Department determines that a baseline ecological risk assessment is warranted, the Department should be able to tailor the ecological risk assessment to fit the circumstances. For example, the Department should be able to exercise its professional judgment to determine that neither quantitative nor weight-of-the-evidence analysis is necessary. The entire area of ecological risk assessment is at a nascent stage that does not lend itself to quantification or rigorous description in a rule. Each year, the scientific community produces new ways to evaluate ecological impacts and risks; accordingly, the rule should be as flexible as possible so that the Department and responsible parties can take advantage of new developments and creative approaches. To achieve this flexibility, we suggest replacing the opening clause of 084(3) with the following:

- (3) The Department may require a baseline ecological risk assessment to include any or all the following based on the Department's determination of the importance of the potential ecological impacts from hazardous substances at the site:

B. Hot Spot

Hot spots for media other than water are defined to include contamination at a toxicity quotient of 10 or more for ecological receptors. This definition is not consistent with the definition of acceptable risk levels for ecological receptors and will result in almost all contamination above the acceptable risk level for populations to be defined as hot spots. A toxicity quotient of 1 is the same as the ecological benchmark value. Therefore, hot spots would be defined as 10 times the ecological benchmark value. Ecological benchmark value, however, is not the point at which there is a significant adverse effect on populations. Even under the proposed definition of acceptable risk level for populations (which we believe is too restrictive), cleanup would not be necessary unless more than 20 percent of the population is exposed to contamination at the ecological benchmark value. Because the acceptable risk level is based on exposure, not concentration, the mere presence of contamination at 10 times the ecological benchmark value is by itself not important. It certainly does not warrant the cost associated with the preference for treatment that follows hot spots.

We understand that the Department may have selected this approach to the hot spot definition to simplify the definition of hot spots early in the process. While we encourage simplification, here the price is too high. This type of simplification defeats the principle that the preference for treatment should be limited to the worst problems at a site.

This prong of the hot spots definition is in contrast with the prongs associated with the acceptable risk levels for human exposures. For human exposures, hot spots are defined to equate directly to concentrations that are 10 times the acceptable risk level. This same approach should apply to ecological receptors.

In this regard, we suggest that the following language be substituted for 115(35)(b)(A)(iii) and 080(7)(a)(C):

10 times the acceptable risk level for individual ecological receptors or populations of ecological receptors.

C. Acceptable Risk Level for Individual Receptors

1. Limited to Threatened or Endangered Species

ORS 465.315(1)(b)(A) provides protection for "species," as opposed to "populations," only for threatened or endangered species listed pursuant to 16 USC §§ 1531 et seq. or ORS 496.172. This protection at the individual receptor level is analogous to the Endangered Species Act ("ESA") taking prohibition that focuses on the protection of

individual specimens of endangered fish or wildlife. 16 USC § 1538(a)(1)(B). Section 9 of the ESA prohibits any person from taking an endangered species of fish or wildlife. *Id.* The Secretary of Interior has promulgated regulations that extend the prohibition on taking to include those species listed as threatened. 50 CFR § 17.31. Thus, the combined effect of ORS 465.315(1)(b)(A) and the ESA is to support a cleanup rule that provides individual receptor protection only for threatened or endangered fish and wildlife.

In contrast to fish and wildlife, the ESA protects plants only at the population level and not at the individual receptor level. The Section 9(a)(1) taking prohibition only applies to fish and wildlife and does not extend to plants. 16 USC § 1538(a)(2). Although there is no taking prohibition of endangered plants on a person's own property, it is unlawful for someone to trespass on another's land to remove, cut, dig up, damage or destroy any endangered plant or to do so in knowing violation of any state law or regulation. The legislative history indicates that section 9 was not intended to interfere with rights traditionally accorded landowners; it was designed to increase the deterrent effect of state plant protection and trespass statutes. S. Rep. No. 240, 100th Cong., 1st Sess. 12 (1987), reprinted in 1988 U.S.C.C.A.N. 2700, 2711-12. In addition, the ESA and the regulations promulgated under it have no provision for the protection of threatened (as opposed to endangered) plant species.

The ESA does not provide protection for individual specimens of plants on private property. Consequently, the use of the term "species" in ORS 465.315(1)(b)(A) does not support the imposition of an acceptable risk level for individual plants. This distinction between the level of protection afforded plants and animals, of course, is supported by the differences in the reproductive mechanisms and cycles between plants and animals and on the differences in the way the public values animal and plant species. We also note that attempts to protect individual plants at a site could be extremely problematic, since any disturbance of the surface of the site may result in significant loss of plants.

In addition, the proposed rule is not clear in limiting the individual receptor protection to just threatened or endangered species. This concept is reflected in the portion of the rule describing the risk assessment requirements, 084(1)(h)(B)(I), but is not incorporated into the provisions that require protection at the acceptable risk level. *See* 040(2)(a).

To avoid confusion regarding the application of the acceptable risk level for individual receptors we suggest that the definition of this term at 115(5) specify that it applies only to threatened or endangered fish and wildlife species. The limitation to fish and wildlife also needs to be inserted in 084(1)(h)(B)(I) of the proposed rule.

2. Decision Making Confidence

As proposed at 115(5)(a), the rule would require the acceptable risk level to be achieved for individual receptors (which should include only threatened or endangered fish and wildlife) with 100 percent confidence. This requirement for 100 percent confidence creates two problems. First, it is confusing in the context of deterministic risk assessments. Deterministic risk assessments ultimately produce a toxicity index, which is a single numeric value with no hint as to the potential range or variability of the index. The reference in the definition to distributions and confidence intervals, therefore, is confusing and unnecessary with respect to deterministic risk assessment.

Second, and more important, establishing a 100 percent confidence interval based on a probabilistic risk assessment will be impossible if models from mathematical statistics are used to describe the frequency distributions of the input data. Normal and lognormal distributions have a long (theoretically infinite) tail that, although it may approach some asymptotic level near zero, never actually reaches zero. In other words, most normal distributions never reach an absolute limit that can be established with 100 percent confidence. When one or more of these mathematical distributions are used in a probabilistic risk assessment, the upper limit of the resulting sampling distribution of toxicity index estimates cannot be known with 100 percent confidence. The result of imposing a 100 percent confidence requirement is to effectively eliminate the use of probabilistic risk assessment for impacts on individual ecological receptors.

We understand from discussions with Bruce Hope that the Department believed it had to use the 100 percentile confidence interval because the ESA does not allow the private taking of any individual of a threatened or endangered fish or wildlife species. This, however, is only the statutory standard that is to be applied, it does not govern the confidence with which the standard must be applied. Nothing in the ESA requires assurance at any particular level of confidence that each individual will be protected. To the contrary, in approving private-party "take avoidance plans," the United States Fish and Wildlife Service (USFWS) evaluates the extent to which the probability of taking an individual is reduced, not whether the plan assures with 100 percent confidence that no individuals will be taken. *See, e.g.*, attached Letter from the USFWS. Similarly, the Department of Interior has issued a "No Surprises" policy that encourages persons to develop habitat conservation plans that focus on habitat to enhance survival of the species while providing private landowners certainty by not requiring any further mitigation even though circumstances may change over time. U.S. Department of Interior, "No Surprises; Assuring Certainty for Private Landowners in Endangered Species Act Habitat Conservation Planning" (Aug. 9, 1994). This policy focuses on the ecological principles of conserving habitat as the means for protecting the species as a population and recognizes that individual members of a population may not be protected.

Accordingly, the confidence with which cleanup decisions are made for protection of threatened and endangered species should be no different than the confidence with which those decisions are made for human health. ORS 465.315 states that humans are to be protected from exposure to contamination with a hazard index of greater than 1. The proposed rule appropriately says that remedy selection decisions should be made with 90 percent confidence that this level of protection will be achieved. Similarly, the rule should provide that remedy selection decisions will be made with 90 percent confidence that no threatened or endangered fish or wildlife will be taken. As the proposed rule is written, it would require a dramatically greater (technically, absolute) confidence for protection of threatened or endangered species than is required for protection of humans. Surely, this is not an appropriate result.

3. Proposed Revisions

To address the problems discussed above we suggest that the definition of "acceptable risk level for individual ecological receptors" be revised as follows:

- (5) "Acceptable risk level for individual receptors" applies only to fish and wildlife species listed as threatened or endangered pursuant to 16 USC 1531 et seq. or ORS 496.172 and means the level before a significant adverse impact on the health or viability of a species occurs as determined based on any of the following:
- (a) For deterministic risk assessments, a toxicity quotient number less than or equal to one for each contaminant of ecological concern, and a toxicity index number less than or equal to one;
 - (b) For probabilistic risk assessments, a toxicity index number less than or equal to one at the 90th percentile and less than or equal to 10 at the 95th percentile, each based upon the same distribution of toxicity index numbers for an exposed individual ecological receptor; or
 - (c) A weight-of-the-evidence analysis, based on modeling, field studies, laboratory investigations, or any combination of these or other methods acceptable to the Department, which indicates that the probability of toxicological responses is *de minimis*.

In addition, the risk assessment protocols should be revised to clarify that risk assessments should be made at the individual level only for threatened or endangered fish and wildlife, not for plant species. This clarification can easily be accomplished by inserting the words "fish or wildlife" before species in 084(1)(h)(B)(I) at line 28 of page 24 of the proposed rule.

D. Acceptable Risk Level for Populations of Ecological Receptors

One of the most important concepts of HB 3352 is that it defines valued ecological conditions that are to be protected. Specifically, it calls for the protection of viable populations of ecological receptors. Protection of viable populations is the goal of most fish and game management and is consistent with the Environmental Protection Agency's proposed guidelines for ecological risk assessment. 61 Fed Reg 47552 (September 9, 1996). The concept of protecting viable populations has two critical components. First, it looks past individual receptor impacts and focuses instead on the way an entire population is affected. Second, the population-level impacts to be protected against are those that go to the sustainability of the population, not just any impact on the population. The concept is based on a scientific understanding that populations are subjected to a wide variety of stresses and are able to absorb, or adjust to, most of those stresses without affecting survival of the population. Therefore, the importance of an impact on the population should be evaluated against how it affects the long term survival of the population.

The proposed rule departs from both these critical components of the population protection concept. First, it looks at exposure rather than impact. The proposed rule assumes that individuals exposed to contamination above an ecological benchmark value in fact will suffer important adverse impacts. Similarly, it assumes that exposure of 20 percent of a population to contamination above the ecological benchmark value will result in reduced population survival. However, for numerous reasons, individuals may suffer no adverse effects when exposed to contaminants above benchmark values and population viability may not be affected when 20 percent of a population is exposed. This line of reasoning is too much a leap of logic, and results in exactly the overly conservative decision making HB 3352 was intended to prevent.

As written, the proposed rule would appear to require removal from an ecosystem, such as a pond, of all contamination above the ecological benchmark value. In a pond, we can assume that virtually every fish at some point will be exposed to even a very small patch of contaminated sediment. The proposed rule does not appear to take into consideration the likelihood that these transient exposures will be trivial, or even irrelevant, in comparison to the chronic exposures that underlie the studies that produce ecological benchmark values. In other words, the proposed rule appears to ignore the nature and duration of the exposure. It focuses on the likelihood of potential exposure to individuals, rather than on objective measures of impacts on health and viability of populations.

As discussed below with respect to the definition of ecological benchmark, the individual impacts against which the protection would be provided have little to do with population survival. The proposed rule would consider a contaminant dose unacceptable if it could produce any adverse effect on an individual specimen. Such effects would include skin

rashes, irritation, salivation and a host of other effects that are unlikely to have any observable impact on the population itself.

The proposed rule at 115(6)(b) and 115(23) regarding de minimis ecological responses would depart from the concept of protecting population survival. These provisions would protect against changes in factors that include genetic diversity, demographic structure or habitat quality. While these factors eventually may affect population survival and, therefore, can be related to health or viability of the population, changes in these factors do not reasonably portend a significant adverse impact on the population itself.

We understand that the Department is attempting to provide an objective standard against which contamination can be compared without the need for more advanced population survival analysis. We appreciate the need to keep this analysis as simple as possible in most cases, and conservative assumptions and processes are appropriate bases for screening potential issues for further consideration. We do not, however, want to see such conservative approaches used to support a conclusion that expensive remedial action is necessary when significant adverse impacts on population survival in fact are unlikely.

To address these various concerns, we suggest the following revisions to the proposed rule:

- Revise the definition of ecological response as follows:

(23) "Ecological response" means significant adverse changes in factors such as survivorship, fecundity, abundance, genetic diversity, demographic structure, or habitat quality that are reasonably likely to have a significant adverse effect on survival of a local population.

- Revise the definition of acceptable risk level for populations of ecological receptors as follows:

(6) "Acceptable risk level for populations of ecological receptors" means the level before a significant adverse impact on the health or viability of a population occurs as determined based on any of the following:
 - (a) 10 percent chance, or less, that no more than 20 percent of the total local population will be exposed to an exposure point value greater than the ecological benchmark value for each contaminant of ecological concern. Exposures to be considered under this subsection include only those exposures of the type and duration that are consistent with the scientific basis for the ecological benchmark value;
 - (b) The level at which there is no significant increase in the probability of premature extinction for a local population as a result of exposure to a hazardous substance; or

(c) A weight of the evidence analysis, based on field studies, laboratory investigations, appropriate population models, or any combination of these or other methods acceptable to the Department, which indicates that the probability of ecological responses is *de minimis*.

E. Ecological Benchmark Value

1. Use of NOAELs

As the AOI subcommittee attempted to understand the proposed rule, we found increasingly confusing and, ultimately disturbing, the definition of ecological benchmark value. This term is the cornerstone of the definitions of acceptable risk level for both individuals and populations. The proposed rule defines this term essentially as a no observed adverse effect level (NOAEL), which is not defined in the proposed rules. This, in turn, becomes the basis for defining acceptable risk level. None of these terms reflect the statutory standard of significant adverse impact on health and viability. Lost is both the concept of significance and the context of health and viability.

As we looked for help in the proposed rule for interpretation of NOAEL, we became concerned that the definition of toxicity endpoint would be used to help interpret NOAEL. Toxicity endpoint includes consideration of virtually any sort of physiological response, including irritation, increased stress, allergies and the like. Most such effects are likely to have little or no observable effect on populations and may not even affect survival of individual receptors.

We believe the statutory criterion that adverse impacts be significant is critical to the successful implementation of this new risk assessment regime. We also believe it is critical to focus the analysis on survival, which is the underlying criteria in the statute. While this criteria is mentioned in the definition, the definition appears to allow consideration of the full range of responses described in the definition of toxicity endpoint as long as the study in question also looked at reproductive success.

ORS 465.315(1)(b)(A) defines the acceptable risk level for ecological receptors as the point before significant adverse impacts on health or viability occur. Thus, the law does not allow the acceptable risk level to be based on just any impact, the impact must be significant. By definition, the NOAEL is not related to a significant impact. The NOAEL is a point before (typically considerably before) which any impact occurs. The NOAEL combined with the proposed rule's definition of acceptable risk level for populations effectively protects against 20 percent of a population being exposed to a level at which there is no effect. We question why there should be any concern about any portion or a population being exposed to levels at or near the NOAEL.

Even higher levels such as the lowest observed adverse effects level (LOAEL) do not relate to a significant impact. The LOAEL is the lowest level at which an impact is observed in any specimen in the study. The impact at the LOAEL can often be trivial and does not significantly affect the health or viability of the test subjects. Therefore, it may be more relevant to set the acceptable risk level for populations at a level where some significant portion of the population is exposed to levels at which the adverse impact is actually likely. For example, exposure of 20 percent of the population to an LD₅₀ or LC₅₀ level would be more logical. Such a standard would suggest that 50 percent of the exposed individuals would die, thereby suggesting a potential loss of 10 percent of the population. Such a potential loss is more consistent with a significant impact on the health or viability of a population than is the trivial loss that may occur at a LOAEL.

We also are uncomfortable with the use of a NOAEL for defining the acceptable risk level for individual ecological receptors. If, however, the definition is revised as we have suggested above and the NOAEL is limited to effects on survival or reproductive success, the NOAEL may be more appropriate than a LOAEL. Nevertheless, we need to understand that the use of a NOAEL may result in extreme conservative unless the NOAEL has been derived from numerous studies and use of a comprehensive range of doses in those studies.

2. Probabilistic Assessments

We question how the proposed definition of ecological benchmark value is intended to be applied to probabilistic assessments. The first clause of the definition appears to prohibit the use of NOAELs in probabilistic assessments, but the parenthetical in the second clause suggests that distributions of NOAELs may be used. This problem appears to be largely a drafting problem--the definition is written so that the phrase "for deterministic risk assessments" modifies, and therefore limits, the entire definition.

Of greater importance, the use of a distribution of NOAELs or similar values would not appear to be appropriate. If study-specific NOAELs are available from several acceptable studies, by definition and convention, the highest of these values is used in risk assessments as the NOAEL. This highest NOAEL should be used anytime a fixed value, rather than a distribution is being considered. But for probabilistic assessments, a dose-response curve is the more meaningful input data. Use of a distribution of NOAELs from individual studies is not appropriate because the actual NOAEL is by definition the upper bound of this distribution. All lower levels that appeared as NOAELs in individual studies are simply arbitrary values that have subsequently been demonstrated to be lower than the true NOAEL.

3. Proposed Rule Language

Given the statutory standard, we believe ecological benchmark value (as used in the definitions of acceptable risk level) must be defined consistent with the following basic concepts:

- For populations, protecting health and viability should be accomplished by protecting survival of the population. Therefore, the ecological benchmark value should focus on impacts on reproductive success.
- For individual receptors, protecting health and viability should be established by focusing on impacts on mortality and reproductive success; other impacts should not be considered unless they are relevant to mortality or reproductive success.
- In all cases, the impacts should only be considered if they are significant. A dose that elicits a response in a very small portion of the population, or only in weakened or otherwise stressed specimens, is not significant. Therefore, the ecological benchmark value for population impacts should not be set at the LOAEL or NOAEL, which are not indicative of significant impacts.
- For probabilistic analysis, the dose response distribution should be used, not a distribution of NOAELs, LOAELs or other values from a variety of studies. The statistical information used to produce these values should not be lost in the probabilistic analysis.

With these several points in mind, we offer the following proposed definition of ecological benchmark value:

(21) "Ecological benchmark value" means the no-observed-adverse-effects level (NOAEL) for individual receptor impacts and the LD50 or LC50 for population impacts. If a NOAEL, LD50 or LC50, as applicable, for effects on reproductive success or survival is not available for ecological receptors at the site, the ecological benchmark value may be set at a level derived from other toxicological endpoints (*e.g.*, NOAEL, LOAEL, ED50, LD50, LC50) for the ecological receptors at the site or other relevant species, with appropriate adjustments to approximate a NOAEL, LD50 or LC50 for the ecological receptors at the site. The ecological benchmark value shall be based on studies for which the experimental conditions (*e.g.*, exposure pathway and duration) are consistent with the expected exposure at the site and which measure survival or reproductive success.

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We do not believe any reference to probabilistic risk assessment or deterministic risk assessment is necessary in this definition. The use of distributions in probabilistic risk assessments is adequately addressed in 084(4)(e)(E).

If this definition is acceptable, the confusing and potentially misleading definition of toxicity endpoint can be deleted entirely. As discussed above, many of the effects described in the proposed definition do not relate to survival or reproductive success. The definition of ecological benchmark value we have proposed above takes into consideration the basic concepts we understand DEQ wanted to address through the use of this term. As this is a definition at the fourth order within other definitions, its elimination also will simplify the rule.

F. Local Population

We are concerned that the definition of local population may be too narrow and will result in the effects on small groups being interpreted as an important impact on a true species population. We are concerned, for example, about the possibility that fish landlocked in a single pond, in particular a stocked pond, could be regarded in all cases as a population. If so, any impact or potential impact within the pond would be interpreted as important to the population, even though the fish species in the pond are prolific in other nearby water bodies. Such an interpretation could lead to extraordinary expenditures to protect the fish in the single pond, a result that may not be a cost effective expenditure of resource protection dollars. Instead, the relevant population should not be limited to the pond, but to the similar habitats in the area.

We also are concerned that the definition would define as a population only the portion of a migratory species that actually comes into contact with the site. On this point, the definition is somewhat circular in that it defines a population as any "portion of a population" that temporarily uses habitat in the locality of the facility. For migratory and other transient species, a population is much larger than just the portion that may pass through the locality of a site. Moreover, the portion that passes through the site may change from year to year. The definition would be more consistent with the ecological concept of an interbreeding population if it referred to a "population, a portion of which may temporarily inhabit the locality of the site," rather than to "any portion of a population" that passes through a site.

With these points in mind, we offer the following proposed definition of population:

(43) "Population" and "local population," for purposes of evaluating ecological receptors, means a group of individual plants, animals, or other organisms of the same species that live together and/or interbreed within a given habitat type.

Population includes any population of a transient or migratory species, a portion of which uses habitat in the locality of a facility for only a portion of the year or for a portion of their life cycle.

G. Ecological Receptor and Non-native Species

Similarly, the proposed definition of ecological receptor would require a narrow delineation of a population. The definition suggests that the entire population must be within the locality of the facility. The concepts important to the term "locality of the facility" are invoked in risk assessment portions of the rule and need not be used to limit the term "ecological receptor."

This definition excludes domestic animals, but does not mention domestic or cultivated plants, which should be similarly excluded. It also should exclude non-native species that are undesirable. Certainly, we do not want a remedy driven by protection of a species that the public generally is trying to eradicate.

We also do not believe that habitat should be included as an ecological receptor. The habitat is only important with respect to its impact on the population or individual receptors. It is not itself protected by HB3352.

Accordingly, we offer the following proposed definition of ecological receptor:

(22) "Ecological receptor" means a population of plants or animals (excluding domestic or cultivated plants or animals and undesirable, non-native species) with members in the locality of the facility, or an individual member of any species listed as threatened or endangered.

III. Significant Adverse Effect on Beneficial Use of Water

The proposed rules define the term "significant adverse effect on beneficial use of water" as an element of identifying hot spots in water resources. The proposed definition at 115(54) includes any exceedance of any applicable or relevant "federal, state or local water quality standards, criteria, guidance or specification."¹ This language is so broad as to potentially include any governmental assertion of what should be regarded as an acceptable level of contamination in water. Although some drinking water standards and water quality criteria are well established by rule, various agencies have produced a plethora of criteria,

¹This same language appears in 080(6)(a). Our comments apply to both usages of this language.

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guidance and specifications that have not been established by rule or even by some uniform policy. As written, this definition provides no protection against a municipality simply announcing that it has established natural background levels as the acceptable water quality standard for drinking water in its community. The language also invites the use of EPA's maximum contaminant level goals, which are set at zero for carcinogens. In short, this language creates the potential for virtually any groundwater contamination being defined as a hot spot.

We understood the original intent of this rule language to be inclusion of the federal maximum contaminant levels under the Safe Drinking Water Act and water quality criteria established by rule. In order to avoid confusion and abuses, this portion of the definition should be revised to read as follows:

- (a) Applicable or relevant federal or state water quality standards or criteria established by rule;

The definition should not include local standards, as this would result in the delegation by the Department to local government of the ability to set cleanup standards—an approach that would invite inconsistency across the state and use standards not based on sound science.

We also are concerned that the rule does not address where in the groundwater the standard is to be applied. Logically, it should be applied only in that portion of the groundwater where the beneficial use occurs or is reasonably likely to occur. Alternatively, one might attempt to apply a drinking water standard to shallow groundwater simply because the deeper portions of the aquifer are used for drinking water. We understand that the Department intends to apply this definition in a manner so that water quality only in the geologic zone of the beneficial use is compared against the standard. This intent, however, is not clear in the rule language. In the revised language proposed at the end of the next paragraph, we have attempted to clarify this point.

Lastly, we note that the criteria used to define "significant adverse effect on beneficial use of water" are repeated verbatim at 080(6). Consistent with our comments that the proposed rule is too complex, we suggest that the criteria only appear once. This could easily be accomplished by simply using the defined term in this rule and deleting the recital of the criteria used in the definition. We also note that the defined term does not appear to be used in the rule, but that the undefined term "significant adverse effect on existing or reasonably likely future beneficial uses of water or waters" is used in 115(35) and 080(6). We suggest using the shorter defined term and revising the opening clause of the definition to read as follows:

(54) "Significant adverse effect on beneficial uses of water" means current or reasonably likely future exceedance of one of the following in portions of water or waters to which hazardous substances are reasonably likely to migrate and for which there is a current or reasonably likely future beneficial use:

IV. Excavation and Offsite Disposition

The proposed rules at 085(7)(a) require evaluation of treatment of a soil hot spot of contamination to a level at which the soil contamination would no longer be considered a hot spot. Under 090(4)(c), any treatment implemented for a soil hot spot can be carried out either onsite or offsite in conjunction with excavation and offsite disposal.

Because 085(7)(a) does not make clear that the goal of proposed rule is to eliminate the hot spot onsite (considering the exposure pathway(s) at the site for the soil hot spot), the proposed rule may suggest that soil that is excavated and treated offsite may need to be treated to a specific concentration level. Such a suggestion makes no sense because offsite treatment and disposal can occur under the law only at authorized disposal facilities where the exposure pathways are strictly controlled or eliminated. As long as the hot spot soils are removed from the site and are treated, the rule should not need to specify how much offsite treatment is appropriate. The level of offsite treatment should be governed by the applicable land disposal restrictions and other considerations relevant to the method of treatment and final disposal. To ensure that the erroneous implication does not arise, we suggest that 085(7)(a) be revised as follows:

(a) The feasibility of treatment to a point where the concentration or condition making the hazardous substance a hot spot would no longer occur at the site, based upon a balancing of the remedy selection factors set forth in OAR 340-122-090 and an application of the higher threshold for evaluating the reasonableness of the cost of treating hot spots of contamination; and

We are also concerned that the proposed rule at 090 may be interpreted by some not to allow sufficient flexibility for the Department to approve expedited cleanup of small volumes of hazardous substances including small soil hot spots. One could interpret 090 to require a party responsible for undertaking the remedial action at a site with a small quantity of contamination to perform a risk assessment, feasibility study and remedy selection process and interpret 090(5) to require a demonstration that any remedial action proposed meets the full feasibility study and remedial action selection process requirements. Such a process would be more costly and time consuming for a small volume of hazardous substance contamination than simply implementing a remedial action, such as excavation and offsite disposal, that would result in an immediate completion of the remedial action and reduction or elimination of the risk.

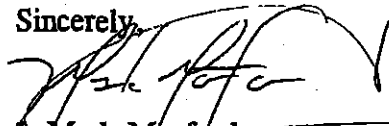
Mr. Jeff Christensen
November 14, 1996
Page 18

We suggest revising 090(5) as follows to provide clear direction in the rules that implementation of such cost effective and expeditious solutions can occur in the situations specified:

Any person responsible for undertaking the remedial action who proposes one remedial action option over another shall have the burden of demonstrating to the Director through the remedial investigation and feasibility study that such remedial action option fulfills the requirements of OAR 340-122-090, except that the person may propose to the Director, and the Director may approve, offsite transport and disposition of hazardous substances that will achieve acceptable risk levels at the site if the offsite disposition would significantly expedite the remedial action or would minimize the need for onsite engineering or institutional controls, especially if the remedial action involves small quantities of hazardous substances or low toxicity hazardous substances.

Thank you again for considering our comments. If for any reason, our proposed changes are not acceptable to the Department, we would appreciate the opportunity to meet with you to discuss the issues further. Please provide us a copy of your responsiveness summary as soon as it is available. We hope to be able to support these rules before the Environmental Quality Commission.

Sincerely,



J. Mark Morford
Chair, AOI Cleanup Subcommittee

Enclosure

cc: Subcommittee Members
Mr. Bruce Hope
Mr. Dick Pedersen
Mr. Richard M. Butrick
Mr. John D. Ledger



Port of Portland

Box 3529, Portland, Oregon 97208
503/231-5000

November 15, 1996

Jeff Christiansen
DEQ
811 SW 6th Avenue
Portland, OR 97204

Dear Mr. Christiansen:

The Port of Portland has reviewed the proposed cleanup rules developed by the Oregon Department of Environmental Quality (DEQ) in response to HB3352. The Port appreciates the efforts of DEQ in involving a broad-based technical and public group to provide guidance to DEQ staff during the development of the rules. The Port supports the approach DEQ has taken and appreciates the opportunity to serve on the Risk Protocol Committee, and to provide response to the rules as proposed. The comments that are being made are limited to the section on ecological risk assessment. This memo contains our comments on the ecological risk assessment proposed rules (OAR 340-122-084). In general, the rules are general and not very specific, therefore ultimately guidance development will determine the level of effort required by the DEQ.

This issue was discussed during the Risk Protocol meetings and the Port recommends that guidance be developed to provide for consistent application of the rules. The ability to use probabilistic methods is a big improvement that will allow for a more realistic evaluation of risk to potential human and ecological receptors. Our specific comments follow.

1. It will be a burden on the regulated community to be required to develop site-specific toxicity information (-084(1)(c)(C)). The costs associated with developing toxicity data for terrestrial receptors, specifically avian species and non-rodent mammals, are extremely high. Alternatives such as the use of structure-activity relationships to derive toxicity data should be considered.
2. The listing of appropriate sources of exposure factor information (-084(1)(j)) does not include USEPA Region 10 Superfund Risk Assessment Guidance. As this is a source of regional exposure factors, this guidance should be included in this listing.
3. There is no mention of the use of screening level risk assessments (both human and ecological) for the contaminants of concern. We strongly advocate the use of tiered risk assessment strategy. The first tier is a screening level assessment utilizing



Port of Portland

Box 3529, Portland, Oregon 97208
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November 15, 1996

Jeff Christiansen

page 2

appropriate human and ecological risk-based screening levels to select the contaminants of concern. Such a tiered strategy is extremely useful in focusing the resources necessary in conducting a baseline human and/or ecological risk assessment.

Sincerely,

Kathi Futornick

Kathi Futornick
Environmental Affairs Manager

ENVIRON

November 15, 1996

Facsimile

Mr. Jeff Christensen
Oregon Department of Environmental Quality
811 S.W. 6th Avenue
Portland, OR 97204

Re: Comparison of Oregon Environmental Cleanup Law with ASTM E-1739

Dear Mr. Christensen:

ENVIRON Corporation was retained by BP Oil Company and Chevron Products Company to compare Oregon's Environmental Cleanup Law amendments (HB 3352) and the associated proposed rules dated September 17, 1996 with the ASTM risk-based corrective action (RBCA) process as described in ASTM E-1739. The purpose of the comparison was to identify differences between the remedial action process described in the Oregon law and the RBCA process that would lead to significant differences in what and how remedial actions would be conducted under the two processes. Because many state regulatory agencies are adopting the RBCA principles and/or framework in their site remediation programs, the comparison of the Oregon remedial action process with E-1739 also provides a general indication of how Oregon's process compares with those in other states.

ENVIRON's comparison of HB 3352 and the associated proposed rules with E-1739 is provided in Attachment 1. Additional comments on aspects of the Oregon proposed rules, apart from comparison with E-1739, are provided in Attachment 2. The additional aspects of the proposed rules discussed in Attachment 2 were identified in the course of the comparison with the E-1739, and therefore, do not represent a comprehensive review of the proposed rules.

ENVIRON has performed similar comparisons of other site remediation programs with E-1739. Primarily on behalf of ASTM and individual state regulatory agencies, we have done, or are doing, similar comparisons for the following programs:

- Pennsylvania
- New Jersey
- Washington, DC
- USEPA's RCRA Corrective Action Program
- Delaware

Attachment C

Mr. Jeff Christensen

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November 15, 1996

We have also critiqued the draft guidance manuals for implementing ASTM E-1739 prepared by the following:

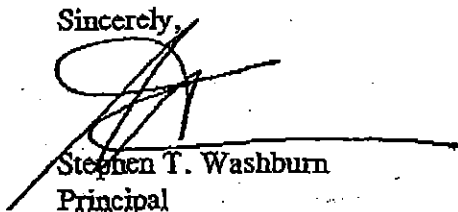
- New York (for ASTM)
- South Carolina (for ASTM)
- USEPA Region 5 for federally-regulated USTs (for ASTM and USEPA Region 5)

Mr. Washburn is certified by ASTM as one of nine scientists nationwide to provide training to state regulatory agencies on the implementation of E-1739, and has conducted training in the following states:


- Oregon
- Ohio
- Michigan
- Pennsylvania
- New Jersey
- Delaware
- Georgia
- Florida
- Tennessee
- Washington, DC

If you have any questions on the comments provided in Attachments 1 or 2, please call either of us (Steve Washburn 609/243-9817, or Steve Song 609/243-9822).

Sincerely,



Stephen T. Washburn
Principal



Stephen Song
Manager

Enclosures

cc: S. Hooton, BP Oil Company
G. Jauregui, Chevron Products Company

ATTACHMENT 1

Comparison of Oregon's Environmental Cleanup Law Amendments (HB 3352) and Associated Proposed Rules with ASTM Risk-Based Corrective Action (E-1739)

1. Site Assessment

- ASTM E-1739: The purpose of a site assessment is to collect only that information necessary to making risk-based decisions in site classification, initial response action, comparison to RBSLs, and determining SSTLs.
- HB 3352: The amendments do not address site assessments.
- Proposed Rules: The proposed purpose of the Preliminary Assessment [OAR 340-122-072(3)] is consistent with the purpose of the site assessment described in E-1739. The information that may be collected in a preliminary assessment [OAR 340-122-072(4)] is consistent with the types of information that may be collected as described in E-1739. However, proposed rule OAR 340-122-045(2)(e), which pertains to numeric soil cleanup levels, may require the collection of data beyond that required under ASTM E-1739, as discussed below under item 4 entitled Tier 1 Evaluation.

2. Site Classification and Initial Response

- ASTM E-1739: Site classification is based on urgency of need for initial response action, as indicated by current and projected short-term and long-term hazards to human health and the environment, and the type of response most appropriate to the nature of any hazard. E-1739 provides an example classification scheme based on immediacy of threat (e.g., immediate, 0 to 2 years, longer than 2 years) and suggests associated initial responses actions; the example classification scheme and suggested initial responses are

not part of the standard. The need for reclassification should be evaluated when additional site information is collected.

- HB 3352: The amendments do not address site classification and initial responses.
- Proposed Rules: The proposed Site Scoring Procedure's stated basis is short-term and long-term risks to public health, safety, welfare and the environment [OAR 340-122-076(1)(a)]. Although its basis appears consistent with E-1739, the Site Scoring Procedure does not appear to tie site scores with specific initial response actions. OAR 340-122-076(3) indicates that the Oregon DEQ will consider the site score along with other unspecified factors to prioritize in an unspecified manner sites for further action.

3. Tier 1 Risk-Based Screening Levels (RBSLs)

- ASTM E-1739: The RBSLs are non-site-specific risk-based concentrations that are developed for specific land use categories (e.g., industrial) and exposure pathways (e.g., soil ingestion). They are developed using either current USEPA reasonable maximum exposure (RME) factors and toxicity values or information from peer-reviewed sources. E-1739 does not specify the target cancer risk level for calculation of RBSLs. An RBSL should not be developed for total petroleum hydrocarbons (TPH).
- HB 3352: The amendments do not provide for the development or use of risk-based screening levels. However, paragraph 465.315(6) provides that nothing in ORS 465.315 or the associated rules shall prohibit the use of rules in effect by July 1995 that use numeric soil cleanup standards for remediation of motor fuel and heating oil releases from underground storage tanks. Therefore, it appears that the numeric soil cleanup standards for TPH in OAR 340-122-335 would remain applicable. The TPH cleanup standards are inconsistent with E-1739 because they are not risk-based and are cleanup levels rather than screening levels.

- Proposed Rules: The proposed rules do not explicitly provide for Tier 1-type risk-based screening levels, although the proposed Numerical Soil Cleanup Levels (OAR 340-122-045) are similar to Tier 1 RBSLs in some respects. That is, the numeric soil cleanup levels are non-site-specific, different for residential and industrial land uses, risk-based, and may be used as screening levels. However, they are not all based on USEPA exposure and toxicity information.

For example, in contrast to USEPA guidance, the proposed numeric soil cleanup levels for the carcinogenic polycyclic aromatic hydrocarbons (PAHs) are based on the assumption that the cancer potency for all carcinogenic PAHs (e.g., chrysene) are the same as that for benzo[a]pyrene. USEPA guidance recommends using relative potencies which are expressed as fractions of the potency of benzo[a]pyrene (e.g., the relative potency of chrysene is 0.001 times that of benzo[a]pyrene). Therefore, the numeric soil cleanup levels for several of the carcinogenic PAHs should be higher (i.e., less stringent) than that for benzo[a]pyrene (e.g., the cleanup level for chrysene should be 1,000 times higher than that for benzo[a]pyrene).

As another example, the proposed residential maximum allowable soil concentration for lead is 200 mg/kg. This is twice as stringent as USEPA's residential soil lead screening level of 400 mg/kg, which USEPA believes to be adequately protective of lead exposures to children in residential settings. Therefore, the proposed cleanup level of 200 mg/kg appears to lack any risk basis that is consistent with USEPA guidance.

The proposed numeric soil cleanup levels also differ from Tier 1 RBSLs in that they may not be updated with current exposure and toxicity information. The proposed rules lack provisions for updating the cleanup levels through rulemaking or allowance to modify without rulemaking the cleanup levels with current information (e.g., updating the cleanup levels for polychlorinated biphenyls with USEPA recently revised cancer slope factors).

4. Tier 1 Evaluation

- ASTM E-1739: Maximum concentrations, or statistical limits (e.g., 95% upper confidence limit on the mean), at a source area are compared with RBSLs appropriate to the land use at and surrounding the site. Background concentrations should be considered when comparing with RBSLs. Cumulative cancer and noncancer risks from exposure to multiple chemicals is not explicitly considered in Tier 1. E-1739 requires evaluation at Tier 1 before evaluation at Tiers 2 and 3. Remedial action to reduce concentrations at a source to RBSLs would avoid the need for Tier 2 or Tier 3 evaluations.
- HB 3352: The amendments do not address the use of risk-based screening levels.
- Proposed Rules: The proposed rules for the numeric soil cleanup levels (OAR 340-122-045) appear to have requirements that may restrict the use of the cleanup levels as Tier 1 RBSLs. The proposed rules require that the vertical and horizontal extent of contaminants be defined [OAR 340-122-045(2)(e)], which may mean that the extent of contaminants must be delineated to analytical detection limits or background levels. A requirement for this type of delineation would be inconsistent with E-1739 since such delineation is not necessary to the use of risk-based screening levels or cleanup levels. In using risk-based levels, the vertical and horizontal extent of contaminants need only be delineated to the risk-based levels.

The proposed use of the numeric soil cleanup levels also differs from a Tier 1 evaluation in a few other ways. The proposed rules require that cumulative cancer and noncancer risks be evaluated explicitly. Another difference is the consideration of background levels. The proposed definition of "background level" appears to limit background levels to naturally occurring levels, as opposed to including anthropogenic levels unrelated to the site. E-1739 does not limit consideration of background to only naturally occurring levels. The proposed rule should also be clarified to indicate that the cleanup levels can be used to eliminate from further evaluation contaminants that are

listed on Table 1, even if contaminants are present in media other than soil and contaminants not listed are present at the site.

5. Tier 2 and Tier 3 Evaluations

- ASTM E-1739: Develop Tier 2 site-specific target levels (SSTLs) for site-specific points of compliance or for source areas. Tier 2 SSTLs use simple models and site data to predict attenuation and dilution of chemical concentrations as chemicals migrate between a source area, or a point of compliance, and points of potential exposure. Tier 2 SSTLs may be derived from the same equations used to derive Tier 1 RBSLs, except that site-specific parameters are used. They may also be the same as Tier 1 RBSLs, but applied at more probable points of potential exposure. Cumulative risks from exposures to multiple chemicals may be addressed.

Tier 3 SSTLs are like Tier 2 SSTLs, except that more sophisticated exposure models, along with site-specific data, are used. They may account for spatial and temporal trends in chemical concentrations and use probabilistic techniques (e.g., Monte Carlo simulations) to account for variabilities in exposure and transport parameters.

- HB 3352: The amendments do not provide for Tier 2- or Tier 3-type evaluations. Rather, they provide for the use of risk assessments to evaluate the need for remedial actions and the effectiveness of remedial alternatives. Paragraph 465.315(2)(a) requires the establishment of a risk assessment protocol that includes: 1) consideration of current and reasonably anticipated exposures based on land use at and surrounding a site; 2) requirement for reasonable estimates of plausible upper-bound exposures; 3) consideration of the range of probabilities of risks, size of populations potentially exposed, and uncertainties; and 4) accounting for cumulative risks from exposure to multiple chemicals.
- Proposed Rules: The proposed rules do not provide for Tier 2- or Tier 3-type evaluations. Rather, they provide for the use of baseline risk assessments to evaluate the

need for remedial actions and the use of residual risk assessments to evaluate the effectiveness of remedial alternatives [OAR 340-122-084(2)-(4)]. In the risk assessments, estimates of chemical concentrations are combined with exposure and toxicity information to estimate risks, which are compared with risk goals. This approach differs from the Tier 2 and Tier 3 approach in E-1739 in two main ways.

First, the proposed rules have no provisions for a Tier 2 evaluation, which is intended to provide an evaluation requiring an intermediate level of effort. For example, the proposed rules do not provide for modification of the proposed numeric soil cleanup levels using site-specific information to develop site-specific soil cleanup levels that would serve as Tier 2 SSTLs.

Second, the evaluation of cancer and noncancer risks in the proposed rules is conducted in a forward manner (i.e., risks are calculated from concentration data, which are then compared with risk goals), rather than in the backward manner described in E-1739 (i.e., target concentrations are calculated from risk goals, which are then compared with site concentrations). By evaluating risks in a forward manner, the risk assessments in the proposed rule assess cumulative risks from exposures to multiple chemicals more efficiently than the backward approach in E-1739.

Apart from these two main differences, the risk assessment protocol in the proposed rule provides for the same considerations as described in E-1739's Tier 3 evaluation. For example, the proposed rule provides for the consideration of reasonable future land use, the use of site-specific exposure factors, the use of site-specific fate and transport analysis, and the use of either deterministic or probabilistic exposure calculations.

6. Remedial Action

- ASTM E-1739: Either Tier 1 RBSLs, Tier 2 SSTLs, or Tier 3 SSTLs may be used as remedial action target levels. Remedial actions may either reduce concentrations of chemicals to levels below RBSLs or SSTLs, or reduce exposures through engineering or institutional controls. Source removal or treatment should not be required to achieve remedial action goals.

- HB 3352: Paragraph 465.315(1)(e) requires treatment, to the extent feasible, as the remedial action for "hot spots." This requirement is inconsistent with E-1739, which recognizes that risk reduction can be just as effectively achieved by use of engineering or institutional controls. The inappropriateness of this requirement in a risk-based remedial action process is further discussed below in the context of the proposed rules.

For areas not considered hot spots, the amendments allow remedial actions to include engineering or institutional controls. Remedies are to be selected by balancing: effectiveness, implementability, long-term reliability, short-term implementation risk, and cost-effectiveness [465.315(1)(d)]. Paragraph 465.315(1)(g) requires remedial actions to consider current and reasonably anticipated land uses at and surrounding a site. This is consistent with E-1739.

- Proposed Rules: Consistent with HB 3352, the proposed rules require treatment as the remedial action for hot spots [OAR 340-122-090(4)]. The proposed rules for treatment of "hot spots" are inconsistent with E-1739 and the proposed rules for the selection of remedies for areas not considered hot spots [OAR 340-122-090(3)]. Both E-1739 and the remedy selection process for non-hot-spots recognize that remedies should be selected by balancing factors pertinent to the long-term and short-term protectiveness, and to the technical and practical implementation of a remedial option. The remedy selection factors identified in OAR 340-122-090(3), which include effectiveness, long-term reliability, implementability, implementation risk, and reasonableness of cost, are appropriate risk-based considerations in the selection of remedies in general—not just for non-hot-spots.

The proposed rules lack sufficient criteria for distinguishing hot spots as a specific category of sites that merit a different remedy selection framework. The proposed definition of "hot spots" provides no basis to support a separate remedy selection framework. It defines a hot spot as an area characterized by the presence of chemicals of high concentrations, with reasonable likelihood of migration, and are "not reliably containable" [OAR 340-122-115(35)]. However, the remedy selection process proposed in OAR 340-122-090(3) already addresses each of these characteristics of a site. The

"effectiveness" criterion requires consideration of how a remedial option would address the magnitude of risk from untreated chemicals (accounting for volume, toxicity, mobility, and propensity to degrade) and the adequacy of engineering and institutional controls to achieve protection. The "long-term reliability" criterion specifically requires consideration of whether a remedial option involving engineering or institutional controls would reliably manage risks from untreated chemicals remaining at a site.

The requirement for treatment of hot spots, in fact, supplants two important remedy selection factors—implementability and implementation risk. These factors are just as important as the "effectiveness" and "long-term reliability" factors in the evaluation of remedial options for hot spots. For example, the treatment of high concentration wastes may result in high implementation risk to workers and the surrounding community during implementation. By not allowing the consideration of implementability and implementation risk, treatment of hot spots may represent a remedial option that is less protective or practical than a non-treatment option.

ATTACHMENT 2

Comments on Aspects of the Oregon Proposed Rules for Environmental Cleanups Not Included in the Comparison with ASTM E-1739

Definition of "background level"

The proposed definition of "background level" in OAR 340-122-115(8) could be interpreted to include only naturally occurring concentrations of substances at a site. This interpretation would be inappropriate since it would exclude from "background" those concentrations at a facility that were caused by releases from sources unrelated to the facility's operations. This would be counter to the goal of HB 3352 "to further enhance the cleanup of contaminated industrial sites and the recycling of these sites into new industrial, commercial or urban housing sites". This interpretation would also be inconsistent with the definition of background used in risk assessment¹ and risk management² of sites under other site remediation programs, such as Superfund and RCRA corrective action. Therefore, Oregon DEQ should clarify the proposed definition to include concentrations of substances (naturally occurring or not) that are unrelated to the activities associated with a facility. For example,

"Background level" means the concentration of a hazardous substance at a facility and areas surrounding the facility that are unrelated to any past or current management, handling, treatment, storage or disposal of the hazardous substance at the facility.

¹USEPA's *Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual, Part A*. December 1989.

²USEPA OSWER Directive 9355.0-30 "Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions" April 22, 1991.

Definition of "plausible upper-bound exposure"

The proposed definition of "plausible upper-bound exposure" in OAR 340-122-084(1)(f) appears incorrect; the phrase "90th percentile upper confidence limit on the arithmetic means of the exposure data" has no meaning. In the context of establishing what constitutes a high-end exposure in a potentially exposed population, the phrase should be revised to "90th percentile of the potential exposures". This definition would be consistent with USEPA's definition of "high-end" exposures and would be consistent with the proposed definitions in OAR 340-122-115 of "acceptable risk level" for probabilistic risk assessments.

Oregon

WATER
RESOURCES
DEPARTMENT

Mr. Jeff Christensen
Waste Management Division
Oregon Dept. of Environmental Quality
811 SW Sixth Ave.
Portland, Oregon 97204

November 15, 1996

Dear Jeff:

Enclosed are comments with on clean up rules. The comments are with respect to the version distributed September 17, 1996.

Thank you for the opportunity to comment and for the invitation to attend rule committee meetings.

Sincerely,



Frederick G. Lissner, Manager
Groundwater/Hydrology Section



Commerce Building
158 12th Street NE
Salem, OR 97310-0210
(503) 378-3739
FAX (503) 378-8130

Attachment C

Problem:

Use of the permissive word "may" renders a rule open to uncertain effect and enforcement. It will result in significant expenditure of resources on argument rather than product.

Recommendation:

In OAR 340-122-080 (1), (2), (3) & (4) change "may" to shall.

Problem:

Water Resources Commission and State water law establish beneficial uses of both groundwater and surface water. What DEQ does with contaminated groundwater may significantly impact Water Resources Department's (WRD) management of those resources, or may render WRD management plans moot. There needs to be coordination with WRD before taking any clean up action that may affect beneficial use of water.

Recommendation:

In OAR 340-122-080(3)(f) add an item F:

(F) The beneficial uses for which the Water Resources Department is managing the affected area groundwaters and surface waters.

Problem:

Remedial action, OAR 340-122-090(3)(a)(B) speaks to the adequacy of institutional controls. The use of institutional controls, as an element of remedial action, need to be constrained to assure effectiveness. That OAR refers to 340-122-84(4)(b) for specification of adequacy, but that rule is not specific.

Recommendation:

Add the following language after "substances" and before the period (.) in OAR 340-122-84(4)(b):

including, but not limited to, evaluation of
(A) their enforceability and,
(B) for the duration of the existence of the contamination, their effectiveness at preventing migration of the contamination offsite and preventing use for which the quality is unsuitable.

Oregon Waste Systems, Inc.
Columbia Ridge Landfill & Recycling Center
18177 Cedar Springs Lane
Arlington, Oregon 97812
503/454-2030 • FAX: 503/454-2133



A Waste Management Company

November 14, 1996

RECEIVED
NOV 15 1996

Mr. Jeff Christensen
Oregon Department of Environmental Quality
Waste Management and Cleanup Division
811 SW 6th Avenue
Portland, OR 97204

Waste Management & Cleanup Division
Department of Environmental Quality

RE: Comments on the Proposed Environmental Cleanup Rule Revisions and Amendments

Dear Mr. Christensen:

Oregon Waste Systems, Inc. (OWS) has reviewed the proposed environmental cleanup rules developed by the Oregon Department of Environmental Quality (ODEQ). It is OWS's concern that, although the intent of the rules is in part, to reduce costs associated with environmental cleanups in Oregon, the proposed rules are, in some cases, more burdensome to the regulated community. OWS has elected to comment on two areas with respect to allowing for more flexibility in the rules for cost effective and environmentally protective remedial solutions by responsible parties (RPs).

In the following comments, in Section A the parts of the proposed rule at issue are quoted in full, with asterisks "***" showing where parts of the proposed rule (not at issue) have been omitted. A bullet "*" is shown next to the part of the proposed rule that should be revised. In Section B there is a discussion of the proposed rule and why it should be revised. Finally, in Section C the proposed rule is set forth again in full with the requested revision shown. Language requested to be added to the proposed rule is underlined.

1.

A. PROPOSED RULE 340-122-085(7)

"For hot spots of contamination in media other than groundwater or surface water that have been identified under OAR 340-122-080(7) or section (6) of this rule, the feasibility study shall evaluate:

- (a) The feasibility of treatment to a point where the concentration or condition making the hazardous substance a hot spot would no longer occur, based upon a balancing of the remedy selection factors set forth in OAR 340-122-090 and an application of the higher threshold for evaluating the reasonableness of the cost of treating hot spots of contamination; and

*** "

Attachment C

B. DISCUSSION

OAR 340-122-085 of the proposed rules presents the requirements for a feasibility study. The remedial investigation for a site under OAR 340-122-080(7) will identify any hot spots of contamination in media other than water, i.e., soil hot spots. OAR 340-122-085(7)(a) requires evaluation of treatment of a soil hot spot of contamination to a level at which the soil contamination would no longer be considered a hot spot. OAR 340-122-090(4)(c) recognizes that any treatment implemented for a soil hot spot can be carried out either onsite or offsite in conjunction with excavation and offsite disposal.

Because OAR 340-122-085(7)(a) does not make clear that the treatment required to be evaluated in the feasibility study by this proposed rule is treatment onsite including consideration of the exposure pathway(s) at the site for the soil hot spot, there is an implication that OAR 340-122-085(7)(a) may also include offsite treatment of the soil hot spot in conjunction with excavation and offsite disposal considering the exposure pathway(s) at the offsite disposal location as well. Such an implication does not make sense because offsite treatment and disposal can occur under the law only at authorized disposal facilities where the exposure pathways are strictly controlled and eliminated. To remove the erroneous implication, OWS requests that OAR 340-122-085(7)(a) be revised as follows.

**C. REQUESTED REVISION TO
PROPOSED RULE 340-122-085(7)**

"For hot spots of contamination in media other than groundwater or surface water that have been identified under OAR 340-122-080(7) or section (6) of this rule, the feasibility study shall evaluate:

(a) The feasibility of treatment to a point where the concentration of condition making the hazardous substance a hot spot would no longer occur at the site, based upon a balancing of the remedy selection factors set forth in OAR 340-122-090 and an application of the higher threshold for evaluating the reasonableness of the cost of treating hot spots of contamination; and

*** "

2

A. CURRENT RULE 340-122-080(5)

"Any person responsible for undertaking the remedial action who proposed one remedial action option over another shall have the burden of demonstrating to the Director through the remedial investigation and feasibility study that such remedial action option fulfills the requirements of OAR 340-122-090"

B. DISCUSSION

OAR 340-122-090 of the proposed rules presents the requirements for selection or approval of the remedial action. It OWS's concern that OAR 340-122-090 may be interpreted not to provide sufficient flexibility to allow for expedited cleanup of small volumes of hazardous substances, including small soil

Jeff Christensen
November 14, 1996
Page 3

hot spots. OAR 340-122-090 may be interpreted to require an RP with a small quantity of contamination to perform a risk assessment, feasibility study and remedy selection process and then under OAR 340-122-090(5) demonstrate that any remedial action proposed meets the full feasibility study and remedial action selection process requirements. This process may actually be cost and time prohibitive for a small volume of hazardous substance contamination in comparison to implementing a remedial action, such as excavation and offsite disposal, that would result in an immediate completion of the remedial action and reduction or elimination of the risk.

Express recognition that small volumes of hazardous substance contamination can be managed offsite in a simple and expedited way is also supported by the purpose of HB 3352. Contaminated properties that are not being used because of the contamination can be returned to use quickly. Residual contamination that might otherwise remain on property and affect its use of value can be avoided.

OWS proposed that the ODEQ include the following suggested revision to make it clear that implementation of cost effective and expeditious solutions can occur in certain specified situations.

**C. REQUESTED REVISION TO
PROPOSED RULE 340-122-090(5)**

“Any person responsible for undertaking the remedial action who proposed one remedial action option over another shall have the burden of demonstrating to the Director through the remedial investigation of the feasibility study that such remedial action option fulfills the requirements of OAR 340-122-090, except that the person may propose to the Director, and the Director may approve, offsite transport and the disposition of hazardous substances that will achieve acceptable risk levels if the offsite disposition would significantly expedite the remedial action or would minimize the need for onsite engineering or institutional controls, especially if the remedial action involves small quantities of hazardous substances or low toxicity hazardous substances.”

CONCLUSION

Overall, OWS would like to see more flexibility in the rules with regard to implementing a remedial action in a cost effective and timely manner without the requisite risk assessment feasibility study and remedy selection process for certain specified situations where such a process is not justified. OWS believes that remedial actions, such as excavation and disposal at a landfill meeting Subtitle C or Subtitle D requirements, is a solution that is both protective of the environment and cost effective. We are concerned that the current language in the proposed rules may create arguments against allowing this alternative in certain situations.

Sincerely,



H. Steve Clarke
Monitoring Programs Manager

cc: Steve Seed
Sam Jiries



REYNOLDS METALS COMPANY

Primary Metals Division
Troutdale, Oregon 97060 • (503)665-9171

RECEIVED

November 11, 1996

NOV 15 1996

Oregon Department of Environmental Quality
Waste Management and Cleanup Division
Mr. Jeff Christensen
811 S.W. Sixth Avenue
Portland, Oregon 97204

Waste Management & Cleanup Division
Department of Environmental Quality

RE: Comments on Proposed Revisions to Division 122, Hazardous Substance Remedial Action Rules

Dear Mr. Christensen:

Reynolds Metals Company appreciates this opportunity to comment on the proposed revisions to Division 122, Hazardous Substance Remedial Action Rules. We are currently conducting a remedial investigation/feasibility study (RI/FS) at our aluminum reduction plant in Troutdale, Oregon, under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or "Superfund"). The U.S. Environmental Protection Agency (EPA) is the lead agency, and we are working closely with both the EPA and the Oregon Department of Environmental Quality (DEQ) to conduct the project by consensus. We believe that the cooperation we are achieving with the agencies at Troutdale will benefit both Reynolds Metals Company and the public. We offer the following comments as an extension of this collaborative approach.

The three subjects we wish to address are:

- Ecological Risk Assessment
- Designation of beneficial uses for groundwater, and
- Status of the new law as an applicable or relevant and appropriate requirement (ARAR) under CERCLA.

Firstly, we want to congratulate the agency on the overall effort with this rule making process and the overall quality of the rule itself. The DEQ faced many difficult issues while developing this rule and we appreciate the effort you undertook to address all of these issues. From conversations with one of the writers of the rule, it does appear that this rule is supported fully by the agency and that the intent of the rule was to streamline the process and produce more practical and cost effective remedies. We do feel that the rule is still quite complex in comparison to HB3352, and we do support the Associated Oregon Industries (AOI) position on the proposed rules' complexity.

Ecological Risk Assessment

We are concerned with the way in which 340-122-080 and -084 address ecological risk assessment. For many sites, a complete ecological risk assessment may not be necessary. In a discussion with Kevin Parrett, DEQ, it does not appear that this is the DEQ's intent; however, the rule does not clearly indicate a pathway around the ecological risk assessment. We recommend additional language to allow for ecological risk assessment only when it is appropriate.

We also fully support the AOI's position, including the proposed language submitted in their comments, on the definitions of:

- "acceptable risk level for individual ecological receptors,"
- "acceptable risk for populations of ecological receptors,"
- "ecological receptor," and
- "population" and "local population."

Beneficial Uses of Groundwater

Firstly, the proposed definition of "significant adverse effect on beneficial use of water" includes any exceedance of any applicable or relevant "federal, state, or local water quality standards, criteria, guidance or specification" (340-122-110(54)). We are concerned about including local standards within this definition. A local government could set cleanup standards, at any level, which could lead to standards which are not scientifically sound and inconsistent across the state.

Secondly, under both CERCLA and this proposed rule, remediation levels for groundwater depend upon its designated beneficial use, both current and future potential use. In the past, CERCLA remediations for groundwater have assumed that drinking water supply would be a future potential use regardless of site-specific conditions which would make this use extremely unlikely in the foreseeable future. Not only has this approach resulted in attempts to restore aquifers to cleanup levels that were unnecessary, many of these attempts have not been technically feasible. As the National Research Council observed in *Alternatives for Ground Water Cleanup* (National Academy Press, 1994), "At many sites requiring groundwater cleanup, some areas will remain contaminated above drinking water standards for the foreseeable future even when the best available technologies are used."

The new Oregon law requires consideration of "existing or reasonably likely future beneficial uses" of groundwater. The proposed rule expands on this consideration to include site-specific conditions "in the locality of the facility," such as historical land and water use, neighbors' concerns, and local development patterns. Such site-specific considerations are necessary to arrive at a reasonable decision for each site and can avoid

the needless expenditures at a single site. We strongly support the inclusion of consideration for site-specific conditions in the final rule.

We do have concerns as to how the designations of beneficial use will be conducted. While we are convinced of the necessity for realistic site-specific determinations, we are also aware that this approach will require more effort at each site by the DEQ than the previous default to drinking water supply.

In particular, the situation in which a contaminated groundwater zone is not used or reasonably likely to be used for drinking water, but is hydraulically connected in some degree to a groundwater zone that is a drinking water supply, needs to be thoroughly analyzed. This situation is common at hazardous waste sites and can present an infinite number of variations. The simple, but unrealistic and unreasonable response in the past, has been to default to a drinking water scenario for even remotely connected zones of contamination. The response that is more cost-effective in the long-run is to recognize and deal with these complex conditions using analytical methods and models to demonstrate where real risk exists.

It is our understanding that the DEQ will develop guidance for the designation of beneficial uses of groundwater in 1997. We believe it is essential that this guidance strongly support the intention of the new law to recognize the actual, realistic groundwater use at each site and that sufficient agency resources be allocated for its implementation, with standardization of the tools to be used and criteria for their use.

Applicable or Relevant and Appropriate Requirements (ARARs)

CERCLA remediations are required to meet state environmental requirements that are more stringent than their federal counterparts. EPA has the responsibility to determine what state laws and regulations are ARARs, but the statute requires the agency to cooperate with the States in this determination.

Although the EPA has some discretion, in general in the case of carcinogens, cleanup under Superfund is not required if the cumulative risk does not exceed a lifetime excess cancer risk of 10^{-4} . (See "Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions," Memorandum by Don R. Clay, EPA Assistant Administrator, April 22, 1991; Office of Solid Waste and Emergency Response Directive 9355.0-30) By contrast, the proposed Oregon rules require action where individual carcinogens exceed a lifetime excess cancer risk of 10^{-6} .

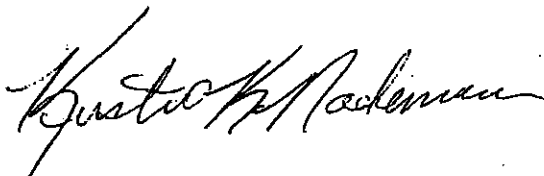
On the other hand, the new Oregon law explicitly provides more flexibility in selection of the remedy than CERCLA allows, stating that "where two or more remedial action alternatives are protective ... the least expensive remedial action shall be preferred," subject to the balancing factors identified, and making it clear that any method of response is acceptable, if it is protective. By contrast, the Superfund rules place emphasis on "alternatives that offer advantages in terms of long-term effectiveness and permanence,

and reduction of toxicity, mobility, or volume through treatment.” (55 FR 8725, March 8, 1990) Under Superfund, “An alternative that relies on the off-site transport and land disposal of untreated hazardous substances will be the least favored alternative where practicable treatment technologies are available ...” (55 FR 8725, March 8, 1990)

If the cleanup levels in the new Oregon law are determined to be ARARs because they are more stringent than the common Superfund cleanup levels, the remedy selection criteria in the new Oregon law must also be considered ARARs to avoid violating the clear intent of the new law to provide some relief in selecting actions that are both protective and reasonably costly.

Thank you in advance for considering our comments. Please provide a copy of the responsiveness summary when it becomes available. If you have any questions or comments, please feel free to contact me at (503) 666-0259.

Sincerely,



Kristin K. Nadermann
Environmental Manager

cc: Steve Shaw, Dick Starkweather, Steve Utzman - RMC Troutdale
Doug Macauley, Bob Lenney - RMC CEQ

November 14, 1996



Mr. Jeff Christensen
Oregon Department of Environmental Quality
Waste Management & Cleanup Division
811 S.W. 6th Avenue
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**Chevron Research and
Technology Company**
1003 West Cutting Boulevard
P.O. Box 4054
Richmond, CA 94804-0054

Toxicology & Health Risk Assessment

Dear Mr. Christensen:

Chevron Research and Technology Company is pleased to provide comments on the Oregon Department of Environmental Quality *Proposed Revisions to Division 122: Hazardous Substance Remedial Action Rules*. Overall we support the effort to institute a risk-based corrective action program and we find the proposed revisions to be very thorough and well developed. A great deal of effort has obviously been devoted to the development of a program which incorporates many technically sound and sophisticated risk assessment and risk management techniques. Attached we provide general comments on the overall approach described for the program, along with specific technical comments on issues raised in the proposed revisions.

Chevron appreciates the opportunity to assist the Oregon Department of Environmental Quality in the refinement of the program. If you have any questions about any of the comments, or if we can be of any further assistance, please feel free to call either myself at (510)242-7235 or Mr. Garrick Jauregui at (510)842-8699.

Sincerely,

A handwritten signature in cursive script that reads "Renae I. Magaw".

Renae I. Magaw
Senior Toxicologist

RECEIVED

NOV 15 1996

attachment

cc: P.W. Beatty, CRTIC
D.J. Gallagher, CRTIC
E.G. Jauregui, CPDS
J.W. Mitchell, CPDS
K.A. Synowiec, CRTIC
THRAfiles

Waste Management & Cleanup Division
Department of Environmental Quality

Attachment C

GENERAL COMMENTS
OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY
PROPOSED REVISIONS TO DIVISION 122:
HAZARDOUS SUBSTANCE REMEDIAL ACTION RULES

Overall, we support the Department of Environmental Quality's (DEQ) effort to institute a risk-based corrective action program for handling hazardous substances in Oregon. The proposed program allows for and encourages appropriate use of sophisticated risk assessment techniques and the best science available in making remediation decisions. Below we provide general comments on the approach described in the proposed program.

First, although we agree with the importance of evaluating the potential for adverse effects on ecological as well as human receptors in making remediation decisions, we question the value of requiring a full baseline ecological risk assessment in *every* site evaluation. A detailed ecological analysis does not appear to be a necessary, or even very useful, requirement for certain sites which by virtue of their individual characteristics (e.g., location, small size) do not provide significant habitat for ecological receptors.

For example, a typical urban service station site is unlikely to provide sufficient habitat to either attract or maintain a significant population of ecological receptors. Since the focus of the ecological risk assessment for the vast majority of such sites is to be at the population level, rather than on the individual, it is unlikely that these sites could realistically support a large enough proportion of any species' local population to actually pose a significant risk (as defined by DEQ). DEQ should recommend screening procedures for evaluating whether it is necessary to conduct a full baseline ecological risk assessment at individual sites.

Second, the proposed program currently provides for essentially two tiers of risk analysis. The first is a screening level analysis based on the Soil Cleanup Levels proposed in Table 1 and Appendix 1, and the second is a complete baseline risk assessment. The DEQ should consider adding a third tier intermediate between these two which may provide an efficient and cost-effective alternative for many sites. For those sites that do not meet the requirements for a Level 1 analysis or for which Level 1 cleanup criteria are not feasible, a workable alternative may be to allow responsible parties to incorporate site-specific variables into the same general models that DEQ used to generate Soil Cleanup Levels. In this way, site-specific target levels could be generated without the need for a full-scale, time-consuming, and often costly baseline risk assessment.

Lastly, in order for any program to respond to scientific advances over time, it must include provisions for incorporating new procedures and/or information as it becomes available. The proposed rules do not explicitly include such provisions and DEQ should address this issue in the final rules.

SPECIFIC COMMENTS
 OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY
 PROPOSED REVISIONS TO DIVISION 122:
 HAZARDOUS SUBSTANCE REMEDIAL ACTION RULES

Page	Line Number	Comment
4	30-32	<p>The proposed rules indicate that remedial actions shall be implemented to achieve (a) Acceptable risk levels as demonstrated by a residual risk assessment; (b) Numeric soil cleanup levels specified in OAR 340-122-045, if applicable; (c) Numeric cleanup standards developed as part of an approved generic remedy identified or developed by the department under OAR 340-122-047, if applicable; and so on. It is not clear whether the remedial action must achieve "a" and "b" and "c" or whether attainment of acceptable risk levels as demonstrated under "a" will be sufficient without meeting "b" and "c". This should be clarified.</p>
4	34-36	<p>The rules indicate that background levels may be used as the remediation endpoint in those cases in which background levels exceed risk-based levels. The definition of background is not provided. It is unclear whether <i>background</i> applies to "naturally occurring" levels, or whether it applies equally to ambient (or anthropogenic) levels present at a given site, but unrelated to site activities. It is also unclear whether consideration of background levels is equally appropriate for both inorganic and organic chemicals. It is most consistent to give equal consideration to background levels for all chemicals and to allow for consideration of both naturally occurring and ambient levels, as appropriate.</p> <p>These factors should be clarified in the final rule. In addition, guidance for how appropriate site-specific background levels are to be determined should be recommended.</p>
4	41-43	<p>The proposed rules indicate that "A removal or remedial action and related activities shall not result in greater</p>

SPECIFIC COMMENTS
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Page	Line Number	Comment
		<p>environmental degradation than that existing when the removal or remedial activity commenced, . . .” We agree that this is especially important from an ecological standpoint wherein the remedy may, in some cases, be worse than the problem. However, we should also acknowledge that “remedial action and related activities” also pose risks to human health, and in some cases, that there may be a net increase in human health risk as a result of remediation.</p> <p>The rules should provide the option of assessing risks to human health as well as risks to the environment in determining whether remediation may ultimately result in “. . . greater environmental degradation than that existing when the removal or remedial action commenced, . . .” In addition, guidance should be provided on how potential risks and environmental degradation should be assessed and how they are to be balanced against the potential benefits of the action.</p>
5	10 →	<p>Section 340-122-045 describes the use of Numerical Soil Cleanup Levels in remediation projects. Table 1 and Appendix 1 provide risk-based levels that can be used as cleanup targets for individual sites, assuming that the site meets a list of criteria. This is a useful addition to the program and it can be expected to streamline the risk assessment and risk management processes.</p> <p>However, we note that there is no indication in the text as to which site-specific measure of soil concentration is to be compared to the cleanup levels in the table and appendix. It is unclear whether the maximum site concentration is to be used or whether other statistical measures (such as the mean or the upper 95% confidence</p>

SPECIFIC COMMENTS
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 HAZARDOUS SUBSTANCE REMEDIAL ACTION RULES

Page	Line Number	Comment
		limit on the mean) are to be used. This should be clarified.
6	29-38	The text indicates that responsible parties can use Department-approved fate and transport models to demonstrate that residual soil concentrations will not result in unacceptable contaminant concentrations in groundwater. Several factors that are to be considered in these analyses are listed, however it is unclear whether biodegradation processes and rates are to be considered as well. These processes are important determinants of the ultimate contaminant concentrations in groundwater and they should be included in any fate and transport evaluation.
7	6-18	<p>The text indicates that if soil cleanup levels based on leaching to groundwater are not appropriate for an individual site, then the responsible party must meet Residential Maximum Allowable Soil Concentrations unless: (a) The facility is planned and zoned for industrial uses; (b) Institutional controls will be in force; and (c) <i>Uses of the facility and uses and zoning of properties within 100 meters of the site</i> are industrial or other uses where the Department concurs that exposure is limited.</p> <p>This section raises several questions. It is not clear what should be done for non-industrial sites that may be planned for commercial, recreational, permanent open space, or other uses where exposure would be limited. Residential Maximum Allowable Soil Concentrations are clearly not appropriate for these sites.</p> <p>The requirement that neighboring properties be zoned for non-residential uses does not appear to be warranted in all</p>

SPECIFIC COMMENTS
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Page	Line Number	Comment
		<p>cases. For example, this requirement is irrelevant from a risk perspective at sites at which it can be adequately demonstrated that site-related contaminants are either contained on site, or will not impact neighboring properties at levels that would be associated with significant risk. In these cases appropriate cleanup levels for the site should be based solely on the use of the site itself and not on the uses of neighboring properties.</p>
Table 1		<p>Soil Cleanup Levels for most of the chemicals listed in Table 1, including virtually all of the volatile organics, are based on the chemical's potential for leaching to groundwater. Table 1 will not be useful for sites at which leaching to groundwater is not part of a realistic exposure pathway. Table 1 would be much more useful and broadly applicable if cleanup levels based on the next most significant pathway were also provided, especially since this value may be one or more orders of magnitude greater than the leaching potential derived value. The table could also list the practical quantitation limit (PQL) for those chemicals for which risk-based levels are below the PQL.</p> <p>Soil Cleanup Levels for carcinogenic PAHs are based on the carcinogenic potency of one member of the class, benzo(a)pyrene. The assumption is made that all other carcinogenic PAHs are equally potent as benzo(a)pyrene. This assumption is not consistent with current guidance provided by U.S. EPA and many state agencies. U.S. EPA has adopted a relative potency scheme for carcinogenic PAHs (<i>Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons</i>, EPA/600/R-93/089, July 1993) which should be used to derive cleanup levels for PAHs other than</p>

SPECIFIC COMMENTS
OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY
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Page	Line Number	Comment
		benzo(a)pyrene. In addition, relative potency schemes either have already been or are being developed for PCBs and dioxin/furans, and these should be considered in developing cleanup levels for these chemicals, as appropriate.
Appendix 1		The Residential Maximum Allowable Soil Concentrations for arsenic and PAHs are below levels that either occur naturally or are typically found at urban sites across the country. This points out the importance for providing guidance for evaluating background levels in these rules.
20	29-35	<p>It is unclear why the U.S. EPA Exposure Factors Handbooks (<i>Exposure Factors Handbook</i>, EPA/600/8-89/043, March 1990; and <i>Exposure Factors Handbook</i>, EPA/600/P-95/002A, June 1995) are not listed. It would appear that at least the 1990 version should be cited, at least until the 1995 version has been issued in final form.</p> <p>The dates for items "A" and "C" are incorrect. The correct dates are 1989 and 1991 for "A" and "C", respectively.</p>
21	14-37	The requirement for a baseline ecological risk assessment does not appear warranted for all sites. Since the focus of most ecological risk assessments under these rules will be on population effects and the level of significance is set at "a 10% chance, or less, that no more than 20% of the total local population will be exposed to an exposure point value greater than the ecological benchmark value" suggests that there will be some sites which by virtue of their individual site characteristics (e.g., location, small size) will be unable to support a population size large

SPECIFIC COMMENTS
OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY
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		<p>enough to actually ever pose a significant risk to ecological receptors.</p> <p>A detailed ecological risk assessment is clearly not useful in these cases and guidance should be provided to allow responsible parties to determine if and when a full scale ecological risk assessment may be appropriate for an individual site.</p>
21	38-44	<p>The section indicates that residual risk assessments shall be conducted prior to selecting remedial alternatives and it implies that residual risk assessments should be done for every site. This requirement does not appear to be necessary for sites at which cleanup goals will be used that are associated with predetermined levels of risk. For example, it should not be necessary to conduct a separate residual risk evaluation for sites at which the Soil Cleanup Levels provided in Table 1 and Appendix 1 are used. These values are associated with predetermined risk levels and the residual risk posed by reliance on these cleanup levels should require no further analysis. Similarly, a site at which a baseline risk assessment is used to determine site-specific cleanup goals also should not require a separate residual risk evaluation.</p>



BP OIL

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November 13, 1996

Mr. Jeff Christensen
Oregon Department of Environmental Quality
811 SW Sixth Avenue
Portland, OR 97204

RECEIVED

NOV 15 1996

RE: Proposed Cleanup Rule Revisions

Waste Management & Cleanup Division
Department of Environmental Quality

Dear Mr. Christensen:

BP Exploration & Oil (BP) is pleased to provide comments to the Oregon Department of Environmental Quality (Department) on the proposed revisions to the Oregon cleanup rules, set forth in Rule 340-122-010 through 340-122-115, inclusive.

BP's cleanup activities in Oregon are essentially limited to the assessment and remediation of petroleum releases from underground storage tanks at retail gasoline outlets. BP endorses the concept of risk-based corrective action, and supports the initiatives undertaken in Oregon to apply the concept to petroleum releases. BP recognizes that the Department worked with USEPA to train regulatory personnel, consultants, and responsible parties to use the risk-based corrective action process consistent with the *Standard Guide for Risk-Based Corrective Action at Petroleum Release Sites* published by the American Society for Testing and Materials (ASTM, E 1739-95). The April 1996 UST Cleanup Manual Supplement Interim Guidance On Incorporating Risk-Based Corrective Action For Petroleum Releases Into a Corrective Action Plan (OAR 340-122-250) is one tangible result of these efforts, for which the Department should be commended. The guidance, at page 6, Section 2.5, referred to 1995 Oregon Legislature amendments to the state's hazardous substance cleanup law, stating that "the calculation of risk levels will be based on a risk protocol to be established in rule by January 1997." BP assumes, then, that the protocol referred to in the guidance is OAR 340-122-084 (Risk Assessment). As you know, the protocol was drafted in response to the Oregon Recycled Lands Act (HB 3352).

Comment 1: Integrating Numeric Soil Cleanup Levels with the Risk Protocol

BP recognizes that numeric soil cleanup levels can be appropriate for very simple sites, and that probabilistic risk assessments are often appropriate at very complex sites. BP believes that the rules could be improved for sites of intermediate complexity by publishing the exposure and toxicity data that the Department used to calculate the Numeric Soil Cleanup Levels, and provide for the modification of exposure factors based

upon the circumstances at a particular site. This could greatly simplify the conduct of a deterministic risk assessments at relatively simple sites.

The Numeric Soil Cleanup Levels should also be amendable based on updated sources of toxicity information listed under OAR 340-122-084(1)(c).

BP also recommends that numeric soil cleanup levels for compounds that do not possess peer-review toxicity data should be removed or modified because they cannot be used to perform a human health risk assessment (e.g. total petroleum hydrocarbons [TPH]). TPH, a generic term for a wide-range of compounds, is very commonly associated with industrial areas. It appears that the numeric soil cleanup standards for TPH in OAR 340-122-335 would remain applicable and there will be no technical basis to perform the risk assessments that HB 3352 was intended to allow. The common occurrence of TPH at commercial properties along with the lack of peer-reviewed toxicity data may preclude the use of risk assessment. The TPH numeric soil cleanup level does not balance the public's desire for protecting individuals with the need for cleanups to proceed at a reasonable cost, and should be waived.

Comment 2: Ecological Risk Assessments

Rule 340-122-084 establishes a risk protocol that includes complex and rigorous ecological risk assessment requirements for all risk assessments, without consideration of the site location and setting. OAR 340-122-084 (3)(a through f, inclusive) lists six elements that all ecological risk assessments are required by rule to address. These highly rigid and technical requirements may be appropriate at a minority of sites, however, the rules do not allow a flexible approach appropriate for highly urbanized areas where most sites undergoing cleanup are located. The ecological risk assessment requirements will serve as a significant financial disincentive to performing the realistic human health risk assessments that HB 3352 was intended to promote. This holds particularly true of small sites in urban and suburban locations.

In lieu of this rigid and regimented approach, BP suggests that ecological risk requirements described in the rule should be dropped, and replaced with the ecological receptors language in the statute. WSPA suggests that the Department develop ecological risk guidance, in consideration of the nascence state of ecological risk assessment science. To avoid unnecessary ecological risk assessments in urban and suburban areas, WSPA believes that the rule should allow the Department to exercise regulatory discretion and require ecological risk assessments only when warranted by the presence of populations of endangered species. In all other cases, the rule should not require an ecological risk assessment. This would preserve the flexibility necessary to

improve the ecological risk assessment process as new questions or process improvements are discovered.

BP strenuously objects to the concept of individual receptor protection for threatened or endangered fish and wildlife, in lieu of the protection of populations of threatened or endangered fish and wildlife. BP suggests that the definition of acceptable risk for individual receptor at ORS 340-122-110(5) specify that this term applies only to threatened or endangered fish and wildlife species.

Comment 3: Applicability to UST Sites

BP supports the goal of HB 3352 as it amends the existing environmental cleanup law in order to achieve cheaper and potentially faster cleanups of contaminated properties while protecting human health and the environment. The rules drafted in response to HB 3352, however, too opaque and complex to be readily understood by responsible parties, cleanup contractors, and regulators. BP believes that the risk protocol described under OAR 340-122-084 is so complex and burdensome that the legislative intent of HB 3352 will only rarely be realized in practice. BP also believes that the OAR 340-122-084 is too proscriptive and so inflexible that it will be difficult -- if not impossible -- to effectively reconcile the risk protocol with the risk-based guidance for underground storage tanks and ASTM E-1739-95. In order to reduce these potential inconsistencies, BP requests that the Department consider the following:

1. Include provisions for the modification of Numeric Soil Cleanup Levels based on the exposure factors appropriate for a site.
2. Allow for non-residential exposure factors for service station properties located nearby or adjacent to residential areas.
3. That the Department request assistance from USEPA's Office of Underground Storage Tanks to perform an overlay study of ASTM E-1739 and HB-3352 to develop applicable underground storage tank risk assessment guidance.

Comment 4: Hot Spots

BP recognizes that HB 3352 created a new category of contamination that the proposed rules have directed the Department to define. The proposed definition, however, does not appear to be consistent with the intent of HB 3352. The remedy selection process for non-hot-spots recognizes that remedies should be selected by balancing factors pertinent to the long-term and short term protectiveness, and to the technical and practical implementation of a remedial option. the remedy selection factors identified in OAR 340-

122-090(3), which include effectiveness, long-term reliability, implementability, implementation risk, and reasonableness of cost, are appropriate risk-based considerations in the selection of remedies in general -- not just for hot spots. The proposed rules lack sufficient criteria for distinguishing hot spots as a specific category of sites that merit a different remedy selection framework. The proposed definition of "hot spots" provides no basis to support a separate remedy selection framework. It defines a hot spot an area characterized by the presence of chemicals of high concentrations, with reasonable likelihood of migration, and are "not reliably containable" [OAR 340-122-115(35)]. However, the remedy selection process proposed in OAR 340-122-090 (3) already addresses each of these characteristics of a site. The "effectiveness" criterion requires consideration of how a remedial option would address the magnitude of risk from untreated chemicals (accounting for volume, toxicity, mobility and propensity to degrade) and the adequacy of engineering and institutional controls to achieve protection. The "long term reliability" criterion specifically requires consideration of whether a remedial option involving engineering or institutional controls would reliably manage risks from untreated chemicals remaining at a site.

The requirement for the treatment of hot spots (as defined by OAR 340-122-115 [35]) supplants to important remedy selection factors -- implementability and implementation risk. These factors are just as important as the "effectiveness" and "long-term reliability" factors in the evaluation of remedial options for hot spots. For example, the treatment of high concentration wastes may result in high implementation risk to workers and the surrounding community during implementation. By not allowing the consideration of implementability and implementation risk, treatment of hot spots may represent a remedial option that is less protective or practical than a non-treatment option.

BP also believes that the excess cancer risk of $10E-4$ for each individual carcinogen is an inappropriate and unduly restrictive criteria for the definition of "hot spot." BP notes that this definition is more restrictive than health risk goals established by other federal agencies. For example, OSHA is using an acceptable working lifetime risk of one in a thousand as a guide for determining permissible exposure levels for carcinogens¹. The Nuclear Regulatory Commission (NRC) has proposed higher acceptable lifetime risks than any other federal agency. NRC's acceptable lifetime risks (due to cancer mortality and serious heredity effects) are $4E-2$ for occupational exposure and $5E-3$ for general population exposure². BP suggests that the Department consider replacing the definitions 340-122-115(35)(A)(i)(ii)(iii) with "Areas of very high concentrations which may have a significant impact on direct contact exposures".

¹ OSHA (Occupational Safety and Health Administration), Occupational Exposure to Benzene. *Federal Register*. 50:50512-50586, 1985.

² NRC (Nuclear Regulatory Commission), Proposed Standards for Protection Against Radiation. *Federal Register* 51:1092-1216, 1986.

Comment 5: Definition of "background level"

The proposed definition of "background level" in OAR 340-122-115(8) could be interpreted to include only naturally occurring concentrations of substances at a site. This interpretation would be inappropriate since it would exclude from "background" those concentrations at a facility that were caused by releases from sources unrelated to the facility's operations. This would be counter to the goal of HB 3352 "to further enhance the cleanup of contaminated industrial sites and the recycling of these sites into new industrial, commercial or urban housing sites". This interpretation would also be inconsistent with the definition of background used in risk assessment³ and risk management⁴ of sites under other site remediation programs, such as Superfund and RCRA corrective action. Therefore, Oregon the Department should clarify the proposed definition to include concentrations of substances (naturally occurring or not) that are unrelated to the activities associated with a facility. For example,

"Background level" means the concentration of a hazardous substance at a facility and areas surrounding the facility that are unrelated to any past or current management, handling, treatment, storage or disposal of the hazardous substance at the facility.

Comment 6: Definition of "carcinogen"

The proposed definition is too broad. The Department should consider revising the definition to follow USEPA's weight-of-evidence classification scheme for human carcinogens⁵ and guidance on which classes of human carcinogens warrant quantitative cancer risk assessment⁶. Specifically, the proposed definition should be revised to define carcinogens as USEPA-designated "human carcinogens" (also called Group A) or "probable human carcinogens" (also called Group B). USEPA guidance recommends that quantitative cancer risk assessment generally not be conducted on "possible human

³USEPA's *Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual, Part A*. December 1989.

⁴USEPA OSWER Directive 9355.0-30 "Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions" April 22, 1991.

⁵USEPA's Guidelines for Carcinogen Risk Assessment. 51 FR 33992, September 24, 1986.

⁶See footnote 3.

carcinogens" (also called Group C) which have no evidence showing carcinogenicity in humans and only limited evidence in animals.

Comment 7: Definition of "plausible upper-bound exposure"

The proposed definition of "plausible upper-bound exposure" in OAR 340-122-084(1)(f) appears incorrect; the phrase "90th percentile upper confidence limit on the arithmetic means of the exposure data" has no meaning. In the context of establishing what constitutes a high-end exposure in a potentially exposed population, the phrase should be revised to "90th percentile of the potential exposures". This definition would be consistent with USEPA's definition of "high-end" exposures and would be consistent with the proposed definitions in OAR 340-122-115 of "acceptable risk level" for probabilistic risk assessments.

Comment 8: Definitions of "acceptable risk level"

The proposed definition of "acceptable risk level" for probabilistic risk assessments in OAR 340-122-115(2)(b), (3)(b), and (4)(b) appear reasonable, even though the proposed definitions specified that the distribution of risk for the potentially exposed population must meet two conditions (e.g., $HI < 1$ at the 90th percentile and $HI < 10$ at the 95th percentile), rather than one condition as typically required by USEPA and other regulatory agencies. Based on our consultant's experience in conducting probabilistic risk assessments, most distributions of risk (cancer or noncancer) based on the common exposure pathways would not have a 95th risk equal to or greater than 10 times the 90th percentile risk. Therefore, the proposed definitions of acceptable risk level will likely operate as a single condition at the 90th percentile (e.g., $HI < 1$ at the 90th percentile). The 90th percentile is at the low end of the range of percentiles that USEPA considers "high-end" (i.e., 90th to 99.9th percentile)⁷. BP requests that the Department limit the acceptable risk level to a $HI < 1$ at the 90th percentile to simplify the rule, as the additional requirements needlessly complicates the risk assessment process without affecting the certainty of decisions made at a site based on a risk assessment.

⁷USEPA's Guidelines for Exposure Assessment 57 FR 22888, May 29, 1992.

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November 13, 1996
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BP again appreciates the consideration of our comments. We would appreciate the opportunity to discuss our comments further in the event that they are not acceptable to the Department. We would also appreciate receiving a copy of the response to commentors as soon as it is available. Please give me a call if you have any comments, questions, or concerns regarding these comments. I can be reached at (206) 251-0689.

Sincerely,



Scott Hooton
Environmental Remediation Management



CH2MHILL

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825 NE Multnomah
Suite 1300
Portland, OR
97232-2146
Tel 503.235.5000
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November 15, 1996

Mr. Jeff Christensen
Oregon Department of Environmental Quality
Waste Management and Cleanup Division
811 SW 6th Avenue
Portland, OR 97204

Dear Mr. Christensen:

Subject: Comments on the Proposed Environmental Cleanup Rule Revisions and
Amendments

In this letter, I offer several comments and suggested changes to proposed revisions to OAR 340, Division 122. These comments are on behalf of CH2M HILL, and myself, as a licensed professional environmental engineer in the State of Oregon.

General Comments

I applaud the work of DEQ and the diligent groups and individuals who spent many hours drafting and assembling the proposed rule package. From a draft rule perspective, they are very complete and thorough. There is no question that future decisions that employ this process will be very well investigated, documented, and defensible.

However, I am very concerned that, as written, the "sum of the parts" may not equal an "integrated risk management" cleanup process for Oregon; which was the original intent of initiating these legislative reforms over two years ago. Rather, the layout and structure of the proposed rules looks like two unrelated programs; risk assessment and risk mitigation. As written, the first proposed "program" is purely nature and extent and risk assessment oriented. For instance, nowhere in the proposed Remedial Investigation (-080) or Risk Assessment (-084) sections is it mentioned or encouraged to conduct advanced technology screening or a feasibility analysis using the remedy selection preferences under section -090 to clearly identify cleanup methodologies that may or may not be implementable at a site, regardless of the risk assessment outcome. This is illustrated in the opening paragraph of -080(1): [emphasis added]

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"If, based upon the Preliminary Assessment, the results of a removal action, or other information, the Director determines that remedial action might be necessary to protect ..., the Director may perform or require to be performed a remedial investigation to develop information to determine the need for remedial action."

A RI/RA that determines the need for a remedial action sets the expectation with DEQ and the public that a remedial action will be performed, unless the FS demonstrates infeasibility. An unintended perception of this process structure is that it is not "managed risk," but rather "compromised risk." To truly achieve "managed risk" it is essential to integrate, or at least begin to define technical (in)feasibility of remedial actions in parallel with developing estimates of risk so that a responsible party's (and public) expectations can more realistically begin to be defined early, and throughout the process.

EPA has demonstrated through its CERCLA streamlining and performance improvement studies that by performing remedial technology evaluations earlier in the process, sometimes even before the RI, remedial investigations are much more focused on gathering sufficient environmental data to complete an appropriate risk characterization, but are also focused on gathering appropriate information on which to base a remedy (i.e., process streamlining). For example, would you, as a responsible party, conduct the same type of RI/RA for groundwater if an advanced feasibility analysis indicates that groundwater extraction is infeasible as opposed to conducting the general nature and extent program suggested in -080?

Based on discussions with several DEQ staff, I do understand and recognize that the proposed rules are intended provide the process framework, and does not preclude responsible parties from proposing alternative approaches. My recommendation, however, is that DEQ, in the response to comments, acknowledge its willingness to entertain process streamlining efforts to do as much as possible to simplify and focus the RI/RA elements towards feasible solutions, rather than waiting until the formal FS stage. It would be desirable, either through DEQ's commitment to appropriate administrative policy, guidance, or revision to these proposed rules, to explicitly recognize process flexibility and opportunity for streamlining measures to reassure the regulated community that these rules are in fact a step forward.

In summary, I encourage DEQ to reevaluate the layout and structure of the proposed rules and consider integrating the risk management elements of the remedy selection process, preferences, and balancing factors forward into the RI/RA sections so that the balancing and managing of environmental risk truly becomes integrated and occurs throughout the entire process.

Comments Regarding "Hot Spots" in Media Other Than Water [OAR 340-122-085(7) and -090(4)]

The implementing statute and proposed regulations require treatment of soil hot spots, subject to the balancing factors with a higher threshold for evaluating reasonableness of costs under proposed -090(4)(c). As was described during the October "Kick-off" session and as documented in the supporting materials to the September 17, 1996 rulemaking proposal, excavation and offsite disposal of hot spot residues does not constitute treatment. Though the statutory and regulatory interpretation that excavation and offsite disposal does not constitute treatment may well be valid in the context of the state cleanup program, DEQ has made an unnecessarily narrow interpretation relative to other statutes and regulatory programs administered by DEQ.

While it is well understood and accepted that a cleanup action should not merely "relocate" contamination to another location, DEQ ignores the fact in this proposal that it also has RCRA Subtitle C (hazardous waste) and Subtitle D (solid waste) waste management programs in effect. Any offsite disposal facility that could accept hot spot cleanup residues is bound by its permit with DEQ regarding the level of contamination it is legally permitted to accept with or without pretreatment. In essence, DEQ is using the proposed cleanup rules to supersede both its hazardous waste and solid waste regulations. DEQ should recognize that the proposed Division 122 regulations are onsite cleanup regulations, not offsite waste management regulations. There is already necessary and sufficient protectiveness built into Oregon's hazardous waste and solid waste regulations. This would also hold true for residues sent out of state to permitted waste management facilities.

It is recommended that DEQ revise -085(7) and -090(4) to specifically recognize that excavation and offsite disposal achieve the requirement for treatment either through a Department approved method under Division 122, or demonstrate that the offsite disposal action will be in compliance with the offsite receiving facility's operating permit with the Department or other state.

Comment on Rule 340-122-090(5)

OAR 340-122-090 of the proposed rules presents the requirements for selection or approval of the remedial action. We express concern that -090 may be interpreted by some not to allow sufficient flexibility for the Department to approve expedited cleanup of small volumes of hazardous substances, including small soil hot spots. OAR 340-122-090 may be interpreted to require a party responsible for undertaking the remedial action at a site with a small quantity of contamination to perform a risk assessment, feasibility study and remedy selection process, and then under -090(5) to demonstrate that any remedial action proposed also meets the full feasibility and remedy selection process requirements. Such a process would mean more costly and time consuming for a small volume of hazardous substance contamination than simply implementing a remedial action, such as excavation and offsite

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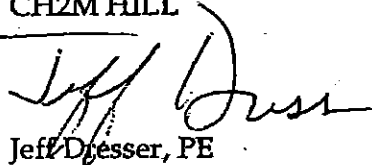
disposal, that would result in an immediate completion of the remedial action and reduction or elimination of the risk.

We support the suggested language for revision to -090(5) that has been submitted by AOI and Oregon Waste Systems.

Thank you for consideration of these comments.

Sincerely,

CH2M HILL

A handwritten signature in cursive script, appearing to read "Jeff Dresser", is written over a horizontal line.

Jeff Dresser, PE
Senior Environmental Manager

PDX/DOCUMENT2

November 15, 1996

Mr. Jeff Christensen
Oregon Department of Environmental Quality
811 SW Sixth Avenue
Portland, Oregon 97204

RE: Comments to Oregon DEQ Proposed Rules for Environmental Cleanups

Dear Mr. Christensen:

SECOR International Incorporated (SECOR) and Safety-Kleen Corp. (Safety-Kleen) would like to take this opportunity to provide the Oregon Department of Environmental Quality (DEQ) with comments on the proposed revisions to the Oregon cleanup rules. We appreciate DEQ's initiative in pursuing risk assessment procedures for the state of Oregon. The risk assessment process is one which encourages remedial efforts, is protective of human health and the environment, and does not act to unduly penalize industries which are intent upon cleaning up impacts within the state.

In general, the proposed risk assessment protocol described in OAR 340-122-084 is technically supported and follows standard-of-practice methods. The protocol should result in more appropriate management decisions that are protective of health and that will conserve limited resources.

Consideration of site-specific exposure conditions, including land and water use, is critical in effectively expending limited resources on cleanups of sites impacted by hazardous substances. Implementation of various engineering and institutional controls, discussed in OAR 340-122-084(4b), can also be effective means of reducing risks.

The following is a list of questions and specific comments which have been raised during SECOR's review of the proposed rules.

1. Will a guidance document describing the risk assessment protocol in more detail be released when the rule is finalized? Will the public be given a chance to comment on this guidance document?
2. It would be helpful if the acceptable risk levels were stated in OAR 340-122-040 and reiterated in -045, -084, and -115. As the proposed rules are currently presented, the reader needs to read three sections to determine the target risk levels that are being proposed.
3. What is the basis for acceptable risk levels for the human health and ecological assessments? (OAR 340-122-115)
4. What are the criteria for performing the site-specific risk assessment versus using the numerical cleanup standards? (OAR 340-122-045(6e))

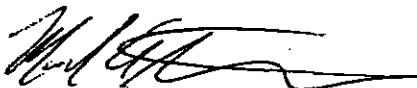
5. How should the requirements in OAR 340-122-047 (1-5) be addressed if a site-specific risk assessment is performed? (OAR 340-122-084)
6. Is it necessary to perform a site-specific baseline risk assessment before performing a residual risk assessment? (OAR 340-122-084)
7. The input assumptions used to develop the numerical cleanup standards should be included in Appendix 1. (OAR 340-122-045)
8. Will the criteria for selecting fate and transport models be published in a guidance document? (OAR 340-122-084(1d))
9. What are the sampling and data quality requirements? (OAR 340-122-084(2b))
10. There is no discussion of the underlying distribution of the data when calculating the upper confidence limit. Can the upper confidence limit be calculated based on a non-normal distribution? (OAR 340-122-084(1f) and -115(3-5))
11. What is the definition of a "significant adverse impact" as discussed in OAR 340-122-115(35a)?
12. What is the definition of "not reliably containable" as discussed in OAR 340-122-115(35b)?
13. The definition of a "hot spot" needs clarification. For example, the current definition does not address an exposure area; the hot spot could cover any sized area regardless of site-specific exposure conditions. How will single sample locations that are identified as a hot spot and are surrounded by sample locations that do not meet the hot spot criteria be addressed? What is the extent of remediation required surrounding this single location? Can statistical methods be employed to delineate areas that are hot spots? [OAR 340-122-080(7) & -115(35)]
14. The definition of hot spot for groundwater and surface water is unclear. What is the definition of significant adverse effect on groundwater and surface water? What endpoints are considered: human health, ecological, or aesthetic? Are the adverse effect related to chemical contamination at the site or other potential sources? OAR 340-122-080(7) 115(35)
15. Please clarify when applicable or relevant and appropriate requirements (ARARs) and other promulgated standards must be used? The use of ARARs may be, in some situations, overly restrictive for the specific exposure conditions. Is this only true for hot spots? What if the exposure pathway is not complete? Requiring the use of ARARs in place of a site-specific risk assessment essentially negates the usefulness of a risk assessment for groundwater or surface water exposures, except in the cases when no ARARs or other existing mandated standards. [OAR 340-122-040(3) & -080(6)]

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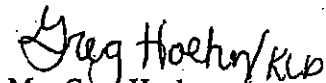
16. What are the criteria for assessing future releases and migration? OAR 340-122-040(4)

Other portions of the proposed rules look to be appropriate and designed to meet the goals set forth in House Bill 3352. SECOR and Safety-Kleen support the DEQ in this effort. If you have any questions regarding this letter, or would like to discuss any of these comments or questions in greater detail, you may contact us at (503) 691-2030 at your earliest convenience.

Sincerely,



Mark A. Trewartha, R.G.
Senior Hydrogeologist



Mr. Greg Hoehn
Principal Geologist

MAT/GH:kh

cc: Mr. Chip Prokop, Safety-Kleen Corp.



Oregon State Public Interest Research Group
1536 SE 11th Avenue, Portland, OR 97214 (503)231-4181 • fax (503)231-4007

Comments on Proposed Environmental Cleanup Rules

Randy Tucker, Environmental Advocate
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I. Overall Comments

OSPIRG played a key role in the development of the original Oregon Environmental Cleanup Law in 1987. When the bill that eventually became HB3352 was first introduced last year we were very concerned about some of its provisions, especially the way it elevated the cost of cleanup above other considerations. We got involved in negotiations over the law in order to ensure that what we consider the public's overriding interest in a clean and safe environment would be protected.

While we ultimately did not oppose the bill that emerged from these negotiations, it should be understood that HB3352's effect -- no matter what implementing rules are approved -- is to roll back previous cleanup requirements, and thus to reduce the supposed burden borne by responsible parties. The goal of the bill's sponsors was to lessen the costs to responsible parties, under the theory that to do so would return contaminated sites to productive use more quickly than before. The bill seeks to achieve these cost savings by (a) changing the target of remedial action from background levels of contamination to goals based on risk assessment; and (b) allowing contamination to be managed in place under certain circumstances rather than cleaned up.

HB3352 thus represents a retreat in certain ways from the principle that polluters need to take full responsibility for the problems they cause and the mess they leave behind. The effect of the revisions in the law will inevitably be that more pollution will remain in the environment. This will clearly place the public and the environment in greater danger than if contamination is treated. Leaving contamination in place is likely to affect property values and also has the potential to impose unforeseen cleanup costs on future generations. Whether the revised law will in fact also result in more remedial actions being completed more quickly, as suggested by the bill's sponsors, remains to be seen.

I served on the Central Advisory Committee (CAC) that developed the proposed rules currently under consideration. Participating on the CAC was a challenging and stimulating experience, and despite the obvious differences among committee members I felt that everyone entered into the process in a good-faith effort to reach consensus. OSPiRG's goal in the process was to ensure that rulemaking did not weaken cleanup targets beyond what the law itself had already done. By maintaining strong cleanup requirements, we also maintain a strong incentive for other users of toxic chemicals to avoid future contamination and thus cleanup liability.

Naturally, many compromises were made in the rulemaking process, and the ultimate effects of the committee's work will only be learned over time. However, notwithstanding our reservations about the law itself, we are hopeful that the committee has succeeded in developing a workable package that adequately protects public health and environmental quality while making some common-sense improvements which will streamline the process of returning sites to safe and productive use. Accordingly, despite the concerns described below, we support the adoption of the rules as proposed.

Because of the impossibility of developing explicit rules in certain areas, the extent to which the committee has in fact succeeded will be determined to a great extent by how the committee's often delicate compromises are translated into guidance and implemented at actual contaminated sites. This is especially true where the rules leave key details to site-specific determinations. Along with other members of the CAC, I expect to follow the implementation of the rules over time in order to see how they actually affect what happens on the ground. It will be critical that guidance be developed in such a way as not to subvert the intent of the advisory committee.

II. General Concerns

There is reason for significant skepticism about risk assessment and the way it is sometimes invoked -- as it is in HB3352 -- to make decisions in the public policy arena. Even professional risk assessors caution us against placing too much faith in risk assessment. We need to see risk assessment as a tool which doesn't necessarily answer all relevant questions related to risk and one which is susceptible to manipulation to achieve certain outcomes.

One of the main concerns about risk assessment is that it can tend to understate the level of uncertainty that exists about the actual risks and results of a given course of action. You perform a risk assessment and out comes a number, which theoretically quantifies the chance that people or ecological receptors will suffer adverse effects. The problem is that the information that goes into a risk assessment at the front end is often far from exact, which means that the risk number that comes out at the other end can be equally imprecise.

For example, very few of the more than 70,000 chemicals in commercial use in the United States have been adequately tested for toxicity. It is true that we can make some educated assumptions to plug into our calculations, but at the same time we need to acknowledge the uncertainties inherent in any resulting assessment of risk.

Many of the substances found on contaminated sites in Oregon can cause cancer, birth defects, reproductive abnormalities, brain and nervous system disorders, liver and kidney failure, and other health problems. Some of them also persist in the environment for long periods of time, accumulate in living tissue, and biomagnify as they go up the food chain. People and animals die or experience severe effects when they are exposed to these substances at certain levels, and emerging science is painting a picture of dire problems resulting from exposure to combinations of chemicals as well as from even very low exposures to so-called endocrine disrupting chemicals.

In light of these risks, it is entirely reasonable, when we do not know the effects of a certain exposure or where other uncertainties exist, to demand that the party responsible for the pollution eliminate the uncertainties or clean up the substance in question. In the absence of certainty, it is generally preferable to overestimate a risk and overprotect, where the costs are paid in money, than to fail to protect ourselves and the environment by underestimating risk, where the costs are paid in human suffering and ecological damage.

The policy question that arises from this situation is: "who should bear the burden of uncertainty?" In OSPIRG's view, public policy should strive to ensure to the greatest extent possible that the polluter, and not the public or the environment, be forced to bear this burden.

The question of uncertainty is the common thread that ties together many of the issues that will require vigilance in the implementation of HB3352. In some cases the rules include explicit language to address this concern. For example, they do allow the Department to require the development of site-specific toxicity information in the event that the data does not already exist. In other cases, such as the language on cumulative risk, the means of addressing uncertainty is not as clear.

III. Specific Areas of Concern

A. **Cumulative Risk:** An area where the issue of uncertainty clearly comes into play is the treatment of cumulative risk. In addition to the uncertainties related to the toxicity of individual contaminants, we really know very little about the effects of exposure to multiple toxic substances and how they interact. For example, a study released last spring shows that low doses of pesticides have estrogenic effects that are not additive, but multiplicative — they increase by orders of magnitude when receptors are exposed to them in combination. The surprise with which this finding was received illustrates how little we know about the synergistic effects of chemicals,

not to mention the huge number of potential individual contaminants for which we do not have adequate toxicity data.

The legislature set an acceptable risk level of one excess cancer risk per one million people exposed for individual carcinogens, but passed the question of cumulative risk along to the rulemaking process. However, sites with just one contaminant are in fact the exception rather than the norm. The real issue in cases of multiple contaminants thus becomes overall site risk rather than the separate risks of individual contaminants; after all, the risk from exposure to individual contaminants is meaningless when people or ecological receptors are actually exposed to multiple toxic substances. The question the committee had to answer was whether overall site risk should be allowed to be higher than the protective level for individual contaminants.

Given the uncertainties associated with the presence of multiple contaminants, OSPIRG sought to ensure that the rules addressed the issue of cumulative and synergistic risks in a manner that provides both protection from known risks and flexibility to address risks about which we may learn in the future. In our view, the presence of multiple contaminants does not justify increasing the risk level that we deem protective of human health or environmental quality. However, what the committee ended up with on this issue was a compromise that allows overall site risk to be an order of magnitude higher than the acceptable risk level for individual carcinogens, but which also allows the Department to demand that the risks resulting from exposure to multiple contaminants be assumed to be synergistic when such an assumption is warranted. As the rules are implemented, we need to pay close attention to this issue to ensure that risk assessments in fact thoroughly examine, and give sufficient weight to, the likelihood of cumulative risk and synergistic effects.

B. Reasonably Likely Future Land Use/Future Beneficial Use of Water: The issue of uncertainty also arises with respect to land use and beneficial uses of water. Oregon, of all places, understands the significance and the dynamic nature of land use, and the Portland metropolitan region in particular has witnessed dramatic changes in land use in recent years.

Within the context of a risk-based approach to environmental cleanup, it is sensible to consider "current and reasonably likely [or reasonably anticipated] future land uses [and future beneficial uses of groundwater and surface water]," as the law does, when calculating risk and selecting remedies. This will ideally enable us to put scarce resources to use where they will give us the most protection. However, the terms "reasonably likely" and "reasonably anticipated" leave much to be desired in terms of precision.

The challenge before us is to make sure that we resolve uncertainties regarding future land and water use in ways that leave options open rather than closing them off. After all, whatever land use or beneficial use of water is determined to be

"reasonably likely" will be used to establish risk levels, and thus the nature and extent of remedial action under the new law. "Reasonably likely" needs to be defined in terms of a time frame that is long enough to be meaningful. If we define it simply to mean the immediate next use to which a responsible party wants to put a site, and ignore anything beyond that, we run the risk of foreclosing our ability to put the site to a different and potentially higher use twenty, thirty, or forty years down the road, which is a blink of an eye in terms of any legitimate idea of sustainability.

Ultimately, it proved impossible to lock a firm definition of "reasonably likely" into the rules, but the range of possible land uses to be considered on a site-specific basis is fairly broad. It is critical that the guidance that is developed to help in making these determinations provide for consideration of land and water uses in such a way as to protect resources for future generations.

C Significant Adverse Effect on Beneficial Uses of Water: This terminology is used in defining hot spots of contamination (sites at which the preference is for treatment rather than for the least expensive remedy). Sites where contamination of water exceeds "applicable or relevant federal, state or local water quality standards, criteria, guidance or specifications" are defined as hot spots. For drinking water, such standards would often be the Maximum Contaminant Levels (MCLs) developed under the federal Safe Drinking Water Act.

MCLs are theoretically established based on the level of contamination which is considered safe from a health standpoint. However, at the time many MCLs were established, it was not possible to measure the presence of contaminants down to that concentration. In those cases, MCLs were set based on judgments about the lowest detectable concentration of contaminants ("practical quantification limit," or PQL) rather than on health, and the health-based concentration was designated an MCLG, or MCL goal.

Subsequently, however, it has become possible to quantify the presence of many contaminants at levels significantly below MCLs. DEQ staff presented the committee with information documenting numerous such cases. During our deliberations, I expressed concern that in cases where (a) the beneficial use of the water is for drinking water, (b) the health-based MCLG is lower than the MCL, and (c) it is now possible to quantify the presence of the contaminant at levels significantly below the MCL, to rely on MCLs to determine "significant adverse effect" is not sufficiently protective of public health and of water quality.

While this view is not embodied in the rules as proposed, the committee clearly intended to require treatment whenever feasible to restore drinking water that has been contaminated. Once again, appropriate guidance should ensure that this result is achieved.

D. Probabilistic Methods: Probabilistic risk assessment was included in HB3352 with the assumption that its use would tend to result in lower risk estimates and thus require less costly remedial actions. However, as the committee was informed, it does not always work out that way. It is entirely possible that using probabilistic risk assessment in a given case will result in higher risk estimates rather than lower. One of the biggest challenges the committee faced was understanding just what the results will be on actual sites when responsible parties begin to employ probabilistic techniques, and what the language in the rules really means in terms of how many people and ecological receptors will suffer adverse effects under the standards we have recommended. Reliance on probabilistic techniques to make cleanup decisions is unprecedented, and it will be critical that we closely monitor the results as we gain some experience with the use of these tools.

E. Bioaccumulation: Another issue that the committee attempted to address in the rules is contamination that persists in the environment, accumulates in fat or tissue, and magnifies as it goes up the food chain. Persistent bioaccumulative toxic contamination, by its nature, constitutes a greater threat to human health and ecological receptors than contamination that does not accumulate in animals or persist in the environment. In particular, in order to answer the question of what constitutes "significant adverse impacts to the health or viability" of ecological receptors, we must consider whether a given contaminant is persistent and bioaccumulative. All other things being equal, compounds that have these characteristics are more harmful than those that do not.

The rules we have drafted take a step toward addressing this issue by, among other things, requiring explicit discussion of these characteristics of each contaminant in human health and ecological risk assessments. Implementation should ensure that this results in cleanup efforts that adequately address the risks associated with these especially harmful substances.

F. Costs and Benefits: This is another area where uncertainty plays a major role. The law says that "the cost of a remedial action shall not be considered reasonable if the costs are disproportionate to the benefits created through risk reduction or risk management." It then goes on to state that "the least expensive remedial action shall be preferred unless the additional cost of a more expensive alternative is justified by proportionately greater benefits" in terms of the balancing factors.

It is difficult enough to determine how to ascribe costs to remedial alternatives, especially considering the time value of money. But the real problem is quantifying the "benefits" half of this equation. Who decides what value to place on the various health effects of exposure to contamination, or on the peace of mind that comes with freedom from the fear of these effects? What about the value of avoiding harm to ecological receptors?

We may be able to avoid some of these questions by merely resorting to the law's definition of protectiveness, but when various remedial alternatives exist, the

question of what costs are "disproportionate" to what benefits is another place where who gets the benefit of the doubt—the polluter or the public—could make a huge difference. It will be necessary to closely monitor the selection of remedies under the new law in order to ensure that the goal of reducing the costs of remediation is in fact weighed fairly against the other balancing factors rather than allowed to supersede all other factors.

F. Hot Spot "Trigger Level": Possibly the most contentious issue the committee dealt with was the definition of "high concentration" which determines when a contaminated site becomes a hot spot. Once we decided that "high concentration" could best be defined in terms of a specific risk level (for carcinogens) or hazard index (for non-carcinogens), the challenge was to determine what that so-called "trigger level" would be. OSPIRG argued that a site at which citizens are exposed to ten times the acceptable risk level of a given carcinogen should qualify as a hot spot, thus triggering a preference for treatment rather than for the least expensive remedy. Others on the committee felt that sites should not merit hot spot status until the risk level exceeded the protective level by 1000 times, or three orders of magnitude.

We ultimately settled on a trigger level of two orders of magnitude, or 100 times, greater than the protective level. The DEQ's Hot Spot Evaluation Report was instrumental in helping the committee to feel more comfortable that this compromise would neither lead to grossly excessive costs nor grossly undermine public health and environmental quality. While OSPIRG would prefer a more stringent standard, we are willing to support the committee's recommendation and monitor implementation to see how it works out.

IV. Conclusion

We urge the Environmental Quality Commission to adopt the proposed environmental cleanup rules. It is our hope that the Department of Environmental Quality will develop guidance that will lead to the implementation of HB3352 in such a way as to most effectively protect public health and environmental quality.

We appreciate having had the opportunity to serve on the Central Advisory Committee and to submit these comments. We look forward to working with the Department and other committee members to monitor the impact of HB3352 and these rules.



Lisa Kim
Attorney

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VIA INTERNET AND REGULAR MAIL

November 15, 1996

Oregon Department of Environmental Quality
Waste Management & Cleanup Division
Jeff Christensen
811 S. W. 6th Avenue
Portland, Oregon 97204

RECEIVED

NOV 18 1996

Waste Management & Cleanup Division
Department of Environmental Quality

RE: **Comments to Proposed Rules Implementing HB 3352**

Dear Mr. Christensen:

On behalf of Texaco Refining and Marketing Inc. ("Texaco"), I am pleased to submit comments to the proposed rules that have been drafted in order to implement Oregon's amended environmental cleanup law, HB 3352.

First, Texaco wishes to state that it concurs with those comments submitted by Del Fogelquist on behalf of the Western States Petroleum Association, of which Texaco is a member.

As a general comment, Texaco would like to express its concern that the proposed regulations do not meet the spirit and intent of HB 3352 to achieve more cost-effective and potentially faster cleanups of contaminated properties while at the same time protecting human health and the environment. As currently drafted, the proposed regulations are unnecessarily complex, confusing and overly burdensome in both form and substance.

In addition, Texaco has the following specific comments:

Preliminary Assessments

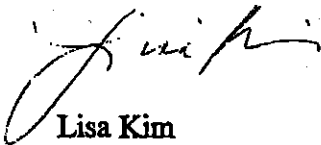
The Department is allowed to conduct a preliminary assessment without a determination that a release of a hazardous substance poses a significant threat to public health, safety, welfare or the environment. In the absence of such a determination, Texaco questions the need for devoting resources for a preliminary assessment. Moreover, once a determination has been made, there should be a preference for the owner or operator of the facility conducting the assessment if the owner or operator so requests.

Risk Assessments

Generally, the risk protocol for performance of human health and ecological risk assessments and the proposed regulations for probabilistic risk assessments which establish a minimum level of technical performance provide very little flexibility to account for site specific conditions. For many smaller or low risk sites, the benefits of conducting a risk assessment are difficult to ascertain as any benefits would likely be outweighed by the cost. In effect, the proposed rules would create a substantial disincentive counter to the goal of HB 3352.

Texaco appreciates the opportunity to provide these comments and the Department's consideration of the matter.

Very truly yours,



Lisa Kim
1101

(file: leg/or/mixed)

cc: A. J. Palagyi
N. Stanley

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MEMORANDUM

TO: Jeff Christensen
FROM: Gayle Killam
DATE: 14 November 1996
SUBJECT: Comments on DEQ's Cleanup Rules

The Oregon Environmental Council has not been involved in this rulemaking until this point because our program areas are limited in scope. We are concerned, however, that the protections afforded to Oregon's groundwater in the Groundwater Protection Act of 1989 may be in jeopardy by some of the language in this draft rule. As I understand it, the committee that has worked on the Cleanup Rules agreed early on that the changes made to Oregon's Cleanup Law during the 1995 legislative session were specifically crafted to maintain the protection of the state's groundwater resources. Therefore, we offer the following comments in the hope that such protections can be ensured.

General Concerns

• **Characterizing current and reasonably likely future beneficial uses**

The Groundwater Protection Rules focus on protecting groundwater resources against contamination, proactively, for existing and future beneficial uses. Decisions about current and reasonably likely future beneficial uses in the Cleanup Rules need to be restricted in their application to the remedial investigation. Otherwise, decisions based in this process could be used to allow discharges or not require action in neighboring areas that should still be protected against any levels of contamination.

The general policies of the Groundwater Protection Rules include the following:

Groundwater, once polluted, is difficult and sometimes impossible to clean up. Therefore, the EQC shall employ an anti-degradation policy to emphasize the prevention of groundwater pollution, and to control waste discharges to groundwater so that the highest possible water quality is maintained.

All groundwaters of the state shall be protected from pollution that could impair existing or potential beneficial uses for which the natural water quality of the groundwater is adequate.

Specific Concerns

- **"Reasonably likely to migrate..."**

It is not clear to us, with respect to groundwater movement and contribution to surface waters, how this will be decided. What professional expertise will make these judgements? Will it be based on time of travel? What amount of time of travel is protective of existing and future beneficial uses? Will the public be involved in these decisions?

- **"Treatment is reasonably likely to restore or protect such beneficial uses within a reasonable time"**

In the feasibility studies, what will be the "reasonable time" standard that is applied? Will it vary from facility to facility? We are concerned that basing the "hot spot" definition on this concept will present problems in protecting uncontaminated groundwater resources through the Groundwater Protection Rules. If the treatment is not deemed to lead to effective cleanup in this "reasonable" amount of time, is containment the answer? Will containment of the contamination be deemed to "restore or protect such beneficial uses within a reasonable time" in that area or neighboring areas? If the contamination is determined to be likely to migrate but the treatment is not "feasible," how can the responsible parties or the state protect neighboring and connected water resources according to the policies of the GPA? Will the feasibility study of treatment take into consideration the alternative cost of protective containment if treatment is not pursued?

- **"Sensitive Environment"**

The definition for sensitive environment should include designated wellhead protection areas and areas delineated around public water supply wells to be contributing to the groundwater resources.

- **"Significant Adverse Effects"**

In the definition of significant adverse effects, the rules should refer specifically to the Groundwater Protection Rules as guidance in neighboring areas - for protection and prevention. The language at 340-122-080 (6) identifies evaluation of waters to which the hazardous substance is reasonably likely to migrate. This section defends the importance of specifically referring to the Groundwater Protection Rules in the definition and should also refer to the numerical guidance in those rules as well.

Thank you for the opportunity to comment on these rules. We have a focused concern in this very broad set of rules based on groundwater protection. In so far as our concerns can be addressed in ways other than we have identified, regarding specific language changes, we would appreciate your consideration. If you have any questions, please do not hesitate to call.

Attachment D

**DEPARTMENT EVALUATION OF PUBLIC COMMENTS
PROPOSED REVISIONS TO
DIVISION 122 RULES:
HAZARDOUS SUBSTANCE REMEDIAL ACTION**

State of Oregon
Department of Environmental Quality

Memorandum

Date: December 20, 1996

To: Environmental Quality Commission

From: Dick Pedersen
Cleanup Policy and Program Development Section Manager

Subject: Response to Comments on Proposed Environmental Cleanup Rules

The Department of Environmental Quality (DEQ) received 2 oral and 19 written comments regarding the proposed revisions to the state's environmental cleanup rules. The following individuals and organizations provided comments:

Harry Moran
Kevin Rogers
William C. Cornitius
Intel
Weyerhaeuser
Portland General Electric
Wohlers Environmental Services, for Oregon Petroleum Marketers Association
Schwabe Williamson & Wyatt, for Pope & Talbot and the Port of St. Helens
Associated Oregon Industries
Port of Portland
Environ, for BP Oil and Chevron Products
State of Oregon Water Resources Department
Oregon Waste Systems
Reynolds Metals
Chevron
BP Oil
CH2M Hill
Secor
Oregon State Public Interest Research Group
Texaco
Oregon Environmental Council

This document provides a summary of the Department's response to comments. Five additional sets of written comments were received after the close of the public comment period, and thus are not included for consideration or as part of this response to comments.

RESPONSE TO COMMENTS

The following provides a brief summary, by pertinent rule section, of the Department's response to comments.

PURPOSE 340-122-010

No comments.

SCOPE AND APPLICABILITY 340-122-030

1) Comment: Portland General Electric recommends addition of an exemption indicating that polychlorinated biphenyl (PCB) releases that have been cleaned up following Toxic Substance Control Act (TSCA) rules should be exempt from the requirements of the environmental cleanup rules.

Response: The Department has not proposed substantive changes to the scope and applicability rule. This rule already includes a description of instances in which certain actions may be adequate for purposes of environmental cleanup to an extent which is protective of public health and the environment. For example, some spill response actions (which may include PCB spills) qualify as an adequate cleanup of contemporary releases of hazardous substances. Also, the Department is working on generic remedies for cleanup of PCBs consistent with the proposed rules (see -047). Upon approval of the Department, generic remedies will provide an additional recognized method for addressing PCB-contaminated sites. A broad exemption is not warranted in this rule.

STANDARDS 340-122-040

1) Comment: Chevron commented that it is not clear whether various standards must collectively be achieved or, alternatively, if a remedial action can be completed by achieving any of the four standards in -040(2).

Response: DEQ agrees. To clarify, the word "or" was inserted between each of the standards.

2) Comment: Chevron agrees with the language indicating a removal or remedial action should not result in greater environmental degradation than that existing when the removal or remedial action commenced, and suggests the language be extended to include human health impacts.

Response: This subsection of the rule was not substantively changed from the existing rule. The Department believes current rule language is appropriate to address short-term environmental degradation. See also -050(4). With respect to potential human health concerns, the Department believes existing language in -090(2)(d) concerning "Implementation Risk" is adequate and appropriate to address the concerns expressed.

NUMERIC SOIL CLEANUP STANDARDS 340-122-045

1) Comment: Several commentors (Environ, Chevron and BP Oil) describe the Numeric Soil Cleanup Levels as a useful addition to the state's environmental cleanup law. They suggest the need to clarify which site-specific measures of contaminated soil concentrations are to be applied to soil cleanup levels, a need to clarify whether or not biodegradation processes and rates may be considered in fate and transport models, and a need to add Practical Quantitation Limits, alternate exposure pathway cleanup levels, and allowance for evaluating naturally occurring and ubiquitous anthropogenic sources of certain contaminants including polycyclic aromatic hydrocarbons (PAHs) and arsenic. They recommend a process for modifying the cleanup levels so that they will address other land use scenarios such as commercial uses.

The commentors suggest the numeric soil cleanup levels be extended to intermediate complexity sites by publishing formulas and data used to derive numeric cleanup levels and allowing for modification of exposure factors based on particular circumstances at individual sites. The commentors indicate promulgated soil cleanup standards should be amendable based on toxicity information referenced in other sections of the proposed rules. Finally, the commentors advocate removal of total petroleum hydrocarbon (TPH) from the rules concerning numeric soil cleanup levels on the grounds that TPH (a generic term for petroleum hydrocarbons) lacks specific peer-reviewed toxicity data which in turn precludes the use of risk assessment based on TPH levels.

Response: The proposed rulemaking does not include significant substantive changes to -045, which was adopted in 1992 for the purpose of providing a simple cleanup process for qualifying sites. The Department believes some of the comments presented above are addressed in the existing rules and guidance for implementation of the soil cleanup levels. Other comments related to suggested changes to the Numeric Soil Cleanup rules may be evaluated at a later date when substantive changes to -045 are considered.

2) Comment: Intel suggested that the 100-meter setback in -045 for industrial use is arbitrary.

Response: The proposed rulemaking does not include significant substantive changes to -045. The 100 meter setback was adopted in 1992 to allow quick determinations if the standards within this rule could be applied.

GENERIC REMEDIES

340-122-047

1) Comment: Intel notes that, as drafted, it appears as if the public comment for generic remedies would be after the remedial action.

Response: DEQ agrees and, in the packet for EQC consideration, proposes to revise the rules to clarify that public comment opportunities will be provided before the Director selects or approves a remedy.

2) Comment: Intel states that including such terms as "concerns of . . . neighboring owners" is too vague.

Response: The Department included this language directly from the statute. DEQ believes public input, including neighboring property owners, often will be essential to the success of risk-based cleanups, including generic remedies, which must be based on current and reasonably likely future land use and current and reasonably likely future beneficial uses of water.

ACTIVITIES

340-122-050

No comments.

REMOVALS

340-122-070

See 340-122-090 comments and discussion.

SITE ASSESSMENT

340-122-072 through 340-122-079

1) Comment: Intel comments that they believe the language is unclear as to the purpose of the Preliminary Assessment. Intel notes that mere completion of a Preliminary Assessment does not necessarily mean that cleanup would be required. They propose explicitly indicating that the purpose of a Preliminary Assessment should be to determine if further investigation is needed. In addition, the commentor suggests that the Department create separate categories for sites in the initial investigation stage (typically a preliminary assessment indicating further investigation is needed) and those for which an investigation (typically a remedial investigation) has determined that corrective action is required.

Response: The proposed rulemaking does not include substantive changes to the Site Assessment rules, including site listing procedures. Consistent with the statute, the Department's

practice is to list sites on the "Confirmed Release List" when a release of hazardous substances has been documented, and on the "Inventory of Sites Requiring Further Action" when there is a threat to human health or the environment requiring further investigation (or remedial action). DEQ notes that, under the statute, "remedial action" includes investigations and that the statute is fairly specific about types of sites that should be included on the "Confirmed Release List" and "Inventory".

2) Comment: Intel expresses concern about information which might need to be collected to define "background conditions" and argues that determining "background" should not have to be a site specific determination. Intel also suggests that language in the rule is not clear on how "background" conditions are determined.

Response: The proposed rulemaking does not include substantive changes to the Site Assessment rules. The Department has developed guidance on how to determine "background". For purposes of site assessment-related work, "background" conditions typically are evaluated only to the extent it is possible that contaminants of concern result from naturally-occurring conditions (arsenic, for example, occurs naturally in the environment). As a practical matter, if existing documentation is adequately detailed, a site-specific determination need not be made.

3) Comment: Texaco recommends allowing responsible parties to perform preliminary assessments.

Response: The proposed rulemaking does not include substantive changes to the Site Assessment rules, including the preliminary assessment rule. DEQ notes the existing rules and DEQ practice provides responsible parties ample opportunities to perform any necessary investigation or remedial action work, including preliminary assessments.

REMEDIAL INVESTIGATION 340-122-080

1) Comment: The State of Oregon, Water Resource Department is concerned that use of the term "may" rather than "shall" for many of the requirements in the remedial investigation (and other sections) will lead to arguments rather than products.

Response: The Department has used the permissive "may" to indicate elements that may be eliminated and the term "shall" to indicate mandatory elements. DEQ's advisory committees have assisted the Department in identifying appropriate mandatory vs. discretionary components of the proposed rules.

2) Comment: Schwabe Williamson & Wyatt believes the Remedial Investigation contains too many compulsory elements.

Response: As indicated by the previous comment from WRD and the Department's response, DEQ has sought to strike an appropriate balance between discretionary and mandatory language.

In any event, under the statute, DEQ retains responsibility for selecting and approving remedies and typically will have considerable input on workplans and remedies selected or approved.

3) Comment: CH2M Hill believes that the whole of the rules, and the remedial investigation section in particular, mistakenly bifurcate “risk assessment” and “risk management”. They support rules which allow for and encourage the performance of remedial technology evaluations earlier in the process. Specifically, they suggest considering “feasibility” and “balancing” factors throughout the remediation process—at the initial investigation stage, as well as at the remedy evaluation stage.

Response: The rules do not preclude early evaluation of available remedial action alternatives, or combining of Remedial Investigation and Feasibility Study activities. In addition, DEQ notes the proposed rules [-085(3)] specifically allow for screening out remedial action alternatives before detailed evaluation is required, if appropriate. Finally, in some instances, the Department believes one must be cautious not to rule out viable alternatives prematurely.

LAND USE

4) Comment: Schwabe Williamson & Wyatt states that consideration of future land use should be based on readily-available information, should primarily consider local government sources of information and the plans of the facility owner, should not be extended to non-surrounding points linked to the facility only by the presence of hazardous substances or future potential migration of hazardous substances to the area, and should not require that the Department conduct a public opinion survey regarding current or reasonably likely land use in the locality of the facility.

Response: DEQ notes that the statute defines facility to include any area where facility-related hazardous substances come to be located [see ORS 465.200(6)]. In addition, HB 3352 explicitly requires the Director to consider a variety of sources of information and the concerns of neighboring owners and the community. Not every remedial action will require a survey, but some will. Finally, as suggested, the Department will consider local government planning jurisdiction information and the plans of the property owner of the site being addressed. However, as a practical matter, especially if potential cleanup activities assume something other than unrestricted, conservative land use exposure scenarios, the Director must consider relevant concerns of neighboring owners and the community.

BENEFICIAL USES OF WATER

5) Comment: Several commentors (Intel and Wohlers Environmental Services) indicate that considering “public concerns” is too broad and imprecise when determining beneficial uses of water or that the determination is, simply, too complex. For example, whether a person says they *might* drill a well (or *might* not) will not always be an accurate predictor of future water use.

Response: HB 3352 requires that beneficial uses of water are to be determined based on a reasonable assessment of “current and reasonably likely future” beneficial uses of water. Unless the responsible party wishes to rely upon conservative assumptions including use of the water as a source of drinking water supplies, this determination needs to be based on site-specific characteristics, and, as required by HB 3352, must include “consideration of concerns of the

facility owner, neighboring owners and the community". The Department intends to tailor the extent of inquiries to the complexity of the site and the extent of uncertainty about current and reasonably likely future beneficial uses of water. Where appropriate, the Department believes a broad inquiry as to how resources are being used currently or are likely to be used in the future will be necessary. Finally, as indicated by the preceding discussion, public comments to the effect that someone *might or might not* drill a well is only one piece of information considered by the Director, and is not necessarily conclusive.

6) Comment: Oregon Environmental Council recommends use of the Groundwater Protection Rules as the basis for determining reasonably likely beneficial uses.

Response: The rules adopted by the Environmental Quality Commission for groundwater protection expressly provide that remedial activities under the environmental cleanup law are *not* subject to the groundwater protection rules. See OAR 340-40-001. In addition, HB 3352 is explicit in stating that remediation of already contaminated water will be for the purpose of restoring and protecting current and reasonably likely future beneficial uses.

7) Comment: The State of Oregon, Water Resource Department (WRD) suggests that the rules should reference WRD management plans when conducting beneficial use inquiry.

Response: The Department believes that the currently proposed rule language typically would include consideration of WRD management plans when making beneficial water use determinations, but to clarify this point, the Department added a specific reference.

HOT SPOTS

8) Comment: Several commentors (Associated Oregon Industries, Reynolds Metals) suggest that the proposed language for determining a hot spot based on ecological risk is too stringent.

Response: DEQ agrees. For the rule package presented to the Environmental Quality Commission, the Department has proposed appropriate modifications to the ecological criteria for determining hot spots.

9) Comment: Several commentors (Associated Oregon Industries, Reynolds Metals, Weyerhaeuser) discuss provisions of the proposed rule OAR 340-122-080(6)(a), which represents the lead criteria to be used for determining if a "significant adverse effect on beneficial uses" exists. Specifically, the commentors object to: reference to "standards, criteria, guidance or specifications", some of which may be unpromulgated in nature, and to the inclusion of local standards, criteria, guidance or specifications. The commentors believe that the proposed language is "so broad as to potentially include any government assertion" of what should be an acceptable quality of water and indicate they believe criteria, guidance or specifications not enacted by rules lack regulatory "fair warning" ordinarily provided as part of a regulatory administrative proceeding. The commentors recommend limiting the operational definition to enacted federal and state water quality standards or criteria established by rule.

Response: Defining significant adverse effect on beneficial uses was one of the items most extensively discussed by the Central Advisory Committee and DEQ's technical advisory committees. Except as discussed below, DEQ believes the language proposed during the public comment period is appropriate, because water quality criteria (for example) have not always been enacted by rule. In addition, DEQ believes local governments have an important role in providing for public health, safety and welfare and, in general, that local governments have and will act responsibly in establishing water quality standards, criteria and guidance.

For the rule package presented to the EQC, DEQ proposes to eliminate reference to "specifications" because we agree this term is ambiguous and unnecessary for the purpose of defining impacts on beneficial uses of water. Therefore, as proposed, a potential "hot spot" for purposes of evaluating remedial action options with a requirement for treatment if feasible would be limited to federal, state or local water quality standards, criteria and guidance.

10) Comment: Schwabe Williamson & Wyatt objects to language which requires consideration of "reasonably likely future exceedances" of water quality standards or guidelines and requests clarification as to whether the intent is to require consideration of future exceedances of criteria or standards existing at the time of the remedial investigation, or if it means exceedances of criteria or standards which are reasonably likely to be applicable in the future.

Response: Defining significant adverse effect on beneficial uses was one of the items most extensively discussed by the Central Advisory Committee and DEQ's technical advisory committees. In general, the consideration to be given is for the potential for future exceedance of criteria or standards existing at the time of the remedial investigation, which might occur as a result of migration of the contaminants, for example.

11) Comment: Schwabe Williamson & Wyatt propose that peer-reviewed scientific information should not be used to determine significant impacts upon beneficial uses of water.

Response: Defining significant adverse effect on beneficial uses was extensively discussed by the Central Advisory Committee and technical advisory committees. As proposed, OAR 340-122-080(6) suggests reliance upon peer-reviewed information only where a) federal, state, and local standards, criteria and guidance are not applicable or relevant; and b) acceptable risk levels are not applicable. DEQ believes subsection (a) and (b) of this rule will most often be used to define significant adverse impacts upon beneficial uses of water, but some potentially significant impacts on beneficial uses would fail to be considered without subsection (c). For example, some beneficial uses of water--industrial process water, for example--can be impacted by certain types of contaminants including metals for which standards, criteria, guidance or risk exposure parameters are insufficient for identifying a potential significant impact.

12) Comment: Schwabe Williamson & Wyatt recommend that the rules not require a feasibility study in order to demonstrate that an area of contamination is not a hot spot of contamination.

Response: Defining significant adverse effect on beneficial uses was extensively discussed by the Central Advisory Committee and technical advisory committees. DEQ believes that whether

or not treatment of the hot spot is feasible is a site-specific determination best made based on the results of both the remedial investigation and feasibility study. As provided by the proposed rules, if restoration or protection of beneficial uses of water is not feasible within a reasonable time the contamination, by definition, is not a "hot spot".

RISK ASSESSMENT

340-122-084

1) Comment: Several commentors (Associated Oregon Industries, Port of Portland, Weyerhaeuser, Reynolds Metals Company, Environ, Chevron, BP Oil, Texaco) recommend inclusion of a screening or phased approach to completion to the risk assessment process, especially for ecological risk assessment.

Response: DEQ recommends incorporating a screening step for ecological and human health risk assessment process in response to these suggestions. See proposed -084(5) of the rules presented for EQC consideration.

2) Comment: The Port of Portland recommends inclusion of U.S. EPA Region X exposure factor information among the sources of information which may be included in risk assessments.

Response: The rules are not an exclusive list, but only a suggested list. Region X approaches can be used.

3) Comment: Chevron recommends inclusion of additional sources of exposure factor information, and corrects the date of other sources of information cited in the proposed rules.

Response: DEQ proposes to include one of the additional cited sources in the rule package for EQC consideration; we do not recommend inclusion of a 1995 document cited in the commentator's correspondence, which we understand was issued by U.S. EPA with a "not to be quoted or cited" limitation. DEQ also corrected dates for previously-cited publications. Also, the list of potential sources is not limited to documents cited and may be expanded to include information to the extent it is available and acceptable to the Department.

ECOLOGICAL RISK ASSESSMENTS

4) Comment: The Port of Portland indicates that it will be a burden to develop site-specific ecological toxicity information and recommends inclusion of non-site-specific sources of information including so-called structure-activity relationship data.

Response: Ecological risk assessments, as with human health assessments, must be site-specific, but there are multiple sources of information which may be used for some risk assessment information including toxicity data. To the extent the information is appropriately used, structure-activity relationship data may be used.

For additional discussion of ecological risk assessment-related issues, see 340-122-090 comments and response.

PROBABILISTIC RISK ASSESSMENTS

5) Comment: Weyerhaeuser recommends that probabilistic risk assessment should not be limited to "large" sites.

Response: The proposed rules do not limit the use of probabilistic risk assessment to large sites, but the rules do require that the probabilistic methods meet the criteria specified in the rules. The Department anticipates that probabilistic methods will most likely be used at larger sites largely as a result of business decisions by the responsible parties to do so.

RESIDUAL RISK ASSESSMENTS

6) Comment: Chevron requests clarification as to whether residual risk assessments are required for cleanups conducted under -045, the numerical cleanup standards.

Response: The proposed rulemaking does not include significant substantive changes to -045, which was adopted in 1992 for the purpose of providing a simple cleanup process for qualifying sites. Numeric soil cleanups present an optional means for cleanup of qualifying sites which is distinct from the traditional remedial action process. Numeric soil cleanups do not require a residual risk assessment; were such an assessment performed, it would indicate consistency with the revised environmental cleanup law.

FEASIBILITY STUDY

340-122-085

1) Comment: Schwabe Williamson & Wyatt suggest that the responsible party (RP) should not have to "propose" permit exemptions to DEQ.

Response: DEQ agrees and has modified the proposed rule language to be consistent with the exemption from certain procedural requirements provided by HB 3352. The RP must inform the local jurisdiction and DEQ. The statutory exemption is not triggered until DEQ determines that an activity is part of a removal or remedial action and that it occurs onsite.

2) Comment: Oregon Environmental Council asks for clarification as to what a "reasonable time" standard is for evaluating protection or restoration of beneficial uses of water contaminated by hazardous substances.

Response: "Reasonable time" will vary by site. Analysis of the extent to which beneficial uses will be restored or protected will need to be performed during the feasibility study and the Director, under the remedy selection provisions (-090), will approve or select remedial actions which restore or protect beneficial uses of water if feasible, subject to the balancing factors.

3) Comment: Several commentors (Associated Oregon Industries, Oregon Waste Systems) recommend inclusion of language clarifying that, for soil hot spots, the feasibility evaluation should evaluate the feasibility of treatment to a point where the conditions making the hazardous substance a hot spot would not longer occur at the site.

Response: DEQ agrees, and has incorporated this suggestion into -085(7)(a).

REMEDY SELECTION
340-122-090

1) Comment: Several commentors (Weyerhaeuser, CH2M-Hill, Oregon Waste Systems, and Associated Oregon Industries) recommend allowing off-site disposal without treatment of contamination for areas meeting the definition of a "hot spot", especially for smaller areas of contaminated soils.

Response: The original environmental cleanup statute enacted in 1987 distinguished between "treatment" and "excavation and offsite disposal", and the 1995 revisions require treatment of identified hot spots subject to the balancing factors. As a practical matter, it is possible to dispose hazardous substances off-site without treatment if the balancing factors favor removal. It is also possible to select the least costly remedy (which may include excavation and off-site disposal) for non-hot spot areas. DEQ retains authority under the removal provisions in -070 to require or allow excavation and off-site disposal as part of an interim response action necessary to address immediate threats to public health or the environment or to expedite completion of remedial action.

DEQ has recommended additional language in -070 of the rule proposal recommended to EQC to address the concerns expressed by commentors, and to clarify the Department's intent with respect to potential excavation and off-site disposal actions. DEQ does not intend to select or approve excavation and off-site disposal simply to avoid identification of hot spots and the requirements for treatment of the hot spot if feasible; at the same time, consistent with DEQ's removal authorities and the recommended new language, the Department may approve excavation and off-site disposal in instances where "such action would be consistent with and expedite completion of remedial action or would minimize the need for onsite engineering or institutional controls".

2) Comment: Schwabe Williamson & Wyatt recommend inclusion of the "reasonable time" element for restoring beneficial uses of water as part of the effectiveness evaluation in -090.

Response: Under the proposed rules, the remedy selection balancing factors (-090) include consideration of the extent to which hot spots of contamination are treated. In the case of beneficial uses of water, this evaluation necessarily includes consideration of the timeframe for restoration or protection. Also, the "reasonable time" element needs to be evaluated during the feasibility study (-085) and will vary by site.

3) Comment: William Cornitius recommends including removal of the source area as part of the remedy selection balancing factors.

Response: In general, source removal is addressed indirectly by the balancing factors and in other provisions of -090. The specific recommended balancing factors are consistent with HB 3352.

4) Comment: The State Water Resources Division recommends the addition of language which more clearly indicates that effectiveness of proposed institutional controls needs to be evaluated.

Response: Agree. The Department added appropriate language.

5) Comment: Environ suggests that the requirement in -090(4) to treat hot spots to the extent feasible conflicts with the remedy selection balancing factors in -090(3) which include consideration of implementation and implementation risk.

Response: DEQ disagrees and notes that these requirements are also found in HB 3352. As a practical matter, not all remedies will equally meet each of the balancing factors. In selecting or approving remedies, the Director will consider all of the balancing factors and other requirements of -090 and other provisions of the rules.

PUBLIC COMMENT

340-122-100

No comments.

DEFINITIONS

340-122-115

1) Comment: Several commentors (including Schwabe Williamson & Wyatt, Associated Oregon Industries, and Wohlers Environmental Services) indicated that the definitions are cumbersome and poorly placed or that they should be combined or moved into the text of the substantive requirements of the rule.

Response: The Department acknowledges that the definitions and the substantive provisions of the rule are complex and difficult. DEQ also notes that the definitions are integral to the rule itself and are the product of extensive DEQ and advisory committee review.

DEQ has reviewed the proposed definitions and, for the proposal presented to EQC, has provided several suggested amendments to address concerns of the commentors. These changes include efforts to simplify the definitions where possible, and deleting or incorporating directly into the other provisions of the rules terms such as: "generic remedy," "generic feasibility study," "generic risk assessment," "ecological responses," "toxicity endpoint," "toxicity index," "toxicity quotient," and "toxicological response." DEQ believes the definitions as proposed for EQC consideration represent an appropriate balance between the need for clarity in use of terms and simplicity in the construction of the substantive provisions of the rule.

ACCEPTABLE RISK LEVEL

2) Comment: Commentors (Associated Oregon Industries and Reynolds Metals) provided suggestions concerning acceptable risk for ecological receptors. For example, commentors contend that 100 percent confidence level to protect threatened and endangered species is an impossible standard; they suggest the definition of acceptable risk for populations of ecological receptors is overly stringent; and they recommend that NOAELs (No Observed Adverse Effect Level) should not be used to determine the point before significant adverse ecological impacts.

Response: The Department has reviewed these comments, and proposes appropriate amendments to the rules presented for EQC consideration as follows: 1) for threatened and endangered species, DEQ proposes protection of individual ecological receptors to the 90th percent confidence level, rather than 100th percentile; 2) for the health and viability of populations of ecological receptors, DEQ proposes a less stringent but still protective standard; and 3) NOAELs have been supplemented by reference to specific median lethal doses in a manner which the Department believes is consistent with the commentor recommendations and consistent with the spirit of the advisory committee deliberations.

3) Comment: BP Oil suggests that the definition for acceptable risk for ecological receptors, when determined using probabilistic risk assessment approaches, could be simplified by eliminating the reference to an acceptable risk associated with 95% confidence level (e.g., the definition could more simply reference the 90% confidence level).

Response: Acceptable risk levels and probabilistic risk assessment issues were discussed extensively by DEQ's advisory committees. In general, BP Oil is correct in asserting that most probabilistic risk assessments meeting the acceptable risk level at the 90% confidence level will also meet the acceptable risk level at the 95% confidence level. The 95% confidence level was added specifically to ensure against inadequate data sets and probabilistic risk assessments based on insufficient data.

BACKGROUND

4) Comment: Chevron states that a definition of "background" should be provided.

Response: The term "background" was previously defined in the environmental cleanup rules, and is not proposed to be revised.

5) Comment: Several commentors (Environ, Chevron, BP Oil) suggest that "background" should include ubiquitous, anthropogenic sources of contaminants.

Response: The definition of "background" is not proposed for revisions during the current rule-making.

CARCINOGEN

6) Comment: BP Oil recommends redefining carcinogen to incorporate the U.S. Environmental Protection Agency's classification system and guidance for determination of human carcinogens. The commentor suggests defining carcinogens to include Group A "human carcinogens" and Group B "probable human carcinogens".

Response: The definition of carcinogen was not a subject for the current rulemaking. Any future consideration of this proposal, among other issues, would need to analyze the possibility that EPA might amend the current classification system.

ECOLOGICAL RECEPTOR

7) Comment: Commentors (Associated Oregon Industries, Reynolds Metals) recommend that the definition of ecological receptors should exclude "cultivated plants" and "undesirable, non-native" species.

Response: DEQ agrees as to cultivated plants and has incorporated appropriate revisions into the rule presented to EQC. DEQ disagrees with excluding "undesirable, non-native" species because, among other potential problems, we believe such a limitation would be inconsistent with the statute. A large number of species now found in the state are "non-native" and DEQ would not have the administrative ability to decide which species are "undesirable".

HOT SPOTS

8) Comment: Commentors (Associated Oregon Industries, Reynolds Metals) describe the criteria for defining a hot spot based on ecological risk as too conservative.

Response: DEQ agrees with the commentors, and has revised the hot spot definition for ecological receptors in a manner consistent with the commentor's suggestions.

LOCALITY OF FACILITY

9) Comment: Schwabe Williamson & Wyatt indicate that the definitions of "locality of the facility" and "ecological receptor" are over-inclusive and circular.

Agency Response: For the rules recommended for EQC adoption, the Department has revised the definition of ecological receptor to eliminate the circularity of definitions. However, investigation and cleanup geographic areas will vary by site, and need to take into consideration the areas where hazardous substances have come to be deposited and the areas to which hazardous substances reasonably could come to be located.

LOCAL POPULATION

10) Comment: Commentors (Associated Oregon Industries and Reynolds Metal) commented on the definition of the term "local population" is defined too narrowly. For example, for migratory species, that the definition should reference the total population, if only a portion of the population uses habitat in the locality of the facility.

Response: The Department believes the local population is defined correctly. DEQ believes the proposed language would likely lead to suggestions that a significant problem doesn't exist for species of considerable size and migratory habits, such as geese and ducks, even if all the individuals contacting facility-related hazardous substances were significantly impacted.

GENERAL COMMENTS

1) Comment: Several commentors (Associated Oregon Industries, Wohlers Environmental Services, and Schwabe Williamson & Wyatt) objected to the complexity of the proposed rules. Commentors also recommended the use of summaries and guidance to assist the regulated community in implementing the new rules.

Response: DEQ agrees the rules are complex. HB 3352 increased the complexity of the state's environmental cleanup program by requiring risk assessment methodology revisions, consideration of current and reasonably likely future land and water uses in risk assessment and remedy selection, incorporation of the treatment requirement for hot spots, and other provisions. Since public comment, DEQ has clarified some definitions, has eliminated redundant passages, and has moved some elements to achieve a more logical flow within the rules. DEQ has, and will continue to provide training with respect to the new cleanup rules, and DEQ has and will continue to produce summaries and guidance for easier use. DEQ will use a number of methods to make the rules accessible and usable.

2) Comment: Oregon State Public Interest Research Group (OSPIRG) expresses support for the rule as proposed, based in large part upon the advisory committee process. OSPIRG's correspondence describes some of the Central Advisory Committee discussions and decisions. OSPIRG expresses concern about the need for the Department to develop guidance and properly implement the rules as developed by the Central Advisory Committee.

Response: Guidance developed will be consistent with the EQC-enacted rule proposal. DEQ believes that the rules presented to EQC following public comment are generally quite consistent with the CAC-developed recommendations.

3) Comment: Several commentors (Cornitius, Moran and Rogers) addressed the need for the Department to work closely with the general public or others affected by a release of hazardous substances, including the owner of a property if an operator has contributed to a release.

Response: DEQ agrees.

MISCELLANEOUS COMMENTS ON RULES

1) Comment: Several commentors (including Wohlers Environmental Services, BP Oil, Chevron) indicate that the proposed rules should not apply at Underground Storage Tank (UST) cleanups nor complicate Risk Based Corrective Actions (RBCA).

Response: UST cleanups are conducted under dual statutory authority (ORS 465.200 and ORS 466.706). The UST "Matrix" rules were specifically preserved under HB 3352, but HB 3352 did not address RBCA. The Department intends to have multiple risk-based tools to address cleanups. The proposed rules do not modify the Underground Storage Tank Cleanup Rules (OAR 340-122-205 through 340-122-360). However, DEQ anticipates the need to amend the existing tank rules (among other purposes to formally incorporate RBCA into the underground storage tank cleanup program) and will consider these comments during rule development.

2) Comment: Reynolds Metals discusses the relationship of the proposed environmental cleanup laws to cleanups that might need to be conducted under CERCLA, the federal Comprehensive Emergency Response Compensation and Liability Act, noting that CERCLA cleanups generally must meet state requirements that are more stringent than their federal counterparts. In the event cleanup levels are determined to be "ARARs", the commentator specifically recommends inclusion of the proposed remedy selection balancing factors.

Response: DEQ intends to work with responsible parties and EPA to ensure that state law and adopted rules are evaluated as applicable and relevant requirements when conducting environmental cleanup work under CERCLA.

3) Comment: Associated Oregon Industries requested reconsideration of several letters submitted to DEQ and the Central Advisory Committee during the advisory committee process.

Response: These comments were previously considered and reflect comments on early drafts of the proposed rules. In addition to not submitting the letters during the public comment period, the commentator did not identify the rules where the previous comments might be pertinent. The early drafts of the rules were modified over time, in part based upon comments and letters previously submitted by Associated Oregon Industries and other interested parties. These earlier comments and letters were considered by DEQ's advisory committees before public notice of the proposed rules.

4) Comment: Several commentators (SECOR, OSPIRG and others) discussed the need for future guidance to provide for implementation of the rules once adopted and suggest a number of areas where guidance might be useful

Response: DEQ agrees and recognizes that effective implementation of the rules will require ongoing training and development of guidance. The guidance topics and questions suggested by these and other commentators are helpful to the Department in documenting needed work.

ATTACHMENT E

**REDLINE VERSION
PROPOSED REVISIONS TO
DIVISION 122 RULES:
HAZARDOUS SUBSTANCE REMEDIAL ACTION**

**SHOWS CHANGES FROM SEPTEMBER 17, 1996
PUBLIC COMMENT "CLEAN VERSION"**

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1
2
3 **PROPOSED REVISIONS TO**
4 **DIVISION 122:**
5 **HAZARDOUS SUBSTANCE REMEDIAL ACTION RULES**

6 **Purpose**

7 **340-122-010** (1) These rules establish the standards and procedures to be used under ORS
8 465.200 through 465.455 and 465.900 for the determination of removal and remedial action
9 necessary to assure protection of the present and future public health, safety and welfare, and the
10 environment in the event of a release or threat of a release of a hazardous substance.

11 (2) These rules also establish the standards and procedures to be used under ORS 465.200
12 to 465.455 and 465.900 and ORS 466.706 to 466.835 and 466.895 for the determination of
13 remedial action or corrective action of releases of petroleum from underground storage tanks
14 necessary to assure protection of the present and future public health, safety and welfare, and the
15 environment in the event of a release or threat of a release of petroleum.

16 (3) These rules further establish the procedures for implementation of a site discovery
17 program for hazardous substance releases pursuant to ORS 465.215 through 465.245 and
18 465.405, including a process for evaluation and preliminary assessment of releases of hazardous
19 substances, and a process for developing and maintaining a statewide list of confirmed releases
20 and an inventory of sites requiring investigation, removal, remedial action, or related long-term
21 engineering or institutional controls.

22
23 Stat. Auth.: ORS 465.400(1), 465.405, Ch. 466 & 468.020

24 Hist.: DEQ 26-1988, f. & cert. ef. 9-16-89; DEQ 29-1988, f. & cert. ef. 11-9-89; DEQ 29-1990, f. &
25 cert. ef. 7-13-90

26
27
28 **Scope and Applicability**

29 **340-122-030** These rules apply to the release or threat of release of hazardous substances
30 into the environment, except as provided below:

31 (1) Exempted Releases. These rules shall not apply to releases exempted pursuant to ORS
32 465.200(21)(a), (b), (c), and (d).

33 (2) Conditional Exemption of Permitted Releases. These rules do not apply to permitted or
34 authorized releases of hazardous substances, unless the Director determines that application of these
35 rules might be necessary in order to protect public health, safety or welfare, or the environment.
36 These rules may be applied to the deposition, accumulation, or migration resulting from otherwise
37 permitted or authorized releases.

38 (3) Relationship to Other Cleanup Actions:

39 (a) Except as provided under subsection (3)(b) of this rule, these rules do not apply to
40 releases where one of the following actions has been completed:

41 (A) Spill response pursuant to ORS 466.605 to 466.680;

42 (B) Oil spill cleanup on surface waters pursuant to ORS 468B.300 to 468B.500;

43 (C) Corrective action of a release of a hazardous waste pursuant to ORS 466.005 to
44 466.357;

45 (D) Cleanup pursuant to ORS 468B.005 to 468B.095.

1 (b) Where hazardous substances remain after completion of one of the actions referred to in
2 subsection (3)(a), these rules apply if the Director determines that a preliminary assessment or
3 additional investigation or remediation may be necessary to protect public health, safety, or welfare,
4 or the environment.

5 (4) Corrective Action for Petroleum Releases from Underground Storage Tanks. OAR
6 340-122-205 to 340-122-360 shall apply to corrective action for releases of petroleum from
7 underground storage tanks that are subject to ORS 466.706 to 466.835 and 466.895, except as
8 provided under OAR 340-122-215(2), authorizing the Director to order the remedial action or
9 corrective action under OAR 340-122-010 to 340-122-110.

10 (5) Nothing in these rules regarding listing on the Confirmed Release List or the
11 Inventory, OAR 340-122-073 through 340-122-079, shall be construed to be a prerequisite to or
12 otherwise affect the liability of any person or the authority of the Director to undertake, order, or
13 authorize a removal, remedial action, or other activities under ORS Chapter 465 or other
14 applicable law.

15 (6) Any determination of current or reasonably likely future land uses or beneficial uses of
16 water pursuant to these rules shall apply only for the purpose of selecting or approving removal or
17 remedial actions under these rules.

18
19
20 Stat. Auth.: ORS 465.400(1), 465.405, Ch. 466 & 468.020

21 Hist.: DEQ 26-1988, f. & cert. ef. 9-16-89; DEQ 29-1988, f. & cert. ef. 11-9-88; DEQ 15-1989, f. &
22 cert. ef. 7-28-89 (and corrected 8-3-89); DEQ 29-1990, f. & cert. ef. 7-13-90; DEQ 12-1992, f. & cert.
23 ef. 6-9-92

24
25 **Standards**

26 **340-122-040** (1) Any removal or remedial action shall address a release or threat of release
27 of hazardous substances in a manner that assures protection of present and future public health,
28 safety, and welfare, and the environment.

29 (2) In the event of a release of a hazardous substance, remedial actions shall be
30 implemented to achieve:

31 (a) Acceptable risk levels defined in OAR 340-122-115, as demonstrated by a residual risk
32 assessment; or

33 (b) Numeric soil cleanup levels specified in OAR 340-122-045, if applicable; or

34 (c) Numeric cleanup standards developed as part of an approved generic remedy identified
35 or developed by the Department under OAR 340-122-047, if applicable; or

36 (d) For areas where hazardous substances occur naturally, the background level of the
37 hazardous substances, if higher than those levels specified in subsections (2)(a) through (2)(c) of
38 this rule.

39
40 (3) In the event of a release of hazardous substances to groundwater or surface water
41 constituting a hot spot of contamination, treatment shall be required in accordance with OAR 340-
42 122-085(5) and OAR 340-122-090.

43 (4) A removal or remedial action shall prevent or minimize future releases and migration of
44 hazardous substances in the environment. A removal or remedial action and related activities shall
45 not result in greater environmental degradation than that existing when the removal or remedial

1 action commenced, unless short-term degradation is approved by the Director under OAR
2 340-122-050(4).

3 (5) A removal or remedial action shall provide long-term care or management, as necessary
4 and appropriate, including but not limited to monitoring, operation, maintenance, and periodic
5 review.

6
7 Stat. Auth.: ORS 465.400(1), Ch. 466 & 468.020

8 Hist.: DEQ 26-1988, f. & cert. ef. 9-16-89; DEQ 12-1992, f. & cert. ef. 6-9-92

9
10 **Numerical Soil Cleanup Levels**

11 **340-122-045** This rule provides cleanup levels for hazardous substances in soil only.
12 Remedial actions under this rule are subject to the public participation requirements provided under
13 ORS 465.320 and OAR 340-122-100. A remedial action may be proposed under this rule if the
14 criteria of sections (1) through (5) of this rule would be satisfied.

15 (1) The characterization of the hazardous substances and the facility has been conducted in
16 a manner acceptable to the Department.

17 (2) The characterization has determined:

18 (a) The number and the nature of the contaminants of concern;

19 (b) The contaminants of concern exist in soil only;

20 (c) All contaminants of concern are listed on the soil cleanup table;

21 (d) The source(s) of the contaminants of concern;

22 (e) The vertical and horizontal extent of the contaminants of concern; and

23 (f) The depth to groundwater.

24 (3) The responsible party can demonstrate to the Department that upon completion of the
25 remedial action the total excess cancer risk will not exceed 1×10^{-5} , and the hazard index for
26 non-carcinogens with similar critical endpoints will not exceed one:

27 (a) Risks are presumed to be additive for carcinogens and for non-carcinogens with similar
28 critical endpoints. The cleanup levels in Table 1 and Appendix 1 must be prorated downward when
29 the substances have similar critical endpoints to keep the total site risk below the prescribed levels;

30 (b) In determining whether a site with multiple contaminants of concern will be accepted
31 for remedial action under this rule the Department will consider the following:

32 (A) Detected concentrations;

33 (B) Toxicity and critical endpoints;

34 (C) Frequency of detection;

35 (D) Mobility;

36 (E) Persistence;

37 (F) Bioaccumulation potential; and

38 (G) Degradation products.

39 (4) No contaminants of concern at the facility will adversely affect surface water based
40 upon consideration of:

41 (a) Distance to the surface water;

42 (b) Containment of the contaminants of concern;

43 (c) Surface soil permeability;

44 (d) Maximum two-year, 24-hour precipitation event;

45 (e) Proximity of flood plain(s);

- 1 (f) Terrain slope;
- 2 (g) Vegetative cover; and
- 3 (h) Hydrological connections between groundwater and surface water.
- 4 (5) No contaminants of concern at the facility will adversely affect sensitive environments

5 based upon consideration of:

- 6 (a) Distance to the sensitive environment;
- 7 (b) Surface soil permeability and erodibility;
- 8 (c) Vegetative cover; and
- 9 (d) Transport media.

10 (6) If all the criteria in sections (1), (2), (3), (4) and (5) of this rule are met, the responsible
11 party may propose a remedial action which uses Table 1 and Appendix 1 to determine the
12 appropriate cleanup levels. All remedial actions under this rule must meet the appropriate Soil
13 Cleanup Level for volatiles, semi-volatiles or pesticides or the appropriate Leachate Concentration
14 for inorganics as contained in Table 1 unless the responsible party can demonstrate by one of the
15 following methods that groundwater will not be adversely affected or that the cleanup level is
16 below background or the practical quantitation level (PQL) and a higher residual concentration than
17 the appropriate level in Table 1:

18 (a) The responsible party can demonstrate with a sampling methodology acceptable to the
19 Department that the leachate concentrations from representative site samples contaminated with
20 volatiles, semi-volatiles, or pesticides do not exceed the Leachate Reference Concentrations in
21 Appendix 1. (For inorganic compounds, the responsible party must always conduct a leaching test,
22 and the resultant leachate must not exceed the Leachate Concentration in Table 1.) The responsible
23 party may perform the Synthetic Precipitation Leaching Procedure (SPLP; EPA Method 1312), the
24 Toxicity Characteristic Leaching Procedure (TCLP; EPA Method 1311) or other Department
25 approved procedures to estimate potential leaching of contamination at the site. In no case may the
26 residual contamination exceed the Maximum Allowable Soil Concentrations in Appendix 1 as
27 specified in section (7) of this rule;

28 (b) The responsible party can demonstrate with a Department-approved fate and transport
29 model and with default and/or site-specific data approved by the Department that residual soil
30 concentrations will not result in contaminant concentrations in the groundwater which exceed the
31 Groundwater Reference Concentrations listed in Appendix 1. This demonstration must consider
32 factors such as type/nature of contaminants; source quantity; quantity of contaminated soils; clay
33 content; soil pH; redox potential; chemical and physical properties of the contaminants including
34 toxicity and mobility; net precipitation; subsurface hydraulic conductivity; vertical depth to
35 groundwater; degradation products; and naturally-occurring background levels. In no case may the
36 residual contamination exceed the Maximum Allowable Soil Concentrations in Appendix 1 as
37 specified in section (7) of this rule; or

38 (c) The responsible party can demonstrate that the soil cleanup level for the contaminant of
39 concern is at or below the background level for compounds that occur naturally. The responsible
40 party may in a manner acceptable to the Department determine the representative background
41 concentration and clean up to that level; or

42 (d) The responsible party can demonstrate that the soil cleanup level is below the practical
43 quantitation level (PQL) for the contaminant of concern. The responsible party may in a manner
44 acceptable to the Department and according to "Test Methods for Evaluating Solid Waste,
45 SW-846, 3rd Edition", U.S. EPA, 1986 (including methods as approved in 54 FR 40260 40269,

1 9/29/89 and 55 FR 8948-8950, 3/9/90) determine the proper PQL and remediate until the residual
2 contamination meets the PQL level; or

3 (e) The responsible party can elect to opt out of this rule and perform a remedial
4 investigation, risk assessment, or feasibility study under OAR 340-122-080 through 340-122-085.

5 (7) If leaching to groundwater is not the pathway of concern or if the responsible party
6 demonstrates that groundwater will not be adversely affected by performing the appropriate
7 leaching test or fate and transport model, the residual soil contamination shall not exceed the
8 Residential Maximum Allowable Soil Concentration in Appendix 1 unless the site meets the
9 industrial criteria and the responsible party proposes to meet the Industrial Maximum Allowable
10 Soil Concentration. If the responsible party proposes to meet the Industrial Maximum Allowable
11 Soil Concentration, the facility must meet all the following additional criteria:

12 (a) The facility is planned and zoned for industrial use; and

13 (b) Appropriate institutional controls (e.g., deed restrictions, restrictive covenants,
14 Environmental Hazard Notice) will be in force; and

15 (c) Uses of the facility and uses and zoning of properties within 100 meters of the
16 contaminated area are industrial uses or are other uses where the Department concurs that the
17 exposure is limited and thus does not warrant application of the residential standard.

18 (8) Proposed remedial actions under this section are not required to include the feasibility
19 study in OAR 340-122-085 except as provided in subsection (6)(e) of this rule. Only remedial
20 technologies that have been proven to be effective in reaching the cleanup levels shall be approved.

21 (9) This rule, including the numerical cleanup levels and the procedures and standards set
22 forth in this rule, is not intended to be construed or applied as applicable or relevant and appropriate
23 requirements under Section 121(d) of the Comprehensive Environmental Response, Compensation
24 and Liability Act of 1980, 42 U.S.C. § 9621.

25 (10) If the responsible party has adequately characterized the site and achieved the
26 appropriate cleanup levels or made appropriate demonstrations as described in sections (6) and (7)
27 of this rule, the Department will issue a written determination that the cleanup is complete subject
28 to any Department finding based on new information that the cleanup as performed is not protective
29 of public health, safety or welfare, or the environment.

30
31 [Publications: The publication(s) referred to or incorporated by reference in this rule are available
32 from the Department of Environmental Quality.]

33
34 Stat. Auth.: ORS 465.400(1) & 468.020

35 Hist.: DEQ 12-1992, f. & cert. ef. 6-9-92

36 37 38 39 **Generic Remedies**

40 340-122-047 (1) The Department may identify or develop generic remedies for common
41 categories of facilities, hazardous substances, or impacted media. For purposes of this rule, a
42 “generic remedy” means a potential remedial technology or method developed or identified by
43 the Department for use at eligible facilities on a streamlined basis with limited evaluation of
44 other remedial action alternatives. Generic remedies may be used as follows:

1 (a) A generic remedy that has been developed or identified by the Department may be
2 proposed for use at an eligible facility. When evaluating a generic remedy proposed for use at a
3 specific facility, the specific requirements of the remedial investigation or feasibility study may
4 be focused or eliminated, with Department approval.

5 (b) Any generic remedy which allows for elimination of the requirement for conducting a
6 site-specific feasibility study shall be based on a generic feasibility study documenting the
7 Department's conclusions with respect to the manner in which facilities eligible for use of the
8 generic remedy will meet the requirements of OAR 340-122-085 and OAR 340-122-090

9 (c) Any generic remedy which includes numeric cleanup standards as a component of the
10 remedy shall be based on a generic risk assessment documenting the Department's conclusions
11 with respect to how facilities eligible for use of the generic remedy will achieve acceptable risk
12 levels and other requirements of OAR 340-122-084 through OAR 340-122-090,

13 (2) In developing generic remedy guidance, the Department will provide opportunities for
14 public participation regarding the scope and content of the guidance.

15 (3) Remedial actions ~~proposed completed~~ under this rule are subject to the public
16 participation requirements provided under ORS 465.320 and OAR 340-122-100.

17 (4) The Department may select or approve use of a generic remedy at a specific facility
18 upon a facility-specific demonstration that the generic remedy is consistent with Department
19 generic remedy guidance and in compliance with OAR 340-122-090(1).

20
21 Stat. Auth.: ORS 465.315 & 465.400

22 Hist.:

23
24 **Activities**

25 **340-122-050** (1) The Director may perform or require to be performed the following
26 activities:

- 27 (a) Preliminary Assessment;
- 28 (b) Removal;
- 29 (c) Remedial Investigation;
- 30 (d) Risk Assessment;
- 31 (e) Feasibility Study; or
- 32 (f) Other investigations and remedial action.

33 (2) These activities, and the scope of these activities, are to be determined by the Director
34 on a case-by-case basis. The Director may determine that all, a combination of less than all, or only
35 one of the above activities are necessary at a facility. (For example, based upon the results of the
36 preliminary assessment, the Director might find that a remedial investigation and feasibility study
37 are not necessary.) The Director may also determine that performance of the above activities shall
38 overlap or occur in an order different than that set forth in section (1) of this rule. (For example, the
39 Director might find that a removal must be undertaken during a remedial investigation.)

40 (3) Removals, remedial actions, preliminary assessments, remedial investigations,
41 feasibility studies, and related activities shall be performed by any person who is ordered or
42 authorized to do so by the Director, or may be performed by the Department.

43 (4) The Director may allow short-term degradation of the environment during a removal or
44 remedial action or related activities, provided that the Director finds:

1 (a) Such short-term degradation cannot practicably be avoided during implementation of the
2 removal or remedial action or related activities;

3 (b) The removal or remedial action or related activity is being implemented in accordance
4 with a schedule approved by the Department; and

5 (c) The short-term degradation does not present an imminent and substantial endangerment
6 to the public health, safety or welfare, or the environment.
7

8 Stat. Auth.: ORS Ch. 466

9 Hist.: DEQ 26-1988, f. & cert. ef. 9-16-89
10

11 340-122-060 [Renumbered to 340-122-426]
12

13 Removal

14 340-122-070 (1) Based upon the Preliminary Assessment or other information, the Director
15 may perform or require to be performed a removal that the Director determines is consistent with
16 the standards set forth under OAR 340-122-040 and is necessary to prevent, minimize, or mitigate
17 damage to the public health, safety and welfare, and the environment that might result from the
18 release or threat of release of hazardous substances. A removal may address potential harm posed
19 by the toxicity, corrosivity, flammability, ignitability, and other threats to public health, safety and
20 welfare, and the environment from a release or threat of release. A removal may include, but is not
21 limited to, offsite transport and disposal of hazardous substances if such action would be consistent
22 with and expedite completion of remedial action or would minimize the need for onsite engineering
23 or institutional controls.

24 (2) The performance of a removal shall not affect the Director's authority to perform or
25 require to be performed a remedial action in addition to the removal, if such remedial action will
26 permanently or more fully address a release or threat of release of hazardous substances. The
27 Director may undertake or require that a removal be undertaken at any time from the discovery of a
28 release or threat of a release through the completion of a remedial action.
29

30 Stat. Auth.: ORS 465.400(1) & 468.020

31 Hist.: DEQ 26-1988, f. & cert. ef. 9-16-89; DEQ 12-1992, f. & cert. ef. 6-9-92
32
33

34 Site Evaluation

35 340-122-071 (1) When the Department receives information about a release or potential
36 release of a hazardous substance, the Department shall evaluate the information and document its
37 conclusions. The purpose of the site evaluation is to determine whether a release has or might
38 have occurred and whether the release may pose a significant threat to public health, safety and
39 welfare, or the environment.

40 (2) The Department may request or gather additional information to complete the site
41 evaluation. When evaluating the potential for human health and ecological impacts, the
42 Department may consider, but is not limited to considering, the potential presence in the locality
43 of the facility, of:

44 (a) Human populations;

45 (b) Any sensitive human subpopulations;

- (c) Threatened and endangered species or their critical habitat;
- (d) Ecological receptors, including any terrestrial or aquatic habitat(s);
- (e) Exposure pathways potentially connecting receptors with hazardous substances; and
- (f) Current and reasonably likely future land and water uses.

(3) After a site evaluation is completed, the Department will determine whether a preliminary assessment, removal, remedial action, other action, or no further action is needed at the facility.

Stat. Auth.: ORS 465.315 & 465.400

Hist.:

Preliminary Assessments

340-122-072 (1) The Department shall conduct a preliminary assessment or approve a preliminary assessment conducted by another person in accordance with section (4) of this rule if the Department determines that a release of a hazardous substance poses a significant threat to public health, safety or welfare, or the environment. The Department may conduct or approve a preliminary assessment without such determination. The Department may determine that existing information constitutes the equivalent of all or part of a preliminary assessment.

(2) Prior to conducting a preliminary assessment, the Director shall notify the owner and operator of the facility, if known, of the Department's intent to conduct the assessment, and allow the owner or operator to submit relevant information to the Department or to request to conduct the preliminary assessment. The Department may accept or deny any such request.

(3) The purpose of a preliminary assessment is to develop sufficient information to determine whether additional investigation, removal, remedial action, or long-term engineering or institutional controls related to removal or remedial action are needed at a facility to assure protection of present and future public health, safety and welfare, and the environment.

(4) A preliminary assessment shall include sufficient onsite observations, maps, facility data, sampling, and other information to accomplish the purposes of a preliminary assessment as described in section (3) of this rule including, as appropriate:

(a) Description of historical operations at the facility, including past and present generation, management, and use of hazardous substances; compliance with relevant environmental requirements; and investigations or cleanups of releases of hazardous substances;

(b) Identification and characterization of hazardous substances that are being or might have been released and, if available, an estimate of the quantities released, the concentrations in the environment, and extent of migration;

(c) Documentation of releases of hazardous substances to the environment;

(d) Identification of present and past owners and operators of the facility;

(e) Description of the facility, including its name, and a site map identifying property boundaries, the location of known or suspected releases of hazardous substances, and significant topographic, terrestrial, and aquatic habitat features;

(f) Description of potential pathways for migration of known or suspected releases of hazardous substances, including surface water, groundwater, air, soils, and direct contact;

(g) Description of human and ecological receptors potentially affected by releases of hazardous substances;

1 (h) Description of any other physical factors that might be relevant to assessing short and
2 long-term exposure to releases of hazardous substances; and

3 (i) Evaluation of present and reasonably likely future threats to public health, safety and
4 welfare, and the environment. During the preliminary assessment, the Department may consider
5 the following information:

6 (A) Concentrations of hazardous substances in environmental media;

7 (B) The documented presence, in the locality of the facility, of any of the following:

8 (i) Human populations;

9 (ii) Any sensitive human subpopulations;

10 (iii) Threatened and endangered species or their critical habitat;

11 (iv) Ecological receptors including any terrestrial or aquatic habitat;

12 (v) Exposure pathways potentially connecting receptors with released hazardous
13 substances;

14 (vi) Current and reasonably likely future land uses; and

15 (vii) Current and reasonably likely future beneficial uses of water.

16 (5) After completion of a preliminary assessment, the Director shall make one or more of
17 the following determinations regarding a facility:

18 (a) Additional investigation, removal, remedial action, or long-term engineering or
19 institutional controls related to removal or remedial action are needed to assure protection of
20 present and future public health, safety and welfare, and the environment;

21 (b) Current regulatory action under another state or federal agency program is adequate to
22 protect public health, safety and welfare, and the environment;

23 (c) Other actions are necessary to assure protection of present and future public health,
24 safety and welfare and the environment; or

25 (d) Based on available information, no further action is needed to assure protection of
26 present and future public health, safety and welfare, and the environment.

27 (6) When the preliminary assessment is completed, the Director shall provide a copy to
28 the owner and operator, if known, and shall notify them of any determination made pursuant to
29 section (5) of this rule.

30
31 Stat. Auth.: ORS 465.315 & 465.400

32 Hist.:

33
34 **Confirmation of a Release**

35 **340-122-073** (1) The Director shall determine that a release of a hazardous substance has
36 been confirmed for the purposes of listing a facility on the Confirmed Release List or the Inventory
37 if the Director determines that the release meets the criteria in subsections (a) and (b) of this
38 section:

39 (a) The release has been documented by:

40 (A) An observation made and documented by a qualified government inspector or agent;

41 (B) A written statement or report from an owner, operator, or representative authorized by
42 an owner or operator stating that the release has occurred; or

43 (C) Laboratory data indicating the hazardous substance has been detected at levels greater
44 than background levels.

45 (b) The release is not excluded under section (2) of this rule.

1 (2) A release shall not be defined as a "confirmed release" pursuant to section (1) of this
2 rule if, based on the information available at the time a final listing decision is made, the Director
3 determines that the release meets any of the following criteria:

4 (a) The release is a de minimis release;

5 (b) The release by its nature rapidly dissipates to undetectable or insignificant levels and
6 poses no significant threat;

7 (c) The release is a permitted or authorized release, but not including deposition,
8 accumulation, or migration of substances resulting from an otherwise-permitted or authorized
9 release;

10 (d) The release is a pesticide product registered under the Federal Insecticide, Fungicide,
11 and Rodenticide Act (7 U.S.C. 136) and applied for its intended purpose in accordance with label
12 directions, but not including deposition, accumulation, or migration of substances resulting from an
13 otherwise-authorized release;

14 (e) The release has been cleaned up to a level that is consistent with rules adopted by the
15 Commission under ORS 465.400 or 466.553 (1987) ~~or~~ ORS Chapter 466 or that poses no
16 significant threat to present or future public health, safety, welfare, or the environment; or

17 (f) The release otherwise requires no additional investigation, removal, remedial action, or
18 long-term environmental or institutional controls related to removal or remedial action to assure
19 protection of present and future public health, safety, welfare, and the environment.

20 (3) A release shall not be excluded pursuant to section (2) of this rule if continuing
21 environmental or institutional controls related to removal or remedial action are required to assure
22 protection of present and future public health, safety, welfare, and the environment.

23
24 [Publications: The publication(s) referred to or incorporated by reference in this rule are available
25 from the Department of Environmental Quality.]

26
27 Stat. Auth.: ORS 465.400(1), 465.405 & 468.020

28 Hist.: DEQ 29-1990, f. & cert. ef. 7-13-90

29
30
31 **Development of Confirmed Release List**

32 **340-122-074** (1) For the purpose of providing public information, the Director shall develop
33 and maintain a Confirmed Release List of all facilities for which the Director has confirmed a
34 release of a hazardous substance in accordance with OAR 340-122-073.

35 (2) The list shall include, at a minimum, the following items, if known:

36 (a) A general description of the facility;

37 (b) Address or location;

38 (c) Time period during which a release occurred;

39 (d) Name of the current owner and operator and names of any past owners and operators
40 during the time period of a release of a hazardous substance;

41 (e) Type and quantity of a hazardous substance released at the facility;

42 (f) Manner of release of the hazardous substance;

43 (g) Concentration, distribution, and characteristics of a hazardous substance, if any, in
44 groundwater, surface water, air, and soils at the facility; and

45 (h) Status of removal or remedial actions at the facility.

1 (3)(a) At least 60 days before adding a facility to the Confirmed Release List, the Director
2 shall notify the owner and operator, if known, of all or any part of the proposed facility by certified
3 mail or personal service, and shall provide an opportunity to comment on the proposed listing
4 within 45 days after receiving the notice. For good cause shown, the Department may grant an
5 extension of up to 45 days for comment;

6 (b) The Director shall consider relevant and appropriate information submitted to the
7 Department in determining whether to add a facility to the Confirmed Release List.
8

9 Stat. Auth.: ORS 465.400(1), 465.405 & 468.020

10 Hist.: DEQ 29-1990, f. & cert. ef. 7-13-90
11

12 **Development of Inventory**

13 **340-122-075** (1) For the purpose of providing public information, the Director shall develop
14 and maintain an Inventory of facilities for which the Director:

15 (a) Has confirmed a release of a hazardous substance in accordance with OAR
16 340-122-073; and

17 (b) Based on a preliminary assessment approved or conducted by the Department, has
18 determined that additional investigation, removal, remedial action, or long-term environmental or
19 institutional controls related to removal or remedial action are required to assure protection of
20 present and future public health, safety and welfare, and the environment.

21 (2) The Inventory shall include, at a minimum, the items required for the Confirmed
22 Release List, described in OAR 340-122-074(2), and the following items, if known:

23 (a) Hazard ranking and narrative information regarding threats to the environment and
24 public health; and

25 (b) Information that indicates whether the remedial action at the facility will be funded
26 primarily by:

27 (A) The Department through the use of moneys in the Hazardous Substance Remedial
28 Action Fund;

29 (B) An owner or operator or other person under an agreement, order, or consent decree
30 under ORS Chapter 465; or

31 (C) An owner or operator or other person under other state or federal authority.

32 (3)(a) At least 60 days before a facility is added to the Inventory the Director shall notify the
33 owner and operator, if known, of all or any part of the facility of the proposed listing by certified
34 mail or personal service. The notice shall include a copy of the preliminary assessment on which
35 the listing is based, and the documentation used to calculate a site score in accordance with OAR
36 340-122-076(1)(a). The notice may reference these documents if they have been previously
37 provided. The notice shall inform the owner and operator of the opportunity to comment on the
38 information contained in the preliminary assessment and on the proposed site score within 45 days
39 after receiving the notice. For good cause shown, the Department may grant an extension of up to
40 45 days for comment.

41 (b) The Director shall consider relevant and appropriate information submitted to the
42 Department in determining whether to add a facility to the Inventory.

43 (4) At least quarterly, the Department shall publish notice of updates to the Inventory. The
44 notice shall include a brief description of the facilities added or removed, and shall be published in

1 the Secretary of State's Bulletin and submitted to local newspapers of general circulation in
2 locations affected by the listings and to interested persons or community organizations.

3
4 Stat. Auth.: ORS 465.000(1), 465.400(1), 465.405, 465.410 & 468.020
5 Hist.: DEQ 29-1990, f. & cert. ef. 7-13-90; DEQ 5-1991, f. & cert. ef. 3-18-91

6
7 **Inventory Ranking**

8 **340-122-076 (1)(a)** The Department will score facilities placed on the Inventory in
9 accordance with the Site Scoring Procedure set forth in Appendix 1. The Site Scoring Procedure
10 provides criteria for scoring facilities based on the short-term and long-term risks they pose to
11 present and future public health, safety, welfare or the environment;

12 (b) The Department will place facilities in the following categories on the Inventory based
13 on their status in the remedial process:

- 14
15 **Phase I:** Facilities where remedial
16 investigation and
17 feasibility studies have
18 not been initiated.
- 19
20 **Phase II:** Facilities where remedial
21 investigation or feasibility
22 studies are underway.
- 23
24 **Phase III:** Facilities where the remedial
25 investigation and feasibility
26 studies have been completed
27 and remedial design, removal
28 or remedial action is underway.
- 29
30 **Phase IV:** Facilities where all necessary
31 removal and remedial action
32 have been completed except
33 for continuing operation
34 and maintenance or
35 other environmental or
36 institutional controls necessary
37 to protect public health, safety,
38 welfare, and the environment.

39
40 The Department will move facilities from one category to the next in quarterly updates of the
41 Inventory as remedial activities progress.

42 (2) Prior to publishing a facility's score on the Inventory, the Department will notify the
43 owners and operators of the facility, if known, and provide an opportunity for them to comment on
44 the facility score and supporting documentation as described in OAR 340-122-075(4).

1 (3) The Department will consider facility scores, among other factors, in prioritizing sites
2 for further investigation, removal, or remedial action at the conclusion of the preliminary
3 assessment or its equivalent. Prior to initiating such action, the Department may rescore a facility if
4 the Department receives additional information that may significantly change a facility's score.
5

6 Stat. Auth.: ORS 465.000(1), 465.410 & 468.020

7 Hist.: DEQ 5-1991, f. & cert. ef. 3-18-91
8

9 **Initiation of Process for Delisting Facilities from the Confirmed Release List and Inventory**

10 340-122-077 (1) An owner or operator of a facility listed on the Confirmed Release List or
11 Inventory, or any other person adversely affected by the listing, may request the Director to remove
12 a facility from the Confirmed Release List or Inventory. The Department may propose to remove a
13 facility on its own initiative.

14 (2)(a) The owner, operator, or other person requesting that a facility be removed from the
15 Confirmed Release List or the Inventory shall submit a written petition to the Director setting forth
16 the basis for such request. The petition shall include sufficient information and documentation to
17 support a determination that:

18 (A) The petitioner is an owner, operator, or person adversely affected by the listing; and

19 (B) The facility meets the respective criteria for delisting from the Confirmed Release List
20 or from the Inventory set forth in OAR 340-122-079(1).

21 (b) A petition to remove from the Confirmed Release List or from the Inventory a facility
22 for which a delisting petition has previously been denied shall demonstrate new information or
23 changed circumstances to support the request.
24

25 Stat. Auth.: ORS 465.400(1), 465.405 & 468.020

26 Hist.: DEQ 29-1990, f. & cert. ef. 7-13-90
27
28

29 **Inventory Delisting — Public Notice and Participation**

30 340-122-078 (1) Prior to the approval or denial of a petition to remove a facility from the
31 Inventory submitted pursuant to OAR 340-122-077, the Department shall:

32 (a) Publish a notice and brief description of the proposed action in the Secretary of State's
33 Bulletin, notify a local paper of general circulation, and make copies of the proposed action
34 available to the public;

35 (b) Make a reasonable effort to identify and notify interested persons or community
36 organizations;

37 (c) Provide at least 30 days for submission of written comments regarding the proposed
38 action;

39 (d) Upon written request received within 15 days after agency notice, postpone the date of
40 its intended action no less than ten or more than 90 days in order to allow the requesting person an
41 opportunity to submit information or comments on the proposed action; and

42 (e) Upon written request by ten or more persons or by a group having ten or more members,
43 conduct a public meeting at or near the facility for the purpose of receiving oral comment regarding
44 the proposed action, except for a petition submitted by an owner pursuant to a cleanup action
45 completed in accordance with these rules.

1 (2) Where possible, the Department shall combine public notification procedures for
2 delisting from the Inventory with the public notification procedures for the proposed certification of
3 completion of a removal or remedial action conducted pursuant to ORS Chapter 465.

4 (3) Agency records concerning the removal of a facility from the Inventory shall be made
5 available to the public in accordance with ORS 192.410 to 192.505, subject to exemptions to public
6 disclosure, if any, under ORS 192.501 and 192.502. The Department shall maintain and make
7 available for public inspection and copying a record of pending and completed delisting actions.
8 The records shall be located at the headquarters and regional offices of the Department.
9

10 Stat. Auth.: ORS 465.400(1), 465.405 & 468.020

11 Hist.: DEQ 29-1990, f. & cert. ef. 7-13-90

12 13 **Delisting — Determination by Director**

14 **340-122-079** (1) The Director shall consider requests or proposals to remove facilities from
15 the Confirmed Release List or the Inventory submitted in accordance with OAR 340-122-077. The
16 Director shall delist a facility from the Confirmed Release List if the Director determines that a
17 facility does not meet the criteria for inclusion on the Confirmed Release List set forth in OAR
18 340-122-074(1). The Director shall remove a facility from the Inventory if the Director determines
19 the facility does not meet the criteria for inclusion on the Inventory set forth in OAR 340-
20 122-075(1).

21 (2) In determining whether to remove a facility from the Confirmed Release List or from
22 the Inventory, the Director shall consider:

23 (a) Any relevant Confirmed Release List or Inventory delisting petitions submitted pursuant
24 to OAR 340-122-077;

25 (b) Any public comments submitted on the proposed action pursuant to OAR 340-122-078;
26 and

27 (c) Any other relevant information available.

28 (3) The Director shall not remove a facility from the Confirmed Release List or from the
29 Inventory if continuing environmental controls or institutional controls related to removal or
30 remedial action (e.g., alternative drinking water supply, caps, security measures) are needed to
31 assure protection of present and future public health, safety, welfare, and the environment.

32 (4)(a) The Director shall document the basis for approving or denying a request or proposal
33 to remove a facility from the Confirmed Release List or the Inventory;

34 (b) If the Director relies on information described in subsection (2)(a) of this rule to make
35 such determination, the Director shall reference such information in the record.

36 (5) The removal of a facility from the Confirmed Release List or from the Inventory shall
37 be effective immediately upon the Director's determination.
38

39 Stat. Auth.: ORS 465.400(1), 465.405 & 468.020

40 Hist.: DEQ 29-1990, f. & cert. ef. 7-13-90

41 **Remedial Investigation**

42 **340-122-080** (1) If, based upon the Preliminary Assessment, the results of a removal, or
43 other information, the Director determines that remedial action might be necessary to protect public
44 health, safety or welfare, or the environment, the Director may perform or require to be performed a
45 remedial investigation to develop information to determine the need for remedial action.

1 (2) Remedial investigation may include, but is not limited to, characterization of hazardous
2 substances, characterization of the facility, performance of baseline human health and ecological
3 risk assessments, and collection and evaluation of information relevant to the identification of hot
4 spots of contamination.

5 (3) In the remedial investigation, characterization of the facility may include, but is not
6 limited to, information regarding:

7 (a) Waste management history and other past practices that could have led to a release of
8 hazardous substances;

9 (b) Geological and hydrogeologic factors, including, but not limited to, information
10 regarding topography, soils, sediments, drainage controls, and water resources;

11 (c) Climatologic and meteorologic factors;

12 (d) Ambient air quality;

13 (e) Current and reasonably anticipated future land use in the locality of the facility,
14 considering:

15 (A) Current land use zoning and other land use designations;

16 (B) Land use plans as established in local comprehensive plans and land use
17 implementing regulations of any governmental body having land use jurisdiction;

18 (C) Concerns of the facility owner, neighboring owners, and the community; and

19 (D) Any other relevant information such as development patterns and population
20 projections.

21 (f) Current and reasonably likely future beneficial uses of groundwater and surface water
22 in the locality of the facility, considering:

23 (A) Federal, state, and local regulations governing the appropriation and/or use of water;

24 (B) Nature and extent of current groundwater and surface water uses;

25 (C) Suitability of groundwater and surface water for beneficial uses;

26 (D) The contribution of water to the maintenance of aquatic or terrestrial habitat;

27 (E) Any beneficial uses of water which the Water Resources Department or other federal,
28 state or local program is managing in the locality of the facility; and

29 ~~(F)~~ Reasonably likely future uses of groundwater and surface water based on:

30 ~~(i)~~ Historical land and water uses;

31 ~~(ii)~~ Anticipated future land and water uses;

32 ~~(iii)~~ Community and nearby property owners' concerns regarding future water use;

33 ~~(iv)~~ Regional and local development patterns;

34 ~~(v)~~ Regional and local population projections; and

35 ~~(vi)~~ Availability of alternate water sources including, but not limited to, public water
36 supplies, groundwater sources, and surface water sources; and

37 ~~(E) The contribution of water to the maintenance of aquatic or terrestrial habitat.~~

38 (g) Identification of ecological receptors, terrestrial habitats, and aquatic habitats in the
39 locality of the facility; and

40 (h) Other relevant information, as appropriate.

41 (4) In the remedial investigation, characterization of hazardous substances may include,
42 but is not limited to, information regarding:

43 (a) Identification and characterization of the source of the release or the threatened release
44 of a hazardous substance;

45 (b) The nature, extent, and concentration of hazardous substances;

- (c) The propensity for the hazardous substance to bioaccumulate;
- (d) The propensity for the hazardous substance to persist or degrade;
- (e) The toxicity of the hazardous substances;
- (f) The transport and fate of the hazardous substances;
- (g) The proximity of contamination to surface water, groundwater, wetlands, and sensitive environments; and
- (h) Other relevant information, as appropriate.

(5) In the remedial investigation, characterization of current ~~and~~ reasonably likely future risks posed by hazardous substances shall be based on baseline human health and ecological risk assessments conducted in accordance with OAR 340-122-084, unless the Department determines through screening of available information that no exceedance of acceptable risk levels could occur taking into consideration the nature, extent and toxicity of contamination, the types of human and ecological receptors potentially at risk, and pathways and routes of exposure present or potentially present.

(6) The remedial investigation shall identify hazardous substances having a significant adverse effect on ~~existing or reasonably likely future~~ beneficial uses of water or waters to which the hazardous substances would be reasonably likely to migrate, ~~based on current or reasonably likely future exceedance of:~~

- ~~— (a) Applicable or relevant federal, state or local water quality standards, criteria, guidance or specifications;~~
- ~~— (b) In the absence of applicable or relevant water quality standards, criteria, guidance or specifications, the acceptable risk level, as defined by OAR 340-122-115; or~~
- ~~— (c) If subsections (a) and (b) of this section do not apply, the concentration of the hazardous substance indicated by available published peer reviewed scientific information to have a significant adverse effect on a current or reasonably likely future beneficial use of water.~~

(7) ~~If hazardous substances present a risk to human health or the environment exceeding the acceptable risk level,~~ The remedial investigation shall identify hot spots of contamination for media other than water, (e.g., contaminated soil, debris, sediments and sludges; drummed wastes; “pools” of dense, non-aqueous phase liquids submerged beneath groundwater or in fractured bedrock, and non-aqueous phase liquids floating on groundwater), to the extent hazardous substances:

- ~~— (a) Are present in concentrations exceeding a risk based concentration corresponding to:~~
 - ~~(A) A lifetime excess cancer risk of 1×10^{-4} for human exposure to each individual carcinogen;~~
 - ~~(B) noncarcinogen A hazard quotient of 10 for human exposure to each noncarcinogen; or~~
 - ~~(C) ecological A toxicity quotient of 10 for ecological receptors; or~~
- ~~(b) Are reasonably likely to migrate to such an extent that there would be an exceedance of the conditions specified in sections (6) or (7)(a) of this rule.~~

40 Stat. Auth.: ORS 465.400(1) & 468.020
 41 Hist.: DEQ 26-1988, f. & cert. ef. 9-16-89; DEQ 12-1992, f. & cert. ef. 6-9-92

43 Risk Assessment
 44 340-122-084 This rule establishes a risk protocol for performance of human health and
 45 ecological risk assessments, including: general requirements for risk assessments and specific

1 requirements for baseline human health risk assessments, baseline ecological risk assessments,
2 residual risk assessments, and probabilistic risk assessments.

3 (1) **General requirements** for risk assessments include:

4 (a) Risks assessments shall consider existing and reasonably likely future human exposures
5 and significant adverse effects to ecological receptors in the locality of the facility.

6 (b) Risk assessments may be conducted using either deterministic or probabilistic risk
7 assessment methodologies at the discretion of the party conducting the risk assessment, provided
8 the risk assessment requirements of this rule are met.

9 (c) Sources of toxicity information to be used in a risk assessment may include the
10 following information to the extent it is available and acceptable to the Department at the time a
11 human health or ecological risk assessment is prepared:

12 (A) For human health risk assessments:

13 (i) U.S. EPA IRIS Data Base;

14 (ii) U.S. EPA HEAST Data Base;

15 (iii) HEAST alternative method;

16 (iv) U.S. EPA-NCEA Superfund Health Risk Technical Support Center;

17 (v) Other U.S. EPA documents or databases;

18 (vi) ATSDR Toxicological Profiles; or

19 (vii) Other refereed technical publications.

20 (B) For ecological risk assessments:

21 (i) U.S. EPA AQUIRE Data Base;

22 (ii) U.S. EPA IRIS Data Base;

23 (iii) U.S. EPA HEAST Data Base;

24 (iv) U.S. EPA ASTER Data Base;

25 (v) U.S. EPA PHYTOTOX Data Base;

26 (vi) U.S. EPA Terrestrial Toxicity Data Base (TERRATOX);

27 (vii) U.S. Fish and Wildlife Service Technical Reports;

28 (viii) Oak Ridge National Laboratory Toxicological Benchmark Technical Reports;

29 (ix) Other U.S. EPA documents or databases;

30 (x) ATSDR Toxicological Profiles; or

31 (xi) Other refereed technical publications.

32 (C) In the absence of toxicity information that is available and acceptable to the
33 Department under paragraph (A) or (B), the Department may require the development of
34 acceptable site-specific toxicity information.

35 (d) Risk assessments may include use of transport and fate models, subject to Department
36 approval of the model and the data to be used for the parameters specified in the model. The
37 Department shall ensure than any transport and fate model approved for use is capable of
38 simulating all site conditions and contaminant properties that might have a significant impact on
39 site-specific contaminant transport or fate.

40 (e) The Department shall require appropriate sampling approaches and data quality
41 requirements to support the risk assessment and remedy selection processes.

42 (f) A plausible upper-bound or high-end exposure for both human health and ecological
43 risk assessments is ~~presumed to be~~ the 90th percentile upper confidence limit on the arithmetic
44 mean of concentrations of hazardous substances that would be contacted by an exposed receptor
45 and reasonable maximum estimates of the exposure factors used in the risk calculations, the

1 ~~exposure data unless a greater or lesser best estimate is acceptable to the Department. The~~
2 ~~plausible upper bound exposure is synonymous with the high end exposure case.~~

3 (g) ~~The arithmetic mean of the exposure data is a reasonable estimate of the central~~
4 ~~tendency exposure for both human health and ecological risk assessments is the arithmetic mean~~
5 ~~of concentrations that would be contacted by an exposed receptor and mean estimates of the~~
6 ~~exposure factors used in the risk calculations. Risk assessments utilizing only deterministic~~
7 ~~methods shall provide both central tendency and upper-bound high end estimates of exposure and~~
8 ~~risk.~~

9 (h) The use of population risk estimates in addition to individual risk estimates is
10 provided for as follows:

11 (A) For human health risk assessments, risk estimates shall be made only at the level of
12 the individual;

13 (B) For ecological risk assessments, risk estimates shall be made:

14 (i) At the level of the individual for species present in the locality of the facility if the
15 species is listed as threatened or endangered species pursuant to 16 U.S.C. 1531 et seq. or ORS
16 496.172; or

17 (ii) At the level of the population for all other plants or animals in the locality of the
18 facility.

19 (i) Cumulative risk from multiple hazardous substances will be assessed by assuming
20 additivity of the risk posed separately by individual non-carcinogenic and carcinogenic
21 hazardous substances in the locality of the facility, unless the Department determines that an
22 assumption of synergism, antagonism, or other toxic response is appropriate or it is demonstrated
23 to the satisfaction of the Department that an assumption other than additivity is appropriate.

24 (j) Appropriate sources of exposure factor information may include, but are not limited
25 to, the following information, to the extent it is available and acceptable to the Department at the
26 time human health and ecological risk assessments are prepared:

27 (A) U.S. EPA Risk Assessment Guidance for Superfund. Volume 1. Human Health
28 Evaluation Manual, Part A, 1989~~22~~;

29 (B) U.S. EPA Risk Assessment Guidance for Superfund Volume 2. Environmental
30 Evaluation Manual, 1989;

31 (C) U.S. EPA Risk Assessment Guidance for Superfund. Volume 1. Human Health
32 Evaluation Manual, Supplemental Guidance - Standard Default Exposure Factors, 1991~~5~~;

33 (D) U.S. EPA Wildlife Exposure Factors Handbook. Volumes 1 and 2, 1993; and

34 (E) U.S. EPA Exposure Factors Handbook, 1990.

35 (2) **Baseline human health risk assessments** shall include, but are not limited to, the
36 following information:

37 (a) A conceptual site model describing ~~showing~~ contaminant sources, release mechanisms,
38 transport routes and media, potential human receptor populations, and relevant exposure scenarios
39 based on current and reasonably likely future land and water uses;

40 (b) Data quality objectives for the human health risk assessment based on the conceptual
41 site model;

42 (c) Exposure analysis including identification and selection of contaminants of concern, a
43 detailed description of potentially exposed populations and exposure routes, and a quantitative
44 estimate of exposure for both current and reasonably likely future land and water use scenarios;

45 (d) Toxicity analysis including a summary of current information regarding the

1 carcinogenic effects, noncarcinogenic effects, bioconcentration potential, bioaccumulation
2 potential, biomagnification potential, and persistence of the identified contaminants of concern as
3 well as current slope factors and reference doses;

4 (e) Risk characterization presenting the quantitative human health risks potentially
5 associated with the facility, a discussion of any available facility-specific human health studies, an
6 explicit discussion of risks associated with the bioconcentration potential, bioaccumulation
7 potential, biomagnification potential, and persistence of each contaminant, and consideration of any
8 other available, published, and peer-reviewed scientific information on other sources of stress as
9 appropriate; and

10 (f) Quantitative and qualitative uncertainty analysis as appropriate for each element of the
11 risk assessment.

12 (3) **Baseline ecological risk assessments** shall include, but are not limited to, the
13 following information:

14 (a) Problem formulation to include identification of contaminants of ecological interest,
15 potential ecological effects, ecological receptors, relevant exposure pathways, initial definition of
16 assessment and measurement endpoints, all with respect to current and reasonably likely future land
17 and water uses, and ~~described~~ shown in a conceptual site model;

18 (b) Data quality objectives for the ecological risk assessment based on the conceptual site
19 model, with emphasis on analytical detection limits appropriate for ecological receptors;

20 (c) Exposure analysis to include identification and selection of potential contaminants of
21 ecological concern, identification and selection of target ecological receptors, an exposure pathway
22 model relating target receptors, exposure routes and measurement endpoints, and a quantitative
23 estimate of exposure for both current and reasonably likely future land and water use scenarios;

24 (d) Ecological response analysis including a summary of current information regarding the
25 toxicological effects, ecological effects, bioconcentration potential, bioaccumulation potential,
26 biomagnification potential, and persistence of the identified contaminants of ecological concern, as
27 well as ecological benchmark values;

28 (e) Risk characterization presenting the quantitative ecological risks potentially associated
29 with the facility, ~~a weight-of-evidence analysis of risk~~, identification of contaminants of ecological
30 concern, a discussion of any available facility-specific ecological studies, an explicit discussion of
31 risks associated with the bioconcentration potential, bioaccumulation potential, biomagnification
32 potential, and persistence of each contaminant, and consideration of any other available, published
33 and peer-reviewed scientific information on other sources of stress as appropriate; ~~and~~

34 (f) As appropriate, the potential for significant adverse effects on the health or viability of
35 individual ecological receptors or local populations may be evaluated with a weight-of-evidence
36 analysis or population viability analysis, respectively. These analyses may utilize field studies,
37 laboratory investigations, appropriate population models, or any combination of these or other
38 methods acceptable to the Department; and

39 ~~(g) (f)~~ Quantitative and qualitative uncertainty analysis as appropriate for each element of
40 the risk assessment.

41 (4) **Residual risk assessments** shall be conducted prior to selection or approval of the
42 remedial action, and shall include:

43 (a) A quantitative assessment of the risk resulting from concentrations of untreated waste
44 or treatment residuals remaining at the facility at the conclusion of any treatment or excavation
45 and offsite disposal activities taking into consideration current and reasonably likely future land

1 and water use scenarios and the exposure assumptions used in the baseline risk assessment; and

2 (b) A qualitative or quantitative assessment of the adequacy and reliability of any
3 institutional or engineering controls to be used for management of treatment residuals and
4 untreated hazardous substances remaining at the facility.

5 (c) The combination of (a) and (b) constitute a residual risk assessment that must
6 demonstrate to the Department that acceptable levels of risk as defined by OAR 340-122-115
7 would be have been attained in the locality of the facility.

8 (5) Probabilistic techniques may be applied to human health and ecological risk
9 assessments. The purpose of this rule is to establish a minimum level of technical performance
10 for probabilistic risk assessments submitted to the Department.

11 (a) Before the commencement of a probabilistic risk assessment, the following issues
12 shall be addressed:

13 (A) Current and reasonably likely future land and water uses in the locality of the facility;

14 (B) A site-specific preliminary conceptual site model that relates potential receptors,
15 hazardous substances, and exposure pathways;

16 (C) Preliminary assessment endpoints for any ecological risk assessment; and

17 (D) Sources and characteristics of the distributions proposed for use in the assessment.

18 (b) Based on consideration of the items specified in subsection(5)(a) of this rule, a
19 probabilistic risk assessment may be performed in accordance with a work plan approved by the
20 Department.

21 (c) The Department is not obligated to accept the results of a probabilistic risk
22 assessment, unless the information requirements set forth in subsection (5)(d) of this rule or
23 otherwise specified by the Department have been addressed in a manner acceptable to the
24 Department.

25 (d) The probabilistic risk assessment shall include, but not be limited to, information
26 regarding:

27 (A) All formulae used to estimate exposure point values, toxicity (cancer slope factor,
28 reference dose) values, ecological benchmark values, hazard indices, and incremental lifetime
29 cancer risks;

30 (B) The probabilistic risk assessment's use of input parameters expressed as either point
31 estimates or distributions. For each input parameter expressed as a distribution, the following
32 information shall be provided:

33 (i) The shape of the full distribution;

34 (ii) To the extent practicable, the mean, standard deviation, minimum, 5th percentile, 10th
35 percentile, median, 90th percentile, 95th percentile, and maximum of the specified distribution;

36 (iii) Justification for the use of each distribution explaining the rationale for its use and
37 the rejection of other relevant distributions. Justification shall be based on one or more of the
38 following:

39 (I) Distributions presented in a refereed or peer-reviewed publication;

40 (II) Distributions available from the U.S. Environmental Protection Agency or other state
41 or federal government agency, the American Society for Testing and Materials (ASTM), or any
42 distributions designated by the Department as default distributions;

43 (III) Expert or professional judgment; or

44 (IV) Parametric distributions of input variables fit quantitatively to measured data. For
45 such distributions, the following information shall be provided: parametric fits and the data on

1 the same axes; appropriate goodness-of-fit statistics; implications of any important differences
2 between the parametric fits and the data; and influence of the statistical process or underlying
3 mechanism creating the random variable on the selection of the distribution used;

4 (iv) The extent to which input distributions and their parameters capture and separately
5 represent both stochastic variability and knowledge uncertainty. This information shall comprise
6 a portion of, but not be a replacement for, a comprehensive discussion in the body of the baseline
7 risk assessment of the qualitative and quantitative sources of uncertainty.

8 (C) Any correlations between or among input variables that are known or expected to
9 have the practical effect of significantly affecting the risk assessment;

10 (D) For each output distribution resulting from the probabilistic risk assessment, the
11 following information:

12 (i) The shape of the full distribution and location of the acceptable risk level; and

13 (ii) To the extent practicable, the mean, standard deviation, minimum, 5th percentile, 10th
14 percentile, median, 90th percentile, 95th percentile, and maximum of the specified distribution;

15 (E) A probabilistic sensitivity analysis for all key input distributions conducted so as to
16 distinguish, to the extent possible, the effects of variability from the effects of uncertainty in the
17 input variables; and

18 (F) Justification for the selection of any point estimate value incorporated into the
19 probabilistic assessment explaining the rationale for its selection and for the rejection of other
20 relevant point estimate values. Such justification for use shall be based on one or more of the
21 sources specified in subparagraph (5)(d)(B)(iii) of this rule.

22 (e) Probabilistic methods may be applied to:

23 (A) Environmental media contaminant concentration data;

24 (B) Transport and fate modeling;

25 (C) Exposure estimation;

26 (D) Human toxicity estimation;

27 (E) Ecological response estimation; or

28 (F) Risk characterization.

29
30 Stat. Auth.: ORS 465.315 & 465.400

31 Hist.:

32
33 **Feasibility Study**

34 **340-122-085** (1) If, based upon the remedial investigation, the results of a removal, or
35 other information, the Director determines that remedial action might be necessary to protect
36 public health, safety or welfare or the environment, the Director may perform or require to be
37 performed a feasibility study to develop information for selection or approval of a remedial
38 action.

39 (2) A feasibility study shall develop and evaluate a range of remedial action
40 alternatives acceptable to the Department, including any or all of the following:

41 (a) No action;

42 (b) Remedial action utilizing engineering and/or institutional controls;

43 (c) Remedial action utilizing treatment;

44 (d) Remedial action utilizing excavation and offsite disposal; and

45 (e) Any combination of the above, as appropriate.

1 (3) Remedial action ~~alternatives~~options may be eliminated from development or
2 evaluation in the feasibility study if, based on the remedial investigation and consideration of
3 factors specified in OAR 340-122-090, the Department determines that one or more of the
4 remedial action ~~alternatives~~options are not protective, feasible or appropriate for the facility.

5 (4) For each remedial action ~~alternative~~option developed under section (2) of this rule, the
6 feasibility study shall evaluate:

7 (a) The protectiveness of the ~~alternative remedial action option~~-based upon the standards
8 set forth in OAR 340-122-040;

9 (b) The feasibility of the ~~alternative remedial action option~~-based upon a balancing of the
10 remedy selection factors set forth in OAR 340-122-090(3) and (4); and

11 (c) The extent to which the remedial action ~~alternative~~option treats hot spots of
12 contamination based upon the criteria set forth in sections (5) and (6) of this rule and OAR 340-
13 122-090(4).

14 (5) For groundwater or surface water in which a significant adverse effect on existing or
15 reasonably likely future beneficial uses has been identified under OAR 340-122-080(6):

16 (a) The feasibility study shall evaluate treatment to concentrations that ensure such
17 significant adverse effects will not occur. Specifically, the following shall be evaluated:

18 (A) Whether treatment is reasonably likely to restore or protect a beneficial use within a
19 reasonable time; and

20 (B) The extent to which treatment is feasible, considering the remedy selection factors set
21 forth in OAR 340-122-090, including application of the higher threshold for evaluating the
22 reasonableness of the cost of treating hot spots of contamination.

23 (b) Where a concentration identified in subsection (5)(a) of this rule is not equivalent to
24 an acceptable risk level:

25 (A) The feasibility study shall evaluate the feasibility of treatment to the concentration
26 identified in subsection (5)(a), regardless of whether that level is more or less stringent than the
27 acceptable risk level, applying the higher threshold for reasonableness of the cost of treatment;
28 and

29 (B) Where the acceptable risk level is more stringent than the concentration identified in
30 subsection (5)(a), the feasibility study shall also evaluate the feasibility of treatment to the
31 acceptable risk level, without application of the higher threshold for reasonableness of the cost of
32 treatment. If treatment to a more stringent acceptable risk level is not feasible, the feasibility
33 study shall evaluate other remedial measures providing protection while allowing beneficial use
34 of the water.

35 (6) For contamination of media other than groundwater or surface water, the feasibility
36 study shall evaluate the extent to which the hazardous substances cannot be reliably contained.

37 (7) For hot spots of contamination in media other than groundwater or surface water that
38 have been identified under OAR 340-122-080(7) or section (6) of this rule, the feasibility study
39 shall evaluate:

40 (a) The feasibility of treatment to a point where the concentration or condition making the
41 hazardous substance a hot spot would no longer occur at the facility, based upon a balancing of
42 the remedy selection factors set forth in OAR 340-122-090 and an application of the higher
43 threshold for evaluating the reasonableness of the cost of treating hot spots of contamination; and

1 (b) The feasibility of treatment to the acceptable risk level through comparison to other
2 remedial methods without application of the higher threshold for reasonableness of the cost of
3 the treatment.

4 (8) The feasibility study should recommend a protective and feasible remedial action
5 from the remedial action ~~alternatives~~~~options~~ developed and evaluated in the feasibility study.
6 For any recommended remedial action, the feasibility study shall:

7 (a) Identify the extent to which the remedial action ~~alternative~~~~option~~ would be conducted
8 onsite;

9 (b) Identify all state or local permits, licenses, or other authorizations or procedural
10 requirements that would be ~~exempted to be~~ pursuant to ORS 465.315(3);

11 (c) Describe any consultation with affected state or local government bodies; and

12 (d) Identify applicable substantive requirements of the affected state or local laws and
13 how they would be addressed.

14
15 Stat. Auth.: ORS 465.315 & 465.400

16 Hist.:

17
18 **Selection or Approval of the Remedial Action**

19 **340-122-090** (1) Based on the administrative record, the Director shall select or approve a
20 remedial action that:

21 (a) Is protective of present and future public health, safety and welfare, and of the
22 environment, as specified in OAR 340-122-040;

23 (b) Is based on balancing of remedy selection factors, as specified in section (3) of this
24 rule; and

25 (c) Treats hot spots of contamination to the extent feasible, as specified in section (4) of
26 this rule.

27 (2) A remedial action may achieve protection through:

28 (a) Treatment;

29 (b) Excavation and offsite disposal;

30 (c) Engineering controls;

31 (d) Institutional controls;

32 (e) Any other method of protection; or

33 (f) A combination of the above.

34 (3) In determining the appropriate method of remediation for a specific facility, the
35 Director shall select or approve a protective remedial action that balances the following factors:

36 (a) **Effectiveness.** Each remedial action ~~alternative~~~~option~~ shall be assessed for its
37 effectiveness in achieving protection, by considering the following, as appropriate:

38 (A) Magnitude of risk from untreated waste or treatment residuals remaining at the
39 facility absent any risk reduction achieved through onsite management of exposure pathways,
40 as determined in OAR 340-122-084(4)(a). The characteristics of the residuals shall be
41 considered to the degree that they remain hazardous, taking into account their volume, toxicity,
42 mobility, propensity to bioaccumulate, and propensity to degrade;

43 (B) Adequacy of any engineering and institutional controls necessary to manage the risk
44 from treatment residuals and untreated hazardous substances remaining at the facility~~onsite~~, as
45 determined in OAR 340-122-084(4)(b);

1 (C) With respect to hot spots of contamination in water, the extent to which the remedial
2 action restores or protects existing and reasonably likely future beneficial uses of water;

3 (D) Adequacy of treatment technologies in meeting treatment objectives;

4 (E) Time until the remedial action objectives would be achieved; and

5 (F) Any other information relevant to effectiveness.

6 (b) **Long term reliability.** Each remedial ~~alternative option~~ shall be assessed for its long-
7 term reliability, by considering the following, as appropriate:

8 (A) Reliability of treatment technologies in meeting treatment objectives;

9 (B) Reliability of engineering and institutional controls necessary to manage the risk from
10 treatment residuals and untreated hazardous substances ~~remaining onsite, as determined under~~
11 OAR 340-122-084(4)(b), taking into consideration the characteristics of the hazardous
12 substances to be managed and the effectiveness and enforceability over time of engineering and
13 institutional controls in preventing migration of contaminants and in managing risks associated
14 with potential exposure;

15 (C) Nature, degree, and certainties or uncertainties of any necessary long-term
16 management (e.g., operation, maintenance, and monitoring); and

17 (D) Any other information relevant to long-term reliability.

18 (c) **Implementability.** Each remedial action ~~alternative option~~ shall be assessed for the
19 ease or difficulty of implementing the remedial action, by considering the following, as
20 appropriate:

21 (A) Practical, technical, and legal difficulties and unknowns associated with the
22 construction and implementation of a technology, engineering control, or institutional control,
23 including potential scheduling delays;

24 (B) The ability to monitor the effectiveness of the remedy;

25 (C) Consistency with federal, state and local requirements; activities needed to coordinate
26 with other agencies; and the ability and time required to obtain any necessary authorization from
27 other governmental bodies;

28 (D) Availability of necessary services, materials, equipment, and specialists, including the
29 availability of adequate offsite treatment, storage, and disposal capacity and services, and
30 availability of prospective technologies; and

31 (E) Any other information relevant to ~~implementability~~.

32 (d) **Implementation Risk.** Each remedial ~~action alternative option~~ shall be assessed for
33 the risk from implementing the remedial action, by considering the following, as appropriate:

34 (A) Potential impacts on the community during implementation of the remedial action
35 and the effectiveness and reliability of protective or mitigative measures;

36 (B) Potential impacts on workers during implementation of the remedial action and the
37 effectiveness and reliability of protective or mitigative measures;

38 (C) Potential impacts on the environment during implementation of the remedial action
39 and the effectiveness and reliability of protective or mitigative measures;

40 (D) Time until the remedial action is complete; and

41 (E) Any other information related to implementation risk.

42 (e) **Reasonableness of Cost.** Each remedial ~~action alternative option~~ shall be assessed for
43 the reasonableness of the cost of the remedial action, by considering the following, as
44 appropriate:

45 (A) Cost of the remedial action including:

1 (i) Capital costs, including both direct and indirect costs;

2 (ii) Annual operation and maintenance costs;

3 (iii) Costs of any periodic review requirements; and

4 (iv) Net present value of all of the above;

5 (B) Degree to which the costs of the remedial action are proportionate to the benefits to
6 human health and the environment created through risk reduction or risk management;

7 (C) With respect to hot spots of contamination in water, the degree to which the costs of
8 the remedial action are proportionate to the benefits created through restoration or protection of
9 existing and reasonably likely future beneficial uses of water;

10 (D) The degree of sensitivity and uncertainty of the costs; and

11 (E) Any other information relevant to cost-reasonableness.

12 (4) The Director shall select or approve a protective remedial action in accordance with
13 the following:

14 (a) Treatment of hot spots of contamination to the extent feasible considering the
15 treatment criteria in OAR 340-122-085(5) and (7) and the factors set forth in OAR 340-122-
16 090(3);

17 (b) The cost of a remedial action shall not be considered reasonable if the costs are
18 disproportionate to the benefits created through risk reduction or risk management;

19 (c) A higher threshold shall be applied in evaluating the reasonableness of costs for
20 treating hot spots of contamination, whether such treatment occurs onsite or in conjunction with
21 excavation and offsite disposal; and

22 (d) Subject to the preference for treatment of hot spots of contamination, where two or
23 more remedial action ~~alternatives~~options are protective, the least expensive ~~alternative~~remedial
24 ~~option~~ shall be preferred, unless the additional cost of a more expensive remedial action
25 ~~alternative~~option is justified by proportionately greater benefits within one or more of the factors
26 set forth in OAR 340-122-090(3).

27 (5) Any person responsible for undertaking the remedial action who proposes one
28 remedial action ~~alternative~~option over another shall have the burden of demonstrating to the
29 Director through the remedial investigation and feasibility study that such remedial action
30 ~~alternative~~option fulfills the requirements of OAR 340-122-090.

31 (6) Subject to the remedy selection factors specified in section (3) of this rule, in selecting
32 or approving a protective remedial action, the Director shall consider current and reasonably
33 anticipated future land uses at the facility and surrounding properties, taking into account:

34 (a) Current land use zoning;

35 (b) Other land use designations;

36 (c) Land use plans as established in local comprehensive plans and land use
37 implementing regulations of any governmental body having land use jurisdiction; and

38 (d) Concerns of the facility owner, neighboring owners, and the community.

39 (7) The Director may incorporate into the selection or approval of a remedial action:

40 (a) Such periodic review or inspections as are necessary to ensure protection of present
41 and future public health, safety and welfare and of the environment; ~~and~~

42 (b) A delineation of the extent to which the remedial action occurs onsite, for purposes of
43 ORS 465.315(3); ~~and~~

44 (c) Designation of points of compliance for measuring attainment of any remedial action
45 objective. Designation of points of compliance shall consider proximity to the source of the

1 release and exposure pathways evaluated in the baseline risk assessment. Points of compliance
2 shall be established as close as possible to the source of the release, and may also be established
3 at other points relevant to exposure pathways and receptors.
4

5 Stat. Auth.: ORS 465.400(1), Ch. 466 & 468.020

6 Hist.: DEQ 26-1988, f. & cert. ef. 9-16-89; DEQ 12-1992, f. & cert. ef. 6-9-92
7

8 **Public Notice and Participation**

9 **340-122-100** (1) The Department may solicit public input for any of the activities specified
10 in OAR 340-122-050. Such input may include, but is not limited to, information related to:

- 11 (a) Current and reasonably likely land use;
- 12 (b) Current and reasonably likely beneficial uses of water;
- 13 (c) Ecological assessment endpoints; and
- 14 (d) Remedial action goals.

15 (2) The Department shall, prior to selection or approval of a remedial action:

- 16 (a) Provide notice and opportunity for comment and a public meeting regarding the
17 proposed remedial action, in accordance with ORS 465.320; and
- 18 (b) Make a reasonable effort to identify and notify interested and affected community
19 organizations and other parties.

20 (3) Any notice under section (2) of this rule shall include but not be limited to a brief
21 description of the Department's proposed remedial action ~~alternative option~~, if known, and
22 information regarding where a copy of the full proposal may be inspected and copied.

23 (4) The Director shall consider any comments received during the public comment period
24 and any public meeting before approving the remedial action.

25 (5) In the Director's discretion, the Department may provide public notice and opportunity
26 for comment and a public meeting regarding a proposed removal and shall consider any comments
27 received during such public comment period or public meeting.

28 (6) Agency records concerning removal or remedial actions and related investigations shall
29 be made available to the public in accordance with ORS 192.410 to 192.505, subject to exemptions
30 to public disclosure, if any, under ORS 192.501 and 192.502. The Department shall maintain and
31 make available for public inspection and copying a record of pending and completed removals,
32 remedial actions, and related investigations, to be located at the headquarters or regional offices of
33 the Department.
34

35 Stat. Auth.: ORS 465.400(1), 465.405, Ch. 466 & 468.020

36 Hist.: DEQ 26-1988, f. & cert. ef. 9-16-88; DEQ 29-1990, f. & cert. ef. 7-13-90
37

38 **Administrative Record**

39 **340-122-110** (1) For purposes of the Director's selection or approval of a removal or
40 remedial action, and enforcement, cost recovery, or review, if any, related to the Director's action,
41 the administrative record shall consist of the following types of documents generated for a facility
42 up to the time of the Director's action:

- 43 (a) Factual information, data, and analyses that form a basis for the Director's action;
- 44 (b) The preliminary assessment, remedial investigation and feasibility study, as applicable;

- 1 (c) Orders, consent decrees, settlement agreements, work plans, and other decision
2 documents;
- 3 (d) Guidance documents and technical literature that form a basis for the Director's action;
4 and
- 5 (e) Public comments and other information received by the Department prior to the
6 Director's action, and Department responses to significant comments.
- 7 (2) Unless expressly designated part of the administrative record by the Director, the
8 administrative record shall not include:
- 9 (a) Draft documents and internal memoranda;
10 (b) Documents relating to the liability of persons potentially liable under ORS 465.255;
11 (c) Documents relating to state remedial action costs; and
12 (d) Documents privileged under law or confidential under ORS 192.501 or 192.502.

13
14 Stat. Auth.: ORS 465.400(1), 465.405, Ch. 466 & 468.020

15 Hist.: DEQ 26-1988, f. & cert. ef. 9-16-88; DEQ 29-1990, f. & cert. ef. 7-13-90

16
17
18 **Definitions**

19 **340-122-115** Terms not defined in this rule have the meanings set forth in ORS 465.200.
20 Additional terms are defined as follows unless the context requires otherwise:

21 (1) "Acceptable risk level" with respect to the toxicity of hazardous substances has the
22 meaning set forth in ORS 465.315(1)(b)(A) and (B) and is comprised of the acceptable risk level
23 definitions provided for carcinogenic exposures, noncarcinogenic exposures, and ecological
24 receptors in sections (2) through (6) of this rule.

25 (2) "Acceptable risk level for human exposure to individual carcinogens" means:

26 (a) For deterministic risk assessments, a lifetime excess cancer risk of less than or equal
27 to one per one million for an individual at an upper-bound high-end exposure; or

28 (b) For probabilistic risk assessments, a lifetime excess cancer risk for each carcinogen of
29 less than or equal to one per one million at the 90th percentile, and less than or equal to one per
30 one hundred thousand at the 95th percentile, each based upon the same distribution of lifetime
31 excess cancer risks for an exposed individual.

32 (3) "Acceptable risk level for human exposure to multiple carcinogens" means the
33 acceptable risk level for human exposure to individual carcinogens and:

34 (a) For deterministic risk assessments, a cumulative lifetime excess cancer risk for
35 multiple carcinogens and multiple exposure pathways of less than or equal to one per one
36 hundred thousand at an upper-bound high-end exposure; or

37 (b) For probabilistic risk assessments, a cumulative lifetime excess cancer risk for
38 multiple carcinogens and multiple exposure pathways of less than or equal to one per one
39 hundred thousand at the 90th percentile and less than or equal to one per ten thousand at the 95th
40 percentile, each based upon the same distribution of cumulative lifetime excess cancer risks for
41 an exposed individual.

42 (4) "Acceptable risk level for human exposure to noncarcinogens" means:

43 (a) For deterministic risk assessments, a hazard index ~~number~~ less than or equal to one for
44 an individual at an upper-bound high-end exposure; or

1 (b) For probabilistic risk assessments, a hazard index ~~number~~ less than or equal to one at
2 the 90th percentile, and less than or equal to ten at the 95th percentile, each based upon the same
3 distribution of hazard index numbers for an exposed individual.

4 (5) "Acceptable risk level for individual ecological receptors" applies only to species
5 listed as threatened or endangered pursuant to 16 USC 1531 et seq. or ORS 465.172, and means:

6 (a) For deterministic risk assessments, a toxicity index quotient ~~number~~ less than or
7 equal to one for an individual ecological receptor at an upper-bound exposure, where the toxicity
8 index is the sum of the toxicity quotients attributable to systemic toxicants with similar endpoints
9 for similarly-responding species and the toxicity quotient is the ratio of the exposure point value
10 to the ecological benchmark value; or at the 100th percentile of a distribution of toxicity quotient
11 numbers for each contaminant of ecological concern, and a toxicity index of less than or equal to
12 one at the 100th percentile of a distribution of toxicity index numbers; or

13 (b) For probabilistic risk assessments, a toxicity index less than or equal to one at the 90th
14 percentile and less than or equal to 10 at the 95th percentile, each based on the same distribution
15 of toxicity index numbers for an exposed individual ecological receptor; or

16 (c) (b) A weight of evidence analysis, based on modeling, field studies, laboratory
17 investigations, or any combination of these or other methods acceptable to the Department,
18 which indicates that ~~The probability of important changes in such factors as growth, survival,~~
19 fecundity, or reproduction related to the health and viability of an individual ecological receptor
20 that are reasonably likely to occur as a consequence of exposure to hazardous substances
21 toxicological responses is de minimis.

22 (6) "Acceptable risk level for populations of ecological receptors" means a 10 percent
23 chance, or less, that no more than 20 percent of the total local population will be exposed to an
24 exposure point value greater than the ecological benchmark value for each contaminant of
25 concern and no other observed significant adverse effects on the health or viability of the local
26 population.

27 ~~(a) 10 percent chance, or less, that no more than 20 percent of the total local population~~
28 ~~will be exposed to an exposure point value greater than the ecological benchmark value for each~~
29 ~~contaminant of ecological concern; or~~

30 ~~(b) A weight of evidence analysis, based on field studies, laboratory investigations,~~
31 ~~appropriate population models, or any combination of these or other methods acceptable to the~~
32 ~~Department, which indicates that the probability of ecological responses is de minimis.~~

33 (7) "Assessment endpoint" means an explicit expression of a specific ecological receptor
34 and an associated function or quality that is to be maintained or protected. Assessment endpoints
35 represent ecological receptors directly or their surrogates for the purposes of an ecological risk
36 assessment.

37 (8) "Background level" means the concentration of hazardous substance, if any, existing
38 in the environment in the location of the facility before the occurrence of any past or present
39 release or releases.

40 (9) "Beneficial uses of water" means any current or reasonably likely future beneficial
41 uses of groundwater or surface water by humans or ecological receptors.

42 (10) "Carcinogen" means any substance or agent that produces or tends to produce
43 cancer in humans.

1 (11) "Cleanup level" for purposes of OAR 340-122-045, means the residual
2 concentration of a hazardous substance in a medium that is determined to be protective of public
3 health, safety and welfare, and the environment under specified exposure conditions.

4 (12) "Commission" means the Environmental Quality Commission.

5 (13) "Confirmed release" means a release of a hazardous substance into the environment
6 that has been confirmed by the Department in accordance with OAR 340-122-073.

7 (14) "Confirmed release list" means a list of facilities for which the Director has
8 confirmed a release of a hazardous substance.

9 (15) "Contaminant of concern" means a hazardous substance that is present in such
10 concentrations that the contaminant poses a threat or a potentially unacceptable risk to public
11 health, safety or welfare, or the environment considering:

12 (a) The toxicological characteristics of the hazardous substance that influence its ability
13 to affect adversely human health, ecological receptors or the environment relative to the
14 concentration of the hazardous substance at the facility;

15 (b) The chemical and physical characteristics of the hazardous substance that govern its
16 tendency to persist in the environment, move through environmental media, or accumulate
17 through food webs;

18 (c) The background level of the hazardous substances;

19 (d) The thoroughness of the testing for the hazardous substance at the facility;

20 (e) The frequency that the hazardous substance has been detected at the facility; and

21 (f) Degradation by-products of the hazardous substances.

22 (16) "Critical endpoint" or "Critical effect" means the adverse health effect used as the
23 basis for the derivation of the reference dose (RfD). Exposure to a given chemical may result in a
24 variety of toxic effects (e.g., liver defects, kidney defects, or blood defects). The critical endpoint
25 is selected from the different adverse health effects produced by a given chemical, and is the
26 adverse health effect with the lowest dose level that produced toxicity.

27 (17) "Department" means the Oregon Department of Environmental Quality.

28 (18) "Deterministic risk assessment" means a risk assessment that produces a point value
29 estimate of risk for a specific set of exposure assumptions.

30 (19) "De minimis release" means a release of a hazardous substance that, because of the
31 quantity or characteristics of the hazardous substance released and the potential for migration and
32 exposure of human or environmental receptors, can reasonably be considered to pose no
33 significant threat to public health, safety or welfare, or the environment.

34 (20) "Director" means the Director of the Department of Environmental Quality or the
35 Director's authorized representative.

36 (21) "Ecological benchmark value" means, ~~for deterministic risk assessments,~~ the
37 highest no-observed-adverse-effect-level (NOAEL) for individual ecological receptors
38 considering effects on reproductive success or the median lethal dose or concentration (LD50 or
39 LC50) for populations of ecological receptors. If a NOAEL, LD50 or LC50, as applicable, is
40 not available for ecological receptors considered in the risk assessment, the ecological
41 benchmark value may be derived from other toxicological endpoints for those receptors or
42 appropriate surrogates for those receptors, adjusted with uncertainty factors to equate to a
43 NOAEL, LD50 or LC50. The ecological benchmark value shall be based, to the extent
44 practicable, on or a level derived from other toxicity endpoints with appropriate safety factors
45 that equates to a NOAEL (or, for a probabilistic assessment, a distribution of NOAEL values

1 with associated measures of uncertainty) established by studies whose routes of exposure and
2 duration of exposure were was commensurate with the expected routes and duration of exposure
3 for and whose toxicity endpoints included measures of reproductive success for a site-related
4 ecological receptors considered in the risk assessment, or ~~an~~ appropriate surrogates for those at
5 receptors.

6 (22) "Ecological receptor" means a population of plants or animals ~~in the locality of the~~
7 ~~facility (excluding domestic animals and cultivated plants);~~ or an individual member of any
8 species listed as threatened or endangered pursuant to 16 U.S.C. 1532 et seq. or ORS 496.172.;
9 ~~or the habitat for any such listed species.~~

10 (23) "Ecological responses" means significant changes in factors such as survivorship,
11 fecundity, abundance, genetic diversity, demographic structure, or habitat quality related to the
12 health and viability of a local population of an ecological receptor as a consequence of exposure
13 to a hazardous substance.

14 (23)(24) "Engineering control" means a remedial method used to prevent or minimize
15 exposure to hazardous substances, including technologies that reduce the mobility or migration
16 of hazardous substances. Engineering controls may include, but are not limited to, capping,
17 horizontal or vertical barriers, hydraulic controls, and alternative water supplies.

18 (24)(25) "Environment" includes ecological receptors, the waters of the state, any
19 drinking water supply, any land surface and subsurface strata, sediments, saturated soils,
20 subsurface gas, or ambient air or atmosphere.

21 (25)(26) "Exposure point value" means the concentration or dose of a hazardous
22 substance occurring at a location of potential contact between a human receptor and the
23 hazardous substance, or between an ecological receptor and the hazardous substance.

24 (26)(27) "Facility" or "Site" means any building, structure, installation, equipment, pipe
25 or pipeline including any pipe into a sewer or publicly owned treatment works, well, pit, pond,
26 lagoon, impoundment, ditch, landfill, storage container, above ground tank, underground storage
27 tank, motor vehicle, rolling stock, aircraft, or any site or area where a hazardous substance has
28 been deposited, stored, disposed of, or placed, or otherwise come to be located and where a
29 release has occurred or where there is a threat of a release, but does not include any consumer
30 product in consumer use or any vessel.

31 ~~(28) "Generic feasibility study" means a feasibility study demonstrating that a generic~~
32 ~~remedy, when applied to eligible facilities, may be presumed to be consistent with the remedy~~
33 ~~selection factors of OAR 340-122-090.~~

34 ~~(29) "Generic remedy" means a remedial method developed or identified by the~~
35 ~~Department for potential use at eligible facilities on a streamlined basis with limited evaluation~~
36 ~~of other remedial methods.~~

37 (30) "Generic risk assessment" means a risk assessment, performed in a manner
38 consistent with the risk protocol set forth in OAR 340-122-084, demonstrating that a generic
39 remedy, when applied to eligible facilities, may be presumed to be consistent with requirements
40 of OAR 340-122-090.

41 (27)(31) "Groundwater" means any water, except capillary moisture, beneath the land
42 surface or beneath the bed of any stream, lake, reservoir or other body of surface water within the
43 boundaries of the state, whatever may be the geological formation or structure in which such
44 water stands, flows, percolates or otherwise moves.

1 | ~~(28)~~(32) "Hazard index" means a number equal to the sum of the hazard quotients
2 | attributable to systemic toxicants with similar toxic endpoints.

3 | ~~(29)~~(33) "Hazard quotient" means the ratio of the exposure point value to the reference
4 | dose, where the reference dose is typically the highest dose causing no adverse effects on
5 | survival, growth or reproduction in human populations.

6 | ~~(30)~~(34) "Hazardous substance" means:

7 | (a) Hazardous waste as defined in ORS 466.005;

8 | (b) Any substance defined as a hazardous substance pursuant to section 101(14) of the
9 | federal Comprehensive Environmental Response, Compensation and Liability Act, P.L. 96-510,
10 | as amended, and P.L. 99-499;

11 | (c) Oil as defined in ORS 465.200(18); and

12 | (d) Any substance designated by the commission under ORS 465.400.

13 | ~~(31)~~(35) "Hot spots of contamination" means:

14 | (a) For groundwater or surface water, hazardous substances having a significant adverse
15 | effect on ~~existing or reasonably likely future~~ beneficial uses of water or waters to which the
16 | hazardous substances would be reasonably likely to migrate and for which treatment is
17 | reasonably likely to restore or protect such beneficial uses within a reasonable time, as
18 | determined in the feasibility study; and

19 | (b) For media other than groundwater or surface water, (e.g., contaminated soil, debris,
20 | sediments, and sludges; drummed wastes; "pools" of dense, non-aqueous phase liquids
21 | submerged beneath groundwater or in fractured bedrock; and non-aqueous phase liquids floating
22 | on groundwater), if hazardous substances present a risk to human health or the environment
23 | exceeding the acceptable risk level, the extent to which the hazardous substances:

24 | (A) Are present in concentrations exceeding risk-based concentrations corresponding to:

25 | (i) 100 times the acceptable risk level for human exposure to each individual carcinogen
26 | ~~lifetime excess cancer risk of 1×10^{-4} for human exposure to each individual carcinogen;~~

27 | (ii) 10 times the acceptable risk level for human exposure to each individual
28 | ~~noncarcinogen hazard quotient of 10 for human exposure to each noncarcinogen;~~ or

29 | (iii) 10 times the acceptable risk level for exposure of individual ecological receptors or
30 | populations of ecological receptors to each individual hazardous substance; a toxicity quotient of
31 | ~~10 for ecological receptors;~~

32 | (B) Are reasonably likely to migrate to such an extent that the conditions specified in
33 | subsection (a) or paragraphs (b)(A) or (b)(C) would be created; or

34 | (C) Are not reliably containable, as determined in the feasibility study.

35 | ~~(32)~~(36) "Institutional control" means a legal or administrative tool or action taken to
36 | reduce the potential for exposure to hazardous substances. Institutional controls may include, but
37 | are not limited to, use restrictions, environmental monitoring requirements, and site access and
38 | security measures.

39 | ~~(33)~~(37) "Inventory" means a list of facilities for which the Director has confirmed a
40 | release of a hazardous substance and, based on a preliminary assessment or equivalent
41 | information, has determined that additional investigation, removal, remedial action, or long term
42 | engineering or institutional controls related to removal or remedial action are required to assure
43 | protection of the present and future public health, safety and welfare, and the environment.

1 (34)(38) "Locality of the facility" means any point where a human or an ecological
2 receptor contacts, or is reasonably likely to come into contact with, facility-related hazardous
3 substances, considering:

4 (a) The chemical and physical characteristics of the hazardous substances;

5 (b) Physical, meteorological, hydrogeological, and ecological characteristics that govern
6 the tendency for hazardous substances to migrate through environmental media or to move and
7 accumulate through food webs;

8 (c) Any human activities and biological processes that govern the tendency for hazardous
9 substances to move into and through environmental media or to move and accumulate through
10 food webs; and

11 (d) The time required for contaminant migration to occur based on the factors described
12 in subsections (34)(38)(a) through (c) of this rule.

13 (35)(39) "Measurement endpoints for ecological receptors" are quantitative expressions
14 of an observed or measured response in ecological receptors exposed to hazardous substances.

15 (36)(40) "Noncarcinogen" means hazardous substances with adverse health effects on
16 humans other than cancer.

17 (37)(41) "Onsite", for purposes of ORS 465.315(3), means the areal extent of
18 contamination and all suitable areas in close proximity to the contamination necessary for
19 implementation of a removal or remedial action.

20 (38)(42) "Permitted or authorized release" means a release that is from an active facility
21 and that is subject to and in substantial compliance with a current and legally enforceable permit
22 issued by an authorized public agency.

23 (39)(43) "Population" and "Local population", for purposes of evaluating ecological
24 receptors, means a group of individual plants, animals, or other organisms of the same species
25 that live together and interbreed within a given habitat, including. ~~Population includes any~~
26 ~~portion of a population of a transient or migratory species that uses habitat in the locality of the~~
27 ~~facility for only a portion of the year or for a portion of their lifecycle.~~

28 (40)(44) "Practical quantification limit" or "PQL" means the lowest concentration that
29 can be reliably measured within specified limits of precision, accuracy, representativeness,
30 completeness, and comparability when testing field samples under routine laboratory operating
31 conditions using Department-approved methods.

32 (41)(45) "Preliminary assessment" means an investigation conducted in accordance with
33 OAR 340-122-072 for the purpose of determining whether additional investigation, removal,
34 remedial action, or related engineering or institutional controls are needed to assure protection of
35 public health, safety and welfare, and the environment.

36 (42)(46) "Probabilistic risk assessment" means a risk assessment that produces a credible
37 range or distribution of possible risk estimates by taking into consideration the variability and
38 uncertainty in the exposure and toxicity data used to make the assessment.

39 (43)(47) "Release" means any spilling, leaking, pumping, pouring, emitting, emptying,
40 discharging, injecting, escaping, leaching, dumping or disposing into the environment including
41 the abandonment or discarding of barrels, containers and other closed receptacles containing any
42 hazardous substance, or any threat thereof, but excludes:

43 (a) Any release which results in exposure to a person solely within a workplace, with
44 respect to a claim that the person may assert against the person's employer under ORS Chapter
45 656;

1 (b) Emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel or
2 pipeline pumping station engine;

3 (c) Any release of source, by product or special nuclear material from a nuclear incident,
4 as those terms are defined in the Atomic Energy Act of 1954, as amended, if such release is
5 subject to the requirements with respect to financial protection established by the Nuclear
6 Regulatory Commission under Section 170 of the Atomic Energy Act of 1954, as amended, or,
7 for the purposes of ORS 465.260 or any other removal or remedial action, any release of source
8 by product special nuclear material from any processing site designated under Section
9 102(a)(1) or 302(a) of the Uranium Mill Tailings Radiation Control Act of 1978; and

10 (d) The normal application of fertilizer.

11 ~~(44)(48)~~ "Remedial action" and "Removal" have the meanings set forth in ORS 465.200
12 (22) and (24), respectively, and, for purposes of these rules, may include investigations,
13 treatment, excavation and offsite disposal, engineering controls, institutional controls, any
14 combination thereof.

15 ~~(45)(49)~~ "Remediated" means implementation of a removal or remedial action.

16 ~~(46)(50)~~ "Residual risk assessment" means both:

17 (a) A quantitative assessment of the risk resulting from concentrations of untreated waste
18 or treatment residuals remaining at the conclusion of any treatment and offsite disposal taking
19 into consideration current and reasonably likely future land and water use scenarios and the
20 exposure assumptions used in the baseline risk assessment; and

21 (b) A qualitative or quantitative assessment of the adequacy and reliability of any
22 institutional or engineering controls to be used for management of treatment residuals and
23 untreated hazardous substances.

24 ~~(47)(51)~~ "Risk" means the probability that a hazardous substance, when released into the
25 environment, will cause adverse effects in exposed humans or ecological receptors.

26 ~~(48)(52)~~ "Risk assessment" means the process used to determine the probability of an
27 adverse effect due to the presence of hazardous substances. A risk assessment includes
28 identification of the hazardous substances present in the environmental media; assessment of
29 exposure and exposure pathways; assessment of the toxicity of the hazardous substances;
30 characterization of human health risks; and characterization of the impacts or risks to the
31 environment.

32 ~~(49)(53)~~ "Sensitive environment", for purposes of OAR 340-122-045, means an area of
33 particular environmental value where a hazardous substance could pose a greater threat than in
34 other non-sensitive areas. Sensitive environments include but are not limited to: Critical habitat
35 for federally endangered or threatened species; National Park, Monument, National Marine
36 Sanctuary, National Recreational Area, National Wildlife Refuge, National Forest Campgrounds,
37 recreational areas, game management areas, wildlife management areas; designated federal
38 Wilderness Areas; wetlands (freshwater, estuarine, or coastal); wild and scenic rivers; state
39 parks; state wildlife refuges; habitat designated for state endangered species; fishery resources;
40 state designated natural areas; county or municipal parks; and other significant open spaces and
41 natural resources protected under Goal 5 of Oregon's Statewide Planning Goals.

42 ~~(50)(54)~~ "Significant adverse effect on beneficial uses of water" means current or
43 reasonably likely future exceedance of:

44 (a) Applicable or relevant federal, state or local water quality standards, criteria, or
45 guidance or specifications;

1 (b) In the absence of applicable or relevant water quality standards, criteria, or guidance
2 or specifications, the acceptable risk level ; or

3 (c) If subsections (a) and (b) of this section do not apply, the concentration of a hazardous
4 substance indicated by available published peer-reviewed scientific information to have a
5 significant adverse effect on a current or reasonably likely future beneficial use of water.

6 (51)(55) "Soil" means a mixture of organic and inorganic solids, air, water, and biota
7 which exists on the earth surface above bedrock, including materials of anthropogenic sources
8 such as slag and sludge.

9 (52)(56) "Surface water" means lakes, bays, ponds, impounding reservoirs, springs,
10 wells, rivers, streams, creeks, estuaries, wetlands, inlets, canals, the Pacific Ocean within the
11 territorial limits of the State of Oregon, and all other bodies, natural or artificial, inland or
12 coastal, fresh or salt, public or private (except those private waters which do not combine or
13 effect a junction with natural surface waters), which are wholly or partially within or bordering
14 the state or within its jurisdiction.

15 (53)(57) "Total excess cancer risk" means the upper bound on the estimated excess
16 cancer risk associated with exposure to multiple hazardous substances and multiple exposure
17 pathways.

18 (58) "~~Toxicity endpoint~~" means, ~~for ecological receptors, the type of toxic response and~~
19 ~~the biological level of organization at which it occurs. Major toxic responses include tissue~~
20 ~~damage and other pathological changes, biochemical lesions, pharmacological responses or~~
21 ~~physiological changes, reproductive and teratogenic effects, mutagenicity, carcinogenicity,~~
22 ~~irritation and corrosive effects, and allergic reactions. Major biological levels of organization~~
23 ~~include molecular, cellular (including specific organs), organismal (individual), population,~~
24 ~~community, and ecosystem.~~

25 ~~(59) "Toxicity index" means a number equal to the sum of the toxicity quotient numbers~~
26 ~~attributable to systemic toxicants with similar toxic endpoints for similarly responding species.~~

27 (60) "~~Toxicity quotient~~" means the ratio of the exposure point value to the ecological
28 benchmark value.

29 ~~(61) "Toxicological response" means significant changes in such factors as growth,~~
30 ~~survival, fecundity, or reproduction related to the health and viability of an individual ecological~~
31 ~~receptor as a consequence of exposure to a hazardous substance.~~

32 (54)(62) "Treatment" means to permanently and substantially eliminate or reduce the
33 toxicity, mobility or volume of hazardous substances with the use of either *in-situ* or *ex-situ*
34 remedial technologies.

35
36 Stat. Auth.: ORS 465.315 & 465.400

37 Hist.:

38

39

Attachment F

**RULE IMPLEMENTATION PLAN
PROPOSED REVISIONS TO
DIVISION 122 RULES:
HAZARDOUS SUBSTANCE REMEDIAL ACTION**

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal
for
Environmental Cleanup Rules

Rule Implementation Plan

Summary of the Proposed Rule

The 1995 Legislature adopted amendments to the state's environmental cleanup law that requires rulemaking in three subject areas:

1. Risk protocol for risk assessment;
2. Definition of "hot spots"; and
3. Remedy selection balancing criteria

Proposed Effective Date of the Rule

The rules will be effective upon filing with the Secretary of State after adoption by the Environmental Quality Commission. Pending remedial actions on the effective date may complete such actions in accordance with the Record of Decision issued before the new rules took effect.

Proposal for Notification of Affected Persons

The primary persons affected are those who are or will be conducting cleanups with Department oversight. The rulemaking process has included all Responsible Parties on the mailing list. Additionally, environmental consulting firms, attorneys, environmental organizations, and citizens have received mailings and have participated in workshops and community discussion groups.

During the public hearing period, the Department held a "kick-off" session for comments on October 2, 1995, and the Department had information sessions that preceded the nine hearings around the state.

Once the rules are adopted, the Department will notify all persons on the mailing list. As guidance is developed, the Department will hold several training sessions for both affected parties and Department staff.

Proposed Implementing Actions

As noted above, the Department has conducted both a "kick-off" session and information sessions during the public comment period of the rules. While WMC has made some changes to the rules stemming from public comment, we believe both affected parties and Department staff were best served by holding these sessions prior to EQC adoption.

After adoption of the rules, WMC will be creating guidance documents for some of the specifics in the rules. Examples of some of the specifics are:

- Conducting ecological risk assessment;
- Use of probabilistic methods in risk assessment;
- Identification of current and reasonably likely beneficial uses of water;
- Identification of current and reasonably likely land uses;
- "Hot spots"; and
- Balancing factors including different thresholds for cost.

Proposed Training/Assistance Actions

Most of the training for staff will be provided by Headquarters policy staff. Some of the training is highly technical (e.g., probabilistic methods) and will require some outside technical expertise.

WMC already conducts quarterly technical discussion forums (TDFs). These sessions will be augmented with "circuit rider" sessions that will be held in each region on specific topics. As regional staff become more trained, there will be regional experts in each region to continue both internal and external training.

During rule development, regional staff conducted Community Discussion Groups (CDGs). These sessions were particularly valuable in that both staff and the community were trained on the rules as they evolved through the rulemaking process.

As during the rulemaking process, the Department will continue to conduct informational sessions - both as DEQ-sponsored sessions and as part of other conferences (e.g., REMCON, legal CLEs, etc.).

WMC will arrange for some outside trainers to come in on certain issues (e.g., probabilistic risk assessment, ecological risk assessment), but EPA Superfund training may not be as appropriate as in the past (under the new law, DEQ will be less likely to default to EPA approaches).

WMC staff will begin developing guidance immediately. Pieces of guidance will be in place when the rules are adopted (anticipated to be in January, 1997), but other elements will be completed post-rule.

As was done during "early implementation" of the revised law, WMC will conduct "Site Clearinghouse" sessions to arrive at timely, definitive resolutions to amendment/rule-related issues.

The combination of written guidance, workshops, technical discussion forums, circuit-rider sessions, outside training, and quick-turnaround site clearinghouse sessions should smooth implementation for both staff and affected parties.

Attachment G

**HOT SPOT SUMMARY AND REFERENCES FOR THE
PROPOSED REVISIONS TO
DIVISION 122 RULES:
HAZARDOUS SUBSTANCE REMEDIAL ACTION**

OREGON DEPARTMENT of ENVIRONMENTAL QUALITY DEVELOPMENT of PROPOSED ENVIRONMENTAL CLEANUP RULES

EXECUTIVE SUMMARY of HOT SPOT EVALUATION REPORT

PRC Environmental Management, Inc. (PRC), was contracted by the Oregon Department of Environmental Quality (ODEQ) to assist in evaluating alternative definitions of "hot spots" in contaminated soils. This evaluation resulted in the "Hot Spot Evaluation Report" dated August 8, 1996. A condensed summary of the report is presented below.

PURPOSE AND OBJECTIVES

The overall purpose of the hot spot evaluation project is to provide information to the ODEQ relating the effects of remediating contaminated media with alternative definitions of "hot spots" in soils on volume and cost. ODEQ will use this information to understand and evaluate the merits of alternative approaches to hot spot definitions.

Although the project focused on the high concentration portion of the hot spot definition, other components are examined in relation to their effect on the hot spot definition, specifically, applying hot spot cleanup levels based on ecological receptors and the mobility of contaminants.

APPROACH

The project estimated the relative soil volume and projected costs for remediating soil hot spots at six facilities using three different risk-based hot spot definitions. To do this, hot spot cleanup levels for the compounds of concern (COC) at each facility were calculated using the results of the risk assessments conducted during the remedial investigation (RI) performed at each site using an escalating scale of the incremental lifetime cancer risk (ILCR) of 1 in 100,000 (10^{-5}) to 1 in 1,000 (10^{-3}) for carcinogens and a hazard quotient of 10 for noncarcinogens (hazard quotients of less than 1 are considered to have no effects on humans). The volume of contaminated media that exceed each hot spot cleanup level was estimated. Costs were then estimated for applying the selected remedy documented in the record of decision (ROD) for each facility. The sites evaluated include McCormick and Baxter Creosoting Company (McCormick and Baxter), Balteau Standard, Inc. (Balteau), Salem Riverfront Park (Salem), Linnton Oil Fire Training Grounds (LOFTG), and Schnitzer Investment Corporation, Moody Avenue, (Schnitzer) Units A and C. In addition, the project qualitatively evaluated the relative effects of considering ecological receptors and the mobility of contaminants estimated on the values of hot spot volume and associated remedial action costs.

HOT SPOT CLEANUP LEVELS

Hot spot cleanup levels were determined based on carcinogenic risks of 1×10^{-3} , 1×10^{-4} , and 1×10^{-5} or a noncarcinogenic hazard quotient of 10. These cleanup levels were based on remedial action levels presented in the site-specific RODs when feasible. Risk-based concentrations or remedial cleanup goals presented in the site-specific remedial investigation/feasibility studies (RI/FS) were used as the basis for hot spot cleanup levels if the remedial action levels presented in the ROD could not be used. The exposure scenarios (e.g., residential or industrial) and exposure parameters used in the RODs or RI/FSs were also used to calculate the hot spot cleanup levels. In most cases, the previously determined remedial action levels were simply adjusted by a factor of 10 or 100 to determine the new hot spot cleanup levels.

VOLUME CALCULATIONS

The volume of soil which contain concentrations of the COCs above the hot spot cleanup levels for each site was estimated. Every attempt was made to estimate soil volumes in a consistent manner as was done in the feasibility studies. Different methods for estimating volumes were used for each facility due to nuances of data collection and availability, assumptions, and methods used in the FSs.

The following general methods for estimating volumes were used in order of preference:

- Volume versus concentration curves (McCormick and Baxter and Schnitzer Units) were used where possible to estimate the volume of contaminated soil for an individual chemical species. Calculating volumes in instances where two or more chemicals were commingled, as in the case with McCormick and Baxter, was not possible using this method.
- Volumes were calculated based on estimating the area and depth of contaminated soil using data presented in maps, cross-sections, and soil quality data provided in the RI/FSs. Where possible, soil volumes were calculated by using a planimeter to estimate the area within an area demarcated by an iso-concentration contour map (Salem, Balteau, LOFTG). However, in some cases only one data point was used to estimate the area of contaminated soil in the FS. In these cases the same assumptions for the area of contaminated soil in the FS were used (Salem, LOFTG). Depth was estimated using assumptions presented in the FSs based on field screening methods (McCormick and Baxter), sample analytical results, and/or geologic cross-sections (Balteau, Salem).
- Volumes were also calculated using area calculations based on grid sampling cells presented in the FS. In these cases, the areas were calculated using the grid and a depth of contamination was assumed (Schnitzer Unit C, and Balteau).
- In instances where volumes below a certain depth (Schnitzer Units A and C) were not calculated in the FS, the volumes were estimated where data was available.

It should be noted that these estimates were performed to obtain a rough estimate of the volumes and costs associated with the various risk level to evaluate relative differences among the hot spot definitions. Actual volumes would likely have yielded different and, in some cases, more accurate results.

COST CALCULATIONS

The study evaluated the costs associated with performing the selected remedy on the estimated volume of soil under the three hot spot cleanup level concentrations. The unit costs for the ROD-selected remedy presented in the respective FSs were used to calculate costs. Where the estimated volume of soil decreased to the point where the selected remedy was not considered practical, the cost estimate was based on unit costs for excavation and removal. Costs for engineering design, site preparation and rehabilitation, permitting, and other administrative fees were not included in the cost estimates.

McCORMICK AND BAXTER CREOSOTING COMPANY

The remedial action cleanup level specified in the ROD ranged from approximately 5×10^{-4} for polycyclic aromatic hydrocarbons (PAHs) to 1×10^{-5} for pentachlorophenol. A comparison of the magnitude of risk reduction associated with a given level of risk reduction indicated that an approximately three-fold increase in soil volume is required to achieve an order of magnitude (ten-fold) level of risk reduction. A similar relationship between costs and risk reduction was also observed. Further evaluation found that soil contamination present at concentrations greater than the 10^{-5} risk level covered the majority of the site. Soil contamination which exceeded the 10^{-4} level was limited to source areas and some surrounding soils. Only PAH-contaminated soil contributed significantly to the hot spot volume at the 10^{-3} risk level. Due to the nature of the contamination present at the site, there was little change in the anticipated remedial technology selected for each hot spot definition evaluated. The McCormick and Baxter site was evaluated assuming an industrial land use exposure scenario. Consequently, exposure assumptions and corresponding risk levels are not expected to change significantly under the new cleanup rules.

BALTEAU STANDARD, INC.

Polychlorinated biphenyls (PCBs) were the only COCs present at the Balteau site. The remedial action cleanup level selected in the ROD corresponded an approximate risk level of 1×10^{-4} (7×10^{-5}). For the Balteau site, a four fold percent increase in soil volume resulted in an order of magnitude reduction in residual risk. A similar relationship between cost and risk reduction was also observed. It was found that the 10^{-5} risk level encompassed the majority of the site, the 10^{-4} risk level encompassed primarily source areas and the 10^{-3} risk level resulted in a relatively small volume of soil (approximately 400 cy). The contaminated soil at the Balteau site was taken off site for disposal although the revised cleanup law specifies a preference for treatment for hot spots. Off-site disposal was preferred due to the high costs associated with treatment of PCBs (typically off-site incineration) and would not be expected to change as a result of changes in hot spot volume. As with the

McCormick and Baxter site, the Balteau site was evaluated based on industrial exposure scenarios and the results are not expected to change significantly under the new cleanup rules.

SALEM RIVERFRONT PARK

The ROD level for the Salem site was based on a 10^{-5} risk level for individual carcinogens and the EPA acceptable level for lead of 400 mg/kg. The cumulative risk was not to exceed a 10^{-4} risk level. Since lead is a noncarcinogen, the hot spot cleanup level considered was 4,000 mg/kg (10 times the acceptable risk level). Soil contaminated at concentrations above a risk level of 10^{-4} appeared to be confined to source areas (for example, the tar well) while the 10^{-5} risk level included source areas and adjacent soils. No contamination was present which exceeded the 10^{-3} risk level. Due the lack of soil data available, it was difficult to estimate the volume of soil present at the 10^{-5} level at the location of the former MGP. The hot spot volume for PAH-contaminated soil approximately doubled when going from the 10^{-4} to 10^{-5} risk level while the treatment costs are only expected to increase by 50 percent.

The selected remedy called for excavation and off-site disposal for all non-RCRA hazardous waste due to the greater cost savings achieved. Any RCRA hazardous waste would require treatment through stabilization prior to off-site disposal. The remedial technology selected is not expected to change based on hot spot volume. Since exposure scenarios were based on park visitor and park worker exposure scenarios, remedial action cleanup levels are not expected to change significantly under the new cleanup rules.

LINNTON OIL FIRE TRAINING GROUNDS

The remedial action cleanup level for the Linnton Oil Fire Training Grounds (LOFTG) site specified in the ROD was based on direct contact with contaminated soil and exposure to groundwater based on a soil/groundwater partitioning analysis. The corresponding risk level was estimated to be 2×10^{-5} . Since this hot spot evaluation is based only on direct contact soil exposures, a direct correlation between risk levels is not possible. However, a comparison between the various cleanup levels is considered useful. The volume estimates corresponding to risk levels of 10^{-3} and 10^{-4} changed only slightly (130 to 186 cy) and represented source and site drainage areas. The volume of soil associated with the 10^{-5} risk level increased seven-fold with a five-fold increases in cost and includes the majority of the contaminated areas.

The selected treatment technology (land farming and thermal desorption) would only be cost effective for soil volumes identified as the 10^{-5} risk level. The selected treatment technology would likely change to excavation and off-site disposal or off-site thermal treatment at the 10^{-4} and 10^{-3} risk levels due to the low volumes of contaminated media. Although soil exposures were based on an industrial land use scenario, the groundwater exposures evaluated in the ROD assumed an industrial drinking water exposure. Under the new cleanup rules, drinking water exposures might not be considered reasonably likely at this site, consequently, the volume estimates developed in this evaluation may accurately represent the volumes of soil for which there is a preference for treatment.

SCHNITZER INVESTMENT CORPORATION - UNIT A

The remedial action cleanup level for the Schnitzer Unit A site corresponds to a risk level of approximately 10^{-5} . No soil contamination was detected at the Schnitzer Unit A site at concentrations corresponding to the 10^{-4} or 10^{-3} risk levels. The 10^{-5} level appears to correspond primarily to source areas at the Schnitzer site. Consequently, under the 10^{-3} and 10^{-4} hot spot definitions, engineering and/or institutional controls may be the only remedial technology utilized, although treatment will still be considered during the FS. However, it is considered unlikely that the selected remedial technology (off-site disposal) would change under the new cleanup rules. A couple of things make the Schnitzer Unit A site unique. First, the FS only evaluated soil below a depth of 4 feet. It was assumed that it would not be feasible to remediate soil below this depth and that soil exposures below this depth were less likely to occur. Second, all risk calculations were based on a residential soil exposure scenario. Although the site is expected to be developed for high density residential development, exposure assumptions might change slightly under the revised cleanup rules.

SCHNITZER INVESTMENT CORPORATION - UNIT C

The ROD level for the Schnitzer Unit C site was established at 3000 mg/kg lead, and 10 mg/kg carcinogenic PAHs and PCBs. However, the ROD specified a maximum cleanup volume cap of 3,000 cy. Consequently, it is not possible to ascribe a risk level to the remedial action cleanup level presented in the ROD for comparative purposes. Based on the hot spot definition evaluation, it was determined that only a small volume of soil corresponds to a risk level of 10^{-3} (approximately 400 cy). The 10^{-4} risk level results in an approximate ten-fold volume increase but only a three-fold increase in cost. The 10^{-5} risk level covers a large portion of the site and results in an additional three-fold volume and cost increase. The selected remedial technology was excavation followed by stabilization and off-site disposal and would not be expected to change under the revised cleanup rules. As with Unit A, risk calculations were based on a residential exposure scenario and might change slightly under the revised cleanup rules.

ECOLOGICAL

The ecological assessment focused on a relatively sensitive receptor (masked shrew). In general, hot spot concentrations based on the ecological portion of the definition corresponded to risk-based soil exposure concentrations of less than 10^{-4} . Consequently, the hot spot threshold for ecological receptors might take precedence over the human health portion if sensitive ecological receptors are present.

HIGH MOBILITY

"High mobility" was evaluated for the LOFTG and McCormick and Baxter sites using simple numerical modeling techniques to estimate the soil concentration that could have a significant adverse effect on a beneficial use of water. "High mobility" concentrations developed for the LOFTG and McCormick and Baxter sites based on MCLs and AWQC correspond to a wide range of risk-based soil exposure concentrations (10^{-1} to 10^{-6}). In some instances, the high mobility portion of the hot spot definition may determine whether a hot spot is present depending on contaminant type, potential receptors and hydrogeological factors. Site-specific fate and transport modeling would likely be required to evaluate the high mobility portion of the hot spot definition.

DATA COLLECTION

The thoroughness of the evaluation possible directly corresponded to the amount of data available. For some sites, such as Balteau (approximately 1,000 samples) and McCormick and Baxter (approximately 600 samples), a large volume of data was available for review and evaluation. Consequently, the cost and volume estimates prepared for these sites should be considered more accurate. For other sites, such as Salem and Schnitzer Unit A, less data was available and the volume estimates developed as part of this task order might not be as accurate. This conclusion has implications for the remedial investigation. For example, field screening procedures with detection limits corresponding to the hot spot threshold may be required to be able to accurately and cost effectively delineate hot spot areas.

CONCLUSIONS

The hot spot evaluation resulted in soil volume estimates of COCs at the six sites evaluated under the three definitions of high concentration. In addition, soil volumes and associated remedial action costs were estimated for all COCs for each site and each definition. This information was useful for comparing soil volumes for each definition as well as making a comparison to the "lowest feasible" cleanup level as determined in the RODs negotiated under existing ODEQ rules.

Based on these comparisons, it is possible identify trends and make conclusions regarding how environmental cleanups may differ under each of the three definitions evaluated. However, it is important to note that the volume estimates developed did not take into account the feasibility of achieving a given cleanup level. In actual practice, cleanup levels would be determined based on feasibility and actual cleanup levels may be more or less than the levels identified during this evaluation. It should also be noted that this analysis did not incorporate the costs of engineering or institution controls. For example, costs associated with increased monitoring or a more highly engineered cap which may be incurred if a lower level of risk reduction is achieved have not been factored in.

A review of RODs for each site concluded that the concentration of contaminants left on site to be managed correspond to a site wide risks ranging from 5×10^{-4} to 1×10^{-6} with the majority falling in the 10^{-4} to 10^{-5} range. For some sites, such as the LOFTG site and Schnitzer Unit C, certain aspects of

the FS evaluation make a comparison to the ROD level difficult. For example, at LOFTG, the risk-based soil cleanup level was based both on exposure to contaminated soils as well as exposure to groundwater as determined through a soil/groundwater partitioning analysis. At Schnitzer Unit C, the maximum soil volume requiring treatment and off-site disposal was specified in the ROD at 3,000 cy.

For a number of sites evaluated, the 10^{-3} risk level resulted in a negligible volume of soil that would be defined as a hot spot. Examples include PCP and arsenic at McCormick and Baxter, carcinogenic PAHs at the Salem Riverfront site and Schnitzer Unit A. For many sites, applying the 10^{-4} risk level corresponded to the locations of contaminant source areas. Examples of this include, all COCs at McCormick and Baxter, Balteau, Salem Riverfront and LOFTG. Only one site did not contain any contamination above the 10^{-4} risk level, Schnitzer Unit A. Applying the 10^{-5} risk level generally resulted in large volumes of soil exceeding the hot spot threshold. At only one site, Schnitzer Unit A, did the 10^{-5} risk level correspond to the location of contaminant source areas. For Schnitzer Unit C, the lack of information readily available for this analysis precluded drawing any conclusions regarding source areas. However, all three risk levels evaluated resulted in a significant volume of contamination for the Schnitzer Unit C site.

Based on an overall review of the six sites evaluated, it was found that the volume increase associated with an order of magnitude reduction in risk ranged from two to forty times. Cost increases were typically less, ranging from 2 to 5 times. However, these results appear to be influenced by the amount of data collected. For the McCormick and Baxter and Balteau Standard sites, which had the largest amount of analytical data and are considered to be the most accurate, the volume increase associated with an order of magnitude reduction in risk ranged from 2 to 4 times with a similar increase in cost.

**OREGON DEPARTMENT of ENVIRONMENTAL QUALITY
DEVELOPMENT of PROPOSED ENVIRONMENTAL CLEANUP
RULES**

REFERENCE LIST

The following is a list of materials referred to by DEQ during the development of the proposed rules. A complete set of all materials listed may be reviewed at each of DEQ's regional offices and headquarters. Copies of materials developed by DEQ staff can be mailed upon request. Copies of materials that were not written by DEQ cannot be provided to members of the public due to copyright restraints.

Materials Developed by DEQ (chronological order)

ORS 465.315 - Exemption of Permits and Other Requirements

Memorandum from Kurt Burkholder, Assistant Attorney General, Department of Justice
12/27/95

Land Use and the Environmental Cleanup Process - A Description of Issues for Discussion

Jeff Christensen, Cleanup Policy and Program Development Section, DEQ
1/8/96

Memorandum - Groundwater Protection in Cleanups

Kurt Burkholder, DOJ
2/12/96

Beneficial Use of Water - Discussion Paper

Eric Blischke, Cleanup Policy and Program Development Section, DEQ
2/20/96

Recommendations for Land Use

Jeff Christensen, DEQ
2/21/96

A Risk Protocol Process for Discussion

Bruce Hope, Cleanup Policy and Program Development Section, DEQ
3/14/96

Recommendations on Beneficial Water Use

Eric Blischke, DEQ
3/29/96

Materials Developed by DEQ (continued)

Hot Spots Discussion Paper

Kevin Parrett, Cleanup Policy and Program Development Section, DEQ

3/29/96

A Tiered Risk Protocol for Discussion

Bruce Hope, DEQ

4/23/96

Ecological Risk Issues Discussion Paper

Bruce Hope, DEQ

4/24/96

Preliminary Draft Rules and Recommendations on Hot Spots

Kevin Parrett, DEQ

5/15/96

Key Issues and Background Materials on Balancing Factors

Kevin Parrett and Jeff Christensen, DEQ

5/15/96

Key Issues and Background Materials on Human Health Risk

Ken Jensen, Cleanup Policy and Program Development Section, DEQ

5/31/96

Ecological Risk Assessment Issues

Bruce Hope, DEQ

6/4/96

Recommendations and Preliminary Draft Rules on Balancing Factors and Remedy Selection

Kevin Parrett and Jeff Christensen, DEQ

6/26/96

Ecological Risk Assessment - Policy Issues and Associated Draft Rules

Bruce Hope, DEQ

6/26/96

Memorandum - Hot Spots in Water

Mike Rosen, Cleanup Policy and Program Development Section, DEQ

7/17/96

Background Report on MCLs Related to Oregon's Revised Cleanup Law

Materials Developed by DEQ (continued)

Memorandum - Use of Part A and Part B of HB3352 in Definition of Water Hot Spots

Mike Rosen, DEQ

7/22/96

Hot Spot Evaluation Report

Prepared for DEQ by PRC Environmental Management, Inc.

8/8/96

Published Materials Referred to During Rulemaking Process

“Use of Monte Carlo Simulation for Human Exposure Assessment at a Superfund Site” Roy L. Smith, *Risk Analysis*, Vol. 14, No. 4, 1994, pg 433.

“Principles of Good Practice for the Use of Monte Carlo Techniques in Human Health and Ecological Risk Assessments” David E. Burmaster and Paul D. Anderson, *Risk Analysis*, Vol. 14, No. 4, 1994, pg. 477.

“Uses of Probabilistic Exposure Models in Ecological Risk Assessments of Contaminated Sites” David L. MacIntosh, Glenn W. Sutter II, and F. Owen Hoffman, *Risk Analysis*, Vol. 14, No. 4, 1994, pg 405.

“Characterizing Perception of Ecological Risk” Timothy McDaniels, Lawrence J. Axelrod, and Paul Slovic, *Risk Analysis*, Vol. 14, No. 4, 1995, pg 575.

“Aquatic Ecological Risk” Rick D. Cardwell, Ben R. Parkhurst, W. Warren-Hicks, and Joe S. Volosin, *Water Environment & Technology*, pg. 47, April 1993.

“Who’s Exaggerating?” Adam M. Finkel, *Discover*, pg. 48, May 1996.



**OREGON DEPARTMENT of ENVIRONMENTAL QUALITY
DEVELOPMENT of PROPOSED ENVIRONMENTAL CLEANUP
RULES**

RISK PROTOCOL TECHNICAL WORKGROUP

May, 1996

Tom Foster
EMCON

Rob Forrest
Truax Harris Energy Company

Kathy Futornick
Port of Portland

Mark Whitson
PTI Environmental Services

Nancy Munn
Beak Consultants Inc.

Janet Senior
City of Portland
Bureau of Water Works

Dennis Shelton
CH2M Hill

Tryg Steen
Portland State University
Department of Biology

Paul Whitney
Beak Consultants Inc.

Julie Wilson
GeoEngineers

**OREGON DEPARTMENT of ENVIRONMENTAL QUALITY
DEVELOPMENT of PROPOSED ENVIRONMENTAL CLEANUP
RULES**

REMEDY SELECTION TECHNICAL WORKGROUP

May, 1996

Richard M Glick, Chair
Davis Wright Tremaine

Debra Forslund
Bonneville Power Administration

Carl Batten
ECO Northwest

Brad Berggren
Geraghty & Miller

Bill Cobb
CH2M Hill

Kevin Godbout
Weyerhaeuser

Dan Kearns
Preston Gates & Ellis

Tony Palagyi
Texaco Refining & Marketing Inc

David Wilson
PacifiCorp

**OREGON DEPARTMENT of ENVIRONMENTAL QUALITY
DEVELOPMENT of PROPOSED ENVIRONMENTAL CLEANUP
RULES**

CENTRAL ADVISORY COMMITTEE MEMBERS

July, 1996

Don Haagensen, Chair
Attorney
Cable, Huston, Benedict,
Haagensen & Ferris

Liz Frenkel
Oregon Chapter
Sierra Club

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Partner
Cogan Owens Cogan
Planning & Communications

Dick Bach
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Grey

Bill Funk
Professor at Law
Northwestern School of Law
of Lewis & Clark College

Steve Shain
Vice President
Zidell Resources Inc

Jan Betz
Deputy City Attorney
City of Portland

Kevin Godbout
Weyerhaeuser

Randy Tucker
OSPIRG

Kathy Brewer
Hewlett-Packard Company

Sheila Holden
Portland Area General
Manager
Pacific Power & Light
Company


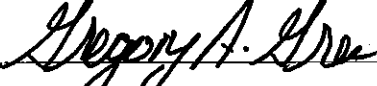

Rich Craig
Environmental Coordinator
Confederated Tribes of
Warm Springs

Ernie Niemi
Vice President
ECONorthwest

Environmental Quality Commission

- Rule Adoption Item
- Action Item
- Information Item

Agenda Item D
Meeting January 10, 1997

Title: Air Quality Industrial Rules (Small Source Title V Deferral Extension)		
Summary: In January, 1995, EPA announced a "transition policy" allowing sources with the Potential To Emit (PTE) at major source levels, but with low <i>actual</i> emissions (less than 50 percent of major source levels) to defer Title V permitting requirements until January, 1997. DEQ adopted a rule (OAR 340-028-2110(4) (b)) to take advantage of the policy. EPA recently extended the deferral by eighteen months, while it engages in rulemaking to redefine PTE (required by recent court cases). The proposed revision would take advantage of the Small Source Title V Deferral Extension. DEQ is currently analyzing how best to deal with the sources affected by the rule after the deferral ends.		
Department Recommendation: The Department recommends that the EQC adopt the rule revision as proposed in Attachment A.		
 Report Author	 Division Administrator	 Director

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

State of Oregon
Department of Environmental Quality

Memorandum

Date: December 24, 1996
To: Environmental Quality Commission
From: Langdon Marsh
Subject: Agenda Item D, Air Quality Industrial Rules (Small Source Title V Deferral Extension) , EQC Meeting January 10, 1997

Background

On October 15, 1996, the Director authorized the Air Quality Division to proceed with a public notice of rulemaking on proposed rules which would extend the current deferral of Title V permitting requirements for some small sources.

Pursuant to the authorization, the notice was published in the Secretary of State's Bulletin on September 1, 1996. The Public Notice and informational materials were mailed to the mailing list of those persons who have asked to be notified of rulemaking actions, and to a mailing list of persons known by the Department to be potentially affected by or interested in the proposed rulemaking action on October 17, 1996.

No Public Hearing was held. The comment period closed on November 22, 1996. No public comment was received, and no changes to the original rule language are proposed.

The following sections summarize the issue that this proposed rulemaking action is intended to address, the authority to address the issue, the process for development of the rulemaking proposal including alternatives considered, a summary of the rulemaking proposal presented for public hearing, a summary of how the rule will work and how it is proposed to be implemented, and a recommendation for Commission action.

Issue this Proposed Rulemaking Action is Intended to Address

In January, 1995, EPA announced a "transition policy" allowing sources with the Potential To Emit (PTE) at major source levels, but with low *actual* emissions (less than 50 percent of major source levels) to defer Title V permitting requirements until January, 1997. DEQ adopted a rule (OAR 340-028-2110(4) (b)) to take advantage of the policy. EPA recently extended the deferral by eighteen months, while it engages in rulemaking to redefine PTE (required by recent court cases). The proposed revision would take advantage of the Small Source Title V Deferral Extension. DEQ is currently analyzing how best to deal with the sources affected by the rule after the deferral ends.

Memo To: Environmental Quality Commission
Agenda Item D, Air Quality Industrial Rules (Small Source Title V Deferral Extension),
EQC meeting January 10, 1997
Page 2

Relationship to Federal and Adjacent State Rules

The rule revision is based on new guidance from EPA.

Authority to Address the Issue

ORS 468.020, 468A.025.

Process for Development of the Rulemaking Proposal (including Advisory Committee and alternatives considered)

The Department considered not extending the deferral, but decided to use the time to finalize analyses of practical limitations on potential to emit. The extra time will also allow EPA time to finish its rulemaking on the definition of potential to emit.

Summary of How the Proposed Rule Will Work and How it Will be Implemented

The rule allows sources with actual emissions below 50 percent of the Title V permit thresholds to defer Title V requirements until July, 1998. Such a deferral is already in effect, and is scheduled to end January 25, 1997. Department and Lane Regional Air Pollution Authority staff would simply be notified of the new 1998 deadline.

Recommendation for Commission Action

The Department recommends that the Commission adopt the rules/rule amendments regarding Small Source Title V Deferral Extension as presented in Attachment A of the Department Staff Report.

Attachments

- A. Rule (Amendments) Proposed for Adoption
- B. Supporting Procedural Documentation:
 - 1. Legal Notice of Hearing
 - 2. Fiscal and Economic Impact Statement
 - 3. Land Use Evaluation Statement
 - 4. Questions to be Answered to Reveal Potential Justification for Differing from Federal Requirements
 - 5. Cover Memorandum from Public Notice
- C. Rule Implementation Plan

Reference Documents (available upon request)

EPA memos:

Memo To: Environmental Quality Commission
Agenda Item D, Air Quality Industrial Rules (Small Source Title V Deferral Extension) ,
EQC meeting January 10, 1997
Page 3

- "Options for Limiting the Potential to Emit (PTE) of a Stationary Source Under Section 112 and Title V of the Clean Air Act (Act)"
- "Extension of January 25, 1995 Potential to Emit Transition Policy"

Approved:

Section:

Gregg E. Fandke

Division:

Gregory A. Green

Report Prepared By: Benjamin M. Allen

Phone: (503) 229-6828

Date Prepared: October 17, 1996

BMA

E:_WORD\RULES\RULE_10\R10_STAF.DOC

November 18, 1996

Proposed Rule Amendments

Deferral extension

Applicability

340-028-2110

- (1) OAR 340-028-2100 through 340-028-2320 apply to the following sources:
 - (a) Any major source;
 - (b) Any source, including an area source, subject to a standard, limitation, or other requirement under section 111 of the FCAA;
 - (c) Any source, including an area source, subject to a standard or other requirement under section 112 of the FCAA, except that a source is not required to obtain a permit solely because it is subject to regulations or requirements under section 112(r) of the FCAA;
 - (d) Any affected source under Title IV; and
 - (e) Any source in a source category designated by the Commission pursuant to OAR 340-028-2110.
- (2) The owner or operator of a source with an Oregon Title V Operating Permit whose potential to emit later falls below the emission level that causes it to be a major source, and which is not otherwise required to have an Oregon Title V Operating Permit, may submit a request for revocation of the Oregon Title V Operating Permit. Granting of the request for revocation does not relieve the source from compliance with all applicable requirements or ACDP requirements.
- (3) Synthetic minor sources.
 - (a) A source which would otherwise be a major source subject to OAR 340-028-2100 through 340-028-2320 may choose to become a synthetic minor source by limiting its emissions below the emission level that causes it to be a major source through production or operational limits contained in an ACDP issued by the Department under 340-028-1700 through 340-028-1790.
 - (b) The reporting and monitoring requirements of the emission limiting conditions contained in the ACDPs of synthetic minor sources issued by the Department under 340-028-1700 through 340-028-1790 shall meet the requirements of OAR 340-028-1100 through 340-028-1140.
 - (c) Synthetic minor sources who request to increase their potential to emit above the major source emission rate thresholds shall become subject to OAR 340-028-2100 through 340-028-2320 and shall submit a permit application under OAR 340-028-2120 in accordance with OAR 340-028-1740.
 - (d) Synthetic minor sources that exceed the limitations on potential to emit are in violation of OAR 340-028-2110(1)(a).
- (4) Source category exemptions.
 - (a) The following source categories are exempted from the obligation to obtain an Oregon Title V Operating Permit:
 - (A) All sources and source categories that would be required to obtain a permit solely because they are subject to 40 CFR part 60, Subpart AAA - Standards of Performance for New Residential Wood Heaters; and

- (B) All sources and source categories that would be required to obtain a permit solely because they are subject to 40 CFR part 61, Subpart M - National Emission Standard for Hazardous Air Pollutants for Asbestos, section 61.145, Standard for Demolition and Renovation
- (b) Permit deferral. A source with the potential to emit at or above major source thresholds need not apply for an Oregon Title V Operating Permit or obtain a synthetic minor permit before ~~July January-25, 19987~~ if the source maintains actual emissions below 50 percent of those thresholds for every consecutive twelve month period between January 25, 1994 and ~~July January-25, 19987~~, and is not otherwise required to obtain an Oregon Title V Operating Permit or synthetic minor permit.
 - (A) The owner or operator of a source electing to defer permitting under this paragraph shall maintain on site records adequate to demonstrate that actual emissions for the entire source are below 50 percent of major source thresholds.
 - (B) Recorded information shall be summarized in a monthly log, maintained for five years, and be available to Department and EPA staff on request.
- (c) All sources listed in OAR 340-028-2110(1) that are not major sources, affected sources, or solid waste incineration units required to obtain a permit pursuant to section 129(c) of the FCAA, are exempted by the Department from the obligation to obtain an Oregon Title V Operating Permit.
- (d) Any source listed in OAR 340-028-2110(1) exempt from the requirement to obtain a permit under this rule may opt to apply for an Oregon Title V Operating Permit.
- (5) Emissions units and Oregon Title V Operating Permit program sources.
 - (a) For major sources, the Department shall include in the permit all applicable requirements for all relevant emissions units in the major source, including any equipment used to support the major industrial group at the site.
 - (b) For any nonmajor source subject to the Oregon Title V Operating Permit program under OAR 340-028-2110(1) and not exempted under OAR 340-028-2110(4), the Department shall include in the permit all applicable requirements applicable to emissions units that cause the source to be subject to the Oregon Title V Operating Permit program.
- (6) Fugitive emissions. Fugitive emissions from an Oregon Title V Operating Permit program source shall be included in the permit application and the permit in the same manner as stack emissions, regardless of whether the source category in question is included in the list of sources contained in the definition of major source.
- (7) Insignificant activity emissions. All emissions from insignificant activities, including categorically insignificant activities and aggregate insignificant emissions, shall be included in the determination of the applicability of any requirement.
- (8) Oregon Title V Operating Permit program sources that are required to obtain an ACDP, OAR 340-028-1700 through 340-028-1790, or a Notice of Approval, OAR 340-028-2270, because of a Title I modification, shall operate in compliance with the Oregon Title V Operating Permit until the Oregon Title V Operating Permit is revised to incorporate the ACDP or the Notice of Approval for the Title I modification.

Stat. Auth.: ORS Ch. 468 & 468A

Hist.: DEQ 13-1993, f. & ef. 9-24-93; DEQ 24-1994, f. & ef. 10-28-94; DEQ 22-1995, f. & ef. 10-6-95; DEQ 24-1995, f. & ef. 10-11-95

NOTICE OF PROPOSED RULEMAKING

(Statement of Need and Fiscal Impact must accompany this form.)

Department of Environmental Quality

AQ

OAR Chapter 340

STATUTORY AUTHORITY: OSR 468.020, 468A.025

AMEND: OAR 340-028-2110

SUMMARY:

In January, 1995, EPA announced a "transition policy" allowing sources with the Potential To Emit (PTE) at major source levels, but with low actual emissions (less than 50 percent of major source levels) to defer Title V permitting requirements until January, 1997. DEQ adopted a rule (OAR 340-028-2110(4) (b)) to take advantage of the policy. EPA recently extended the deferral by eighteen months, while it engages in rulemaking to redefine PTE (required by recent court cases). The proposed revision to DEQ's rules would take advantage of EPA's eighteen month Title V deferral extension.

LAST DATE FOR COMMENT: November 22, 1996

AGENCY RULES COORDINATOR:

Susan M. Greco, (503) 229-5213

AGENCY CONTACT FOR THIS PROPOSAL:

Benjamin M. Allen

ADDRESS:

Air Quality Division

811 S. W. 6th Avenue

Portland, Oregon 97204

TELEPHONE:

(503) 229-6828

or Toll Free 1-800-452-4011

If any interested person wishes to express data, views and arguments orally or in writing at a public hearing, the person must make written request for a public hearing and submit this request along with any written comments to the above address. Request for public hearing must be received before the earliest date that the rule could become effective after the giving of notice in the Bulletin of the Secretary of State from 10 or more persons or an association having not less than 10 members. If sufficient requests are received to hold a public hearing, notice of the hearing shall be published in the Bulletin of the Secretary of State at least 14 days before the hearing.

Benjamin M. Allen
Signature

Oct. 15, 1996
Date

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal
for

Air Quality Industrial Rules (Small Source Title V Deferral Extension)

Fiscal and Economic Impact Statement

Introduction

Many small emission sources have the theoretical potential to emit pollutants at Title V levels, but have practical operational limits on their potential to emit, and thus are not be subject to Title V. The Department is developing analyses of particular source categories that characterize those practical limits. The deferral allows the Department time to finalize its analyses. Without such demonstrations of practical limits on potential to emit, sources must either acquire Title V or synthetic minor permits, or be analyzed on a case by case basis. The deferral would save sources and the Department money and resources by allowing a more efficient approach through the analyses..

General Public

There would be no effect from the proposed revisions.

Small Business

Without the deferral extension, some businesses might be required to get Title V or synthetic minor permits (\$3,000 to \$10,500). The businesses affected include owners of emergency generators (e.g. hospitals and schools), filling stations, body shops, and many others.

Large Business

Without the deferral extension, some businesses might be required to get Title V or synthetic minor permits (\$3,000 to \$10,500). The businesses affected include owners of emergency generators (e.g. hospitals and schools), filling stations, body shops, and many others.

Local Governments

Without the deferral extension, some local government activities might be required to get Title V or synthetic minor permits (\$3,000 to \$10,500). The businesses affected include owners of emergency generators (e.g. hospitals and schools), filling stations, body shops, and many others.

State Agencies

The revision would allow the Department time to finalize its analyses of practical limits on potential to emit for many sources. Without the revision, the Department and LRAPA would have to issue permits for small sources, or rely on analyses which have not yet been fine tuned.

Housing Costs

The Department estimates that this revision would have no effect on the cost of development of a 6,000 square foot parcel and the construction of a 1,200 square foot detached single family dwelling on that parcel.

Assumptions

The Department believes most sources taking advantage of the deferral have practical limitations on their potential to emit, and would not require Title V permits.

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal
for

Air Quality Industrial Rules (Small Source Title V Deferral Extension)

Land Use Evaluation Statement

1. Explain the purpose of the proposed rules.

In January, 1995, EPA announced a "transition policy" allowing sources with the Potential To Emit (PTE) at major source levels, but with low *actual* emissions (less than 50 percent of major source levels) to defer Title V permitting requirements until January, 1997. DEQ adopted a rule (OAR 340-028-2110(4) (b)) to take advantage of the policy. EPA recently extended the deferral by eighteen months, while it engages in rulemaking to redefine PTE (required by recent court cases). The proposed revision would take advantage of the Small Source Title V Deferral Extension. DEQ is currently analyzing how best to deal with the sources affected by the rule after the deferral ends.

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

Yes No

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

Oregon's Title V Operating Permit program, which regulates air emissions from industrial sources.

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

Yes No (if no, explain):

Current procedures require local governments to determine land use compatibility before a Notice of Construction is approved or an air permit is issued.

c. If no, apply specified criteria to the proposed rules.

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

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

Gregory A. G.
Division Representative

Robert C.
Intergovernmental Coord.

11/11/96
Date

**Questions to be Answered to Reveal
Potential Justification for Differing from Federal Requirements.**

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

The revision would implement the federal extension of an existing federal Title V deferral policy.

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

Not applicable.

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

The federal policy addresses issues that concern Oregon. The deferral would allow Oregon time to finish its own policy regarding these small sources.

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

The deferral would simplify the Title V permitting process by deferring permitting requirements for sources which have low actual emissions.

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

No.

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

Not applicable.

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

The proposed revision would be available to all sources which choose to maintain their actual emissions below 50 percent of Title V major source thresholds.

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

No.

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

No.

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

Yes.

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

The terms of the deferral may encourage some sources to keep their emissions below 50 percent of major source thresholds in order to avoid permitting costs. This would lead to lower emissions at lower cost to the source.

**State of Oregon
Department of Environmental Quality**

Memorandum

Date: October 17, 1996
To: Interested and Affected Public
Subject: Rulemaking Proposal and Rulemaking Statements - Air Quality Industrial Rules
(Small Source Title V Deferral Extension)

This memorandum contains information on a proposal by the Department of Environmental Quality (DEQ) to amend rules regarding small Title V sources. Pursuant to ORS 183.335, this memorandum also provides information about the Environmental Quality Commission's intended action to amend rules.

This proposal would: amend OAR 340-028-2110 to extend the deferral of Title V permitting requirements, in accord with the expected EPA extension of the policy on which the rule is based.

The Department has the statutory authority to address this issue under ORS 468.020 and 468A.025.

What's in this Package?

Attachments to this memorandum provide details on the proposal as follows:

- | | |
|--------------|--|
| Attachment A | The official statement describing the fiscal and economic impact of the proposed rule. (required by ORS 183.335) |
| Attachment B | A statement providing assurance that the proposed rules are consistent with statewide land use goals and compatible with local land use plans. |
| Attachment C | Questions to be Answered to Reveal Potential Justification for Differing from Federal Requirements. |
| Attachment D | The actual language of the proposed rule amendments. |

Public Comment Period

You are invited to review these materials and present written comment on the proposed rule changes. Written comments must be presented to the Department by 5:00 p.m., November 22, 1996. In accordance with ORS 183.335(13), no comments can be accepted after this date, by either the EQC or the Department. Thus if you wish for your comments to be considered by the Department in the development of these rules, your comments **must** be received prior to the close of the comment period. Interested parties are encouraged to present their comments as early as possible prior to the close of the comment period to ensure adequate review and evaluation of the comments presented. Please forward all comments to Department of Environmental Quality, Attn: Benjamin M. Allen,

Memo To: Interested and Affected Public

October 17, 1996

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811 S.W. 6th Avenue, Portland, Oregon, 97204 or hand deliver to the Department of Environmental Quality, 811 S.W. 6th, 11th Floor between 8:00 a.m. and 5:00 p.m.

Following close of the public comment period, the Department will prepare a report which summarizes the comments received. The Environmental Quality Commission (EQC) will receive a copy of this report and all written comments submitted.

If written comments indicating significant public interest or written requests from 10 persons, or an organization representing at least 10 persons, are received regarding this proposed rule, the Department will provide a public hearing. Requests for a hearing must be in writing and received by the Department by 5:00 p.m., November 22, 1996.

If you wish to be kept advised of this proceeding and receive a copy of the recommendation that is presented to the EQC for adoption, you should request that your name be placed on the mailing list for this rulemaking proposal.

What Happens After the Public Comment Period Closes?

The EQC will consider the Department's recommendation for rule adoption during one of their regularly scheduled public meetings. The targeted meeting date for consideration of this rulemaking proposal is January 10, 1997. This date may be delayed if needed to provide additional time for evaluation and response to testimony received. You will be notified of the time and place for final EQC action if you present submit written comment during the comment period or ask to be notified of the proposed final action on this rulemaking proposal.

In accordance with ORS 183.335(13), no comments can be accepted by either the Department or the EQC after the comment period has closed. Thus the EQC strongly encourages people with concerns regarding the proposed rule to communicate those concerns to the Department at the earliest possible date prior to the close of the comment period so that an effort may be made to understand the issues and develop options for resolution where possible.

Background on Development of the Rulemaking Proposal

Why is there a need for the rule?

In January, 1995, EPA announced a "transition policy" allowing sources with the Potential To Emit (PTE) at major source levels, but with low *actual* emissions (less than 50 percent of major source levels) to defer Title V permitting requirements until January, 1997. DEQ adopted a rule (OAR 340-028-2110(4) (b)) to take advantage of the policy. EPA recently extended the deferral by eighteen months, while it engages in rulemaking to redefine PTE (required by recent court cases). The proposed revision

Memo To: Interested and Affected Public

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would take advantage of the Small Source Title V Deferral Extension. DEQ is currently analyzing how best to deal with the sources affected by the rule after the deferral ends.

How was the rule developed?

This issue was raised by staff. The Air Quality Industrial Source Advisory Committee will be advised of the proposed revision at their meeting on October 9, 1996. The Department relied on two memoranda from the Environmental Protection Agency (EPA), describing the federal deferral policy:

- "Options for Limiting the Potential to Emit (PTE) of a Stationary Source Under Section 112 and Title V of the Clean Air Act (Act)"
- "Extension of January 25, 1995 Potential to Emit Transition Policy"

The documents are available from DEQ or EPA.

Whom does this rule affect (including the public, the regulated community, and other agencies), and how does it affect these groups?

The revision would affect sources with the potential to emit at Title V major source thresholds, but with actual emissions below 50 percent of those levels. The revision would extend for 18 months a deferral of Title V permitting requirements.

How will the rule be implemented?

Staff of the Department and the Lane Regional Air Pollution Authority would be notified of the changes. Sources will be notified as they contact the Department about permits.

Are there time constraints?

Yes. The current deferral ends on January 25, 1997. The extension should be adopted before that date.

Contact for more information:

If you would like more information on this rulemaking proposal, or would like to be added to the mailing list, please contact:

Benjamin M. Allen
811 SW 6th Ave., Portland, OR 97204-1390
(503) 229-6828

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal
for

Air Quality Industrial Rules (Small Source Title V Deferral Extension)

Rule Implementation Plan

Summary of the Proposed Rule

In January, 1995, EPA announced a "transition policy" allowing sources with the Potential To Emit (PTE) at major source levels, but with low *actual* emissions (less than 50 percent of major source levels) to defer Title V permitting requirements until January, 1997. DEQ adopted a rule (OAR 340-028-2110(4) (b)) to take advantage of the policy. EPA recently extended the deferral by eighteen months, while it engages in rulemaking to redefine PTE (required by recent court cases). The proposed revision would take advantage of the Small Source Title V Deferral Extension. DEQ is currently analyzing how best to deal with the sources affected by the rule after the deferral ends.

Proposed Effective Date of the Rule

Upon filing.

Proposal for Notification of Affected Persons

This rule revision is an extension of a deadline. The Department believes most affected sources are already aware of the rule. Other sources will be notified as they apply for Title V permits.

Proposed Implementing Actions

The Department will continue to implement the rule as it has so far, by advising sources when they qualify for the deferral, and providing guidance on the level of recordkeeping required by the rule.

Proposed Training/Assistance Actions

Department and LRAPA staff will be informed of the new deadline.

Environmental Quality Commission

- Rule Adoption Item
- Action Item
- Information Item

Agenda Item E
January 10, 1997, Meeting

Title:

Extension of the Tualatin Sub-basin Nonpoint Source Management Implementation/Compliance Schedule and Order (EQC Order)

Summary:

The EQC Order was adopted on July 23, 1993, to insure continued implementation of ongoing nonpoint source pollution control efforts to achieve compliance with the Tualatin Basin phosphorus TMDLs. The original expiration date of the EQC Order was December 31, 1995. On November 17, 1995, the Commission extended the compliance schedule in the EQC Order for fifteen months to allow for a broad review of the Tualatin TMDLs.

Over the past year accomplishments have been made in a number of areas, including the near completion of a waterbody assessment by the Department cooperatively with the Tualatin Basin Technical Advisory Committee (TBTAC). In spite of the accomplishments to date, the Tualatin TMDL review project will not be completed on schedule due to current budget shortfalls.

To help finish the TMDL review the Department will soon form a Tualatin Basin Policy Advisory Committee (TBPAC). The TBPAC will assess the information provided by the TBTAC and make recommendations to the Department on the refinement of the Tualatin Basin TMDL implementation strategies and schedules. The Tualatin Basin Designated Management Agencies are aware of the limited resources at DEQ and have agreed to pool resources to hire a consultant to conduct logistics, facilitate and expedite the policy committee. By this action, we project the TMDL review will be completed by May 1, 1998.

The Tualatin Basin DMAs want assurance that future actions required of them by the TMDL are based on the Department's assessment of scientific and policy input from advisory committees. The extension of the EQC Order will provide enough time for the Department to complete a thorough review of the scientific information with the limited staff resources now available to work on the project. Future implementation strategies and compliance schedules will be based on review of the science. The extension will also prevent the DMAs and the Department from being out of compliance with the Order.

Department Recommendation:

The Department recommends that the Commission grant a second extension to the compliance schedule in the EQC Order until May 1, 1998.


Report Author

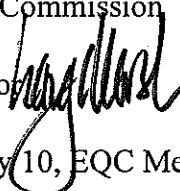

Division Administrator

Director 

State of Oregon
Department of Environmental Quality

Memorandum

Date: December 3, 1996

To: Environmental Quality Commission
From: Langdon Marsh, Director 
Subject: Agenda Item E, January 10, EQC Meeting

Statement of Purpose

Request that the Commission grant an additional extension of the Tualatin Sub-basin Nonpoint Source Order (EQC Order) to allow for completion of review of the Tualatin Basin Total Maximum Daily Loads (TMDLs) implementation strategies and schedules.

The EQC Order was adopted on July 23, 1993, to insure continued implementation of ongoing nonpoint source pollution control efforts to achieve compliance with the Tualatin Basin phosphorus TMDLs. The original expiration date of the EQC Order was December 31, 1995.

On November 17, 1995, the Commission extended the compliance schedule in the EQC Order for fifteen months to allow for a broad review of the Tualatin Basin TMDLs. Over the past year accomplishments have been made in a number of areas, including the near completion of a waterbody assessment that describes the current understanding of water quality in the basin. The assessment has been developed through a review of existing information with the Tualatin Basin Technical Advisory Committee (TBTAC).

In spite of the accomplishments to date, the Tualatin TMDL review project will not be completed on schedule due to current budget shortfalls in the Department's water program. Because of these shortfalls, the Department has had to reassign staff resources originally committed to TMDLs to program areas which are funded. This shift of staff to funded projects will be continued at least through the end of the biennium.

To help finish the TMDL review the Department will form a Tualatin Basin Policy Advisory Committee (TBPAC). The TBPAC will assess the information provided by the TBTAC and make recommendations to the Department on refinement of the Tualatin Basin TMDL implementation strategies and schedules. The Tualatin Basin Designated Management Agencies (DMAs) are aware of the limited resources within the Department's water program for TMDLs, and have agreed to pool resources to hire a consultant to facilitate and expedite the policy committee. By this action, we project the TMDL review will be completed by May 1, 1998.

The Tualatin Basin DMAs want assurance that future actions required of them by the TMDL are based on the Department's assessment of scientific and policy input from advisory committees.

The extension of the EQC Order will provide enough time for the Department's limited staff resources to complete a thorough review of scientific information and to work with the TBPAC to identify implementation strategies that will be based on review of the science. The extension will also prevent the DMAs and the Department from being out of compliance with the EQC Order.

Background

In 1988, the EQC promulgated rules to limit discharges of ammonia and total phosphorus to the Tualatin River in accordance with Section 303 of the Clean Water Act and 40 CFR, part 130.7. This action amended Oregon Administrative Rules (OAR) 340-41-470 by establishing target concentrations for both total phosphorus and ammonia-nitrogen at various locations on the main stem of the Tualatin River and at the mouths of certain tributaries.

The EQC Order for the DMAs was adopted on July 23, 1993. The EQC requires specific tasks and responsibilities of a number of government entities. The DMAs include Unified Sewerage Agency, Clackamas County, Multnomah County, Washington County, City of Portland, City of Lake Oswego, City of West Linn, the Oregon Department of Agriculture, and the Oregon Department of Forestry.

The compliance schedule in the Order lists tasks and responsibilities of the DMAs in controlling nonpoint source water pollution in the Tualatin River Watershed. The original intent of the Order was to improve water quality and to achieve all applicable water quality standards by December 31, 1995. A second goal is to promote ongoing communication among the jurisdictions in the basin. A third major consideration is to encourage and promote the involvement of interest groups of all kinds in the implementation of the Order.

Efforts by the DMAs in accordance with the EQC Order and the TMDL have resulted in significant improvement in the general health of the Tualatin River. The river routinely violated the instream dissolved oxygen standard prior to the TMDL water quality improvement strategies being implemented. The ammonia TMDL has been achieved and the river now meets the dissolved oxygen standard most of the time. There has been a substantial reduction in instream total phosphorus which has resulted in lower algal growth in the river, although the TMDL goal has not been achieved. Available data suggest the TMDL algal growth goal may not be achievable.

The Department believes that a complete review of the data generated by the TMDL process will better enable us to refine our implementation strategies for achieving compliance.

Authority of the Commission with Respect to the Issue

Memo To: Environmental Quality Commission
Agenda Item E, January 10, EQC Meeting Page 3

The 1988 rules promulgated by the EQC amended Oregon Administrative Rules (OAR) 340-41-470 by establishing instream criteria (TMDLs) for both total phosphorus and ammonia-nitrogen at various locations on the main stem of the Tualatin River and at the mouths of certain tributaries.

Establishment of TMDLs is in accordance with Section 303 of the Clean Water Act and 40 CFR, part 130.7 and OAR 340-41-026(4)(d). ORS 468B.020, ORS 468B.035, and ORS 468B.048 provide authority for implementation of the Clean Water Act and the setting of water quality standards. ORS 183.310 to 183.550 provide authority to adopt, modify or repeal rules for the administration of water quality standards.

Alternatives and Evaluation

There are two options:

- 1) Do not extend the deadline
- 2) Extend the deadline

The TMDL review is now close to fifty percent complete. A second extension of the existing Tualatin Basin EQC Order will provide time for the completion of the review. Absent the extension, the Department would need to make decisions on the future course of TMDL implementation without input from a policy committee or finish the review with the DMAs and the Department out of compliance with the EQC Order.

Summary of Public Input Opportunity

The DMAs meet routinely to discuss water quality activities taking place in the Tualatin Basin. The meetings are open to public participation.

The TBTAC is close to completing a waterbody assessment of the Tualatin Basin. The committee includes DMAs, university professors, private consultants and environmental group representatives. The meetings are open to the public.

The TBPAC will be made up of stakeholders in the Tualatin Basin. The DMAs met to develop a proposed list of committee members. The Department will contact representative stakeholders to request that they serve on the committee. The purpose of the TBPAC is to review technical information and recommendations from the TBTAC and use this information to recommend effective water quality regulations updates for the Tualatin River basin.

Conclusions

- Considerable progress has been made by the DMAs in reducing nonpoint source pollution in the Tualatin River Watershed. The DMAs and the Department will continue implementing the tasks and responsibilities outlined in the EQC Order.
- The Department is conducting a scientific review of the Tualatin Basin TMDL with input from the DMAs and advisory committees.
- A thorough TMDL review will not be completed by the time the EQC Order expires. The DMAs want to assure future actions are based on the Department's assessment of scientific information and review of the TMDL.
- An extension of the existing EQC Order will allow for a comprehensive review of scientific information, preparation of a waterbody assessment and a policy review for the Tualatin Basin TMDL.

Intended Future Actions

The Department intends to work with the DMAs and other affected parties in the basin to complete the scientific review of the Tualatin TMDLs. The Department will report back to the Commission on the results of the review prior to May 1, 1998.

Department Recommendation

The Department recommends that the Commission grant a second extension to the compliance schedule in the EQC Order until May 1, 1998.

Attachments

- A. Tualatin Sub-basin Nonpoint Source Management Implementation/Compliance Schedule and Order
- B. Department of Environmental Quality 1994 Tualatin River Basin Status Report
- C. Oregon Administrative Rules 340-41-470
- D. Agenda Item F, July 23, 1993, EQC Meeting - Report on the Tualatin River Watershed Nonpoint Source Management Implementation/Compliance Schedule and Order.

Memo To: Environmental Quality Commission
Agenda Item E, January 10, EQC Meeting Page 5

Approved:

Section:

Robert P Baumgarten

Division:

Tom Beapham

Report Prepared By: Michael R. Wiltsey

Phone: 229-5325

Date Prepared: December 3, 1996

MRW:mrw
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December 3, 1996

Tualatin Sub-basin Nonpoint Source Management
Implementation/Compliance Schedule and Order
for Designated Management Agencies (DMAs)

Designated Management Agencies:

Unified Sewerage Agency of Washington County (representing participating cities)

Clackamas County & River Grove	Multnomah County
Washington County	City of Portland
City of Lake Oswego	City of West Linn
Oregon Department of Agriculture	Oregon Department of Forestry

Purpose:

Because of chronic violations of water quality standards for dissolved oxygen and pH, Total Maximum Daily Loads (TMDL), Waste Load Allocations and Load Allocations for nutrients in the Tualatin River were established in 1988 as required under 40 CFR 130.7. Oregon Administrative Rules (OAR 340-41-470) were amended "In order to improve the water quality within the Tualatin River subbasin to meet the existing water quality standard for dissolved oxygen, and the 15 ug/l chlorophyll a action level..." The rule revisions established compliance concentrations at several points along the main stem of the river and at the mouths of major tributaries. The same rule required development of plans to control nonpoint source (NPS) pollution from urban runoff, agricultural, and forest lands to help achieve the compliance concentrations by the compliance date of June 30, 1993. While considerable progress in the implementation of those plans has been made, full compliance with the phosphorus TMDL will not be achieved by that date. The purpose of the following compliance schedule is to help insure continued implementation of ongoing efforts to achieve the goal: "improve the water quality within the Tualatin River subbasin."

The compliance schedule lists tasks and responsibilities of the various Designated Management Agencies (DMAs) in controlling nonpoint source water pollution in the Tualatin River Watershed between the dates of June 30, 1993 and December 31, 1995. The intent is to improve water quality and achieve all applicable standards and limits through the implementation of a comprehensive, watershed-wide program. Another goal is to promote continuation of the communication that has evolved among jurisdictions involved in pollution control in the watershed. All of the management agencies and the Department will continue to work cooperatively to implement these NPS control efforts.

It is intended that, to the extent possible, neighborhood groups, friends groups, interest groups, and other citizen groups be involved in the implementation of this schedule. This is particularly important in the areas of monitoring, public awareness and education, and review of rules, ordinances, and reports/data analysis. All plans, inventories, products, and performance requested in the compliance schedule are subject to Department approval.

TASKS FOR ALL DMAS

<u>DATE</u>	<u>TASK</u>
	#1 MONITORING
Ongoing	a) Continue existing monitoring programs and plans; submit data to DEQ quarterly.
January of each year	b) DEQ and DMAs review & evaluate existing monitoring data, Identify gaps and needs. Include monitoring by DMAs and evaluation/verification of models. Set minimum monitoring and reporting requirements through December 1995.
April of each year	c) Develop, in cooperation with DEQ, a single, coordinated, watershed-wide monitoring plan which identifies sites to be sampled, frequency of sampling, parameters to be measured, mechanisms of reporting results to DEQ, quality assurance mechanisms. Sites should include the mouth of each of the tributaries and each of the specified points along the mainstem of the Tualatin River listed in OAR 340-41-470. Also re-evaluate and modify monitoring plans as needed within 90 days of any revisions to load allocations.
5/94-12/95	d) Implement the revised monitoring plan.

#2 PUBLIC AWARENESS/EDUCATION

- ongoing a) Continue ongoing public involvement and education programs.
- 12/31/93 b) Revise and submit to DEQ a detailed public awareness plan. The plan should reflect a coordinated, basin-wide effort that includes specific activities of all DMAs to be implemented by 12/95.
- 1/94-12/95 c) Implement the public awareness plan according to the agreed upon schedule.

#3 SITE SPECIFIC PROBLEMS

- 07/30/93 a) A number of inventories have been conducted in the Tualatin watershed using aerial evaluation, streamwalk, or other techniques. Insure that written documentation has been submitted to DEQ. Include such items as streambank erosion sites, pipes of unknown origin discharging to stream, removal of vegetation, illegal dump sites, animal waste entering stream, failing septic systems, etc. Identify location and nature of problem and rank all problems identified.
- 09/30/93 b) DMAs and DEQ coordinate on a watershed-wide basis and identify all areas of the basin that have not yet been inventoried. DMAs and DEQ cooperate to determine whether there is a need for other kinds of inventories such as accurate inventories and pollution potential assessment for specific kinds of operations (e.g. in-ground nurseries or lawn chemical application). Establish a schedule which will lead to completion of needed inventories and prioritization of all stream segments by 12/95.
- 06/30/94 c) Visit all high ranking sites identified in 3a above and correct the identified problem, or establish a firm schedule that will either result in correction of the problem by 12/95, or identify the problem as part of a long term comprehensive watershed restoration program by 12/95.

It is recognized that additional ordinances and procedures may be needed dependant upon the nature of the problems identified and the actions necessary for their correction. (See task #6.)

06/30/95

e) In coordination with DEQ, develop recommended course of action and schedules for other priority sites identified in 3a and 3b above. Submit to DEQ a schedule which identifies and ranks all problems and identifies dates by which corrective actions will take place.

#4 IMPLEMENTATION OF MANAGEMENT PRACTICES
(Best Management Practices/Systems)

Ongoing

a) Continue efforts to insure widespread adoption and implementation of management measures and improved management of riparian areas. Include such management measures as:

Measures for Agriculture

erosion and sediment control
facility wastewater & runoff management
nutrient & pesticide management
wetland/riparian protection
irrigation water management

Measures for Forestry

streamside management areas
road construction/maintenance management
timber harvest practices
revegetation of disturbed areas
wetland/riparian protection

Measures for Urban Areas

new development management
erosion and sediment control
road and street runoff systems
lawn/landscape chemical management
wetland/riparian protection
On-site disposal systems

Examples of appropriate practices that should be in place are included in (but are not limited to) the following documents:

Forest Practices Rules and
Implementation Guidelines
SCS Technical Guidance Manual
Surface Water Quality Facilities
Technical Guidance Handbook
EPA Coastal Nonpoint Pollution Control
Program Guidance

January of
each year

b) As part of annual reporting (Task 7 below) report on progress toward getting area-wide adoption of management practices and riparian area management. To the extent possible, estimate percent coverage. For example: Out of total number of units harvested during the year, how many received on-site inspection and of those, what percent were not implementing all needed practices?

#5 RIPARIAN AREA MANAGEMENT

06/30/94

a) Because of their filtering, shading, and buffering functions, healthy riparian areas are important components of water quality protection. Based on existing watershed inventories (task 3 above), identify and prioritize opportunities for enhancement and restoration of riparian areas. Develop management or restoration strategies for high priority riparian areas. Establish a schedule and begin implementation of efforts in priority areas. (This task should be completed in cooperation with landowners, local government, neighborhood groups, fish and wildlife interests, friends groups, etc.)

06/30/95

b) Inventory, prioritize, and establish target schedules for the management of riparian areas in the rest of the watershed.

#6 RULES, ORDINANCES and GUIDANCE

Ongoing

a) Continue erosion control programs, plans, and enforcement activities.

09/30/93

b) Complete current efforts to review erosion control programs for development activities. Make recommendations on any necessary revisions to relevant DEQ rules or local ordinances. Report recommendations to DEQ. Make recommendations on needed changes to Erosion Control Plans Technical Guidance Handbook. Revise guidance as necessary.

12/31/93 c) Investigate authorities/needs for local control of erosion and runoff from non-development activities throughout the watershed. Make recommendations on any necessary revisions to DEQ rules and/or local ordinances related to erosion, exemptions from on-site stormwater treatment, road maintenance, buffer requirements, or other relevant requirements. Report recommendations to DEQ.

05/01/94 d) Initiate a formal process to adopt new or refine existing ordinances as necessary according to findings of 4(b) and 4(c).

#7 ANNUAL REPORTING

January of each year a) Submit to DEQ a status report on implementation activities. Specifically address public awareness/education (task 2), resolution of site specific problems (task 3), implementation of management practices (task 4), revision of rules, ordinances and guidance (task 6); and any other responsibilities identified under Tasks for Individual Agencies below.

#8 TUALATIN RIVER STATUS REPORT

April of each year Cooperate with DEQ in the production of an annual status report for the Tualatin River Watershed. The report will incorporate items from the DMA annual reports (task 7(a) above) and will cover the compliance status of the river and it's tributaries, and the accomplishments of the DMAs during the preceding year.

ADDITIONAL TASKS FOR INDIVIDUAL AGENCIES

Unified Sewerage Agency of Washington County (representing participating cities)

<u>DATE</u>	<u>TASK</u>
	#9 JACKSON BOTTOM WETLAND
09/01/93	a) Submit, for DEQ approval, a comprehensive Waste Water Reuse Implementation Plan for all USA's existing and proposed future reuse projects, as required by OAR 340-55 (including the Jackson Bottom Wetland and new lands acquired on the west side of Hwy 219 or other lands acquired for disposal of effluent from the Hillsboro West STP).
10/30/93	b) In consultation with DEQ, review all available data related to pollution, including phosphorus, entering the Tualatin River from or through the Jackson Bottom wetland. Include both surface water and groundwater characterization and potential for contamination of surface water or groundwater from irrigation and leakage from the large effluent retention pond (and other ponds) in Jackson Bottom. Provide all data, data analysis, and interpretation to the Department. Determine any additional data needs and produce a plan and schedule, acceptable to the Department, to gather such information.
01/01/94	c) Achieve agronomic irrigation rates, and begin operating in compliance with the DEQ approved wastewater reuse implementation plan for Jackson Bottom (9a above) consistent with OAR Chapter 340, Division 55 and NPDES permits.
12/31/94	d) Submit to DEQ any additional data and data analysis produced as a result of 9(b) above and a report, which reflects public review and comment, that interprets the collected data.
03/31/95	e) Submit a plan, acceptable to the Department, to reduce or control pollution entering the Tualatin River from or through the Jackson Bottom wetland, under USA management, as identified in 9(b) and 9(d) above.

#10 EXEMPTIONS FROM ON-SITE STORMWATER TREATMENT

08/31/93

a) In cooperation with DEQ and participating cities, develop a mechanism of tracking and reporting, on a quarterly basis, all development that is granted exemption from the on-site stormwater treatment requirements. The report should identify each development that is granted exemption, identify the reason for the exemption, demonstrate that a program is in place to provide equivalent and timely off-site treatment. Quarterly reports due in October, January, April, July.

02/28/94

b) In coordination with DEQ and using data produced by the first quarterly report (10a above), assess the current situation with regard to exemptions from on-site treatment, in-lieu fee collection, and provisions for off-site treatment. Make recommendations for any necessary changes to state or local regulations to provide improved assurance that newly generated urban runoff receives adequate treatment. Begin a formal process to adopt any needed changes.

Oregon Department of Agriculture

DATE

TASK

#11

CAFO

Ongoing

a) Perform follow-up inspections and respond to complaints on permitted CAFOs and, as needed, develop enforceable schedules that will result in compliance with permit conditions. As part of annual report to DEQ (task 7 above) identify all permitted CAFOs and their compliance status, identify all actions taken or to be taken.

12/31/94

b) Develop and begin implementation of a program to reduce pollution originating from animal operations that are not permitted under the existing CAFO program. Report status in annual report; include estimate of number of operations in the basin and percentage of those that need improved practices.

#12 NURSERIES

Ongoing

a) Perform follow-up inspections and respond to complaints on containerized nurseries, during irrigation season, to determine compliance with container nursery requirements. As part of annual report to DEQ (task 7 above), identify all container nurseries in the basin and their compliance status.

#13 ASSURANCE OF IMPLEMENTATION

12/31/94

a) Coordinate with local agencies (for example SWCDs, irrigation districts, municipalities, etc.) and DEQ to develop mechanisms to insure necessary practices are applied. Implement program through enabling legislation or other state or local authorities.

Clackamas County
Multnomah County
Washington County
Oregon Department of Agriculture
Oregon Department of Forestry

DATE

TASK

#14 COUNTY ROAD DITCHES

01/01/94

Working cooperatively with DEQ, ODF, and ODA, counties develop and begin implementation of a program to, on a priority basis, maintain county roadside ditches in such a way to minimize transport of sediment, nutrients, and other pollutants to waters of the state. Include provisions to establish and maintain vegetative cover on non-road surface county road right-of-way between road ditches and adjoining land uses. Where possible, convert ditches to vegetated swales and direct road ditch discharges into passive treatment facilities (infiltration basins, wet ponds, detention ponds, etc.) prior to entering waters of the state. Submit an acceptable report to DEQ identifying the program elements.

DEPARTMENT OF ENVIRONMENTAL QUALITY
TUALATIN RIVER BASIN STATUS REPORT - 1993

In 1988, the Environmental Quality Commission (EQC) promulgated rules to limit discharges of nutrients to the Tualatin River in accordance with Section 303 of the Clean Water Act and 40 CFR, part 130.7. This action amended Oregon Administrative Rules (OAR) 340-41-470 by establishing in-stream criteria for both total phosphorus and ammonia-nitrogen at various locations on the main stem of the Tualatin River and at the mouths of certain tributaries. The in-stream criteria were set at levels necessary to meet water quality standards for dissolved oxygen, pH, and the action level for nuisance algae. Waste load allocations (WLAs) were assigned to point sources and load allocations (LAs) were assigned to nonpoint sources as necessary to achieve the in-stream criteria.

Attainment of the ammonia-nitrogen criteria is primarily a point source issue requiring upgrading of the sewage treatment facilities operated by Unified Sewerage Agency of Washington County (USA). The Department anticipates that the ammonia-nitrogen criteria will be achieved in 1994.

Meeting the total phosphorus criteria will require reductions by both point and nonpoint sources. Substantial progress towards reducing phosphorus levels has been realized particularly by the point source dischargers. Further discussion on water quality improvements occurs later in this report.

This report is required by Task #8 of the Tualatin Sub-basin Nonpoint Source Management Implementation/Compliance Schedule and Order for Designated Management Agencies (hereinafter referred to as Order) which was established by the EQC on July 21, 1994. The primary intent of the Order is to improve water quality and to achieve all applicable water quality standards and limits. A second goal is to promote communication among the jurisdictions in the basin. A third major consideration is to encourage and promote the involvement of interest groups of all kinds in the implementation of the Order.

The Order requires specific tasks and responsibilities of a number of governmental entities. The Designated Management Agencies (DMAs) include USA, Clackamas County, Multnomah County, Washington County, City of Portland, City of Lake Oswego, City of West Linn, the Oregon Department of Agriculture, and the Oregon Department of Forestry.

The specific tasks of the Order include: monitoring (task # 1); public awareness/education (task # 2); site specific problems (task # 3); implementation of management practices (task # 4); riparian area management (task # 5); rules, ordinances and guidance (task # 6); annual reporting (task # 7); status report of the basin (task # 8); the Jackson bottom wetland (task # 9); exemptions from on-site stormwater treatment (task # 10); confined animal feeding operations (task

11); container nurseries (task # 12); assurance of implementation (task # 13); and county road ditches (task # 14).

The DMAs in conjunction with the Department of Environmental Quality are required to meet the tasks according to a time schedule in the Order terminating on December 31, 1995.

Since the Order refers exclusively to Nonpoint sources, this report will also confine itself to nonpoint source issues and the requirements or tasks required in the Order.

MONITORING:

Monitoring of the Tualatin River and its tributaries is an ongoing project of the DMAs and DEQ. The monitoring locations and the nature of the data collected are being reviewed by the DMAs and DEQ. Monitoring includes ambient studies to assess changes in the overall water quality of the Tualatin River and time and site specific studies to determine the effectiveness of specific water quality control projects and management practices designed and installed to mitigate water quality problems. Arrangements are being made to make all of the data being collected in the Tualatin basin available to the DMAs and DEQ through the Environmental Protection Agency data base, STORET. The basic monitoring plan will be reviewed annually and possibly revised, if necessary, to reflect new information and to accommodate changing circumstances.

DATA REVIEW:

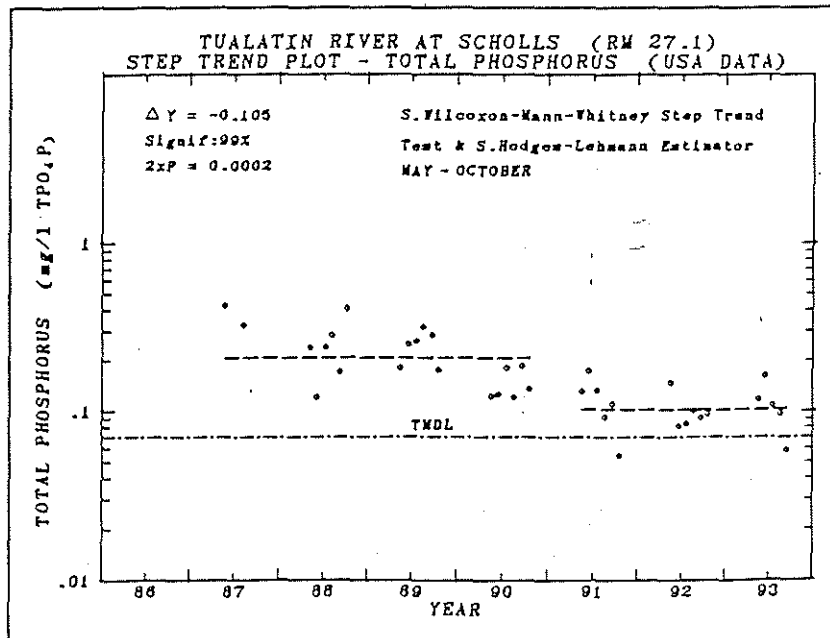
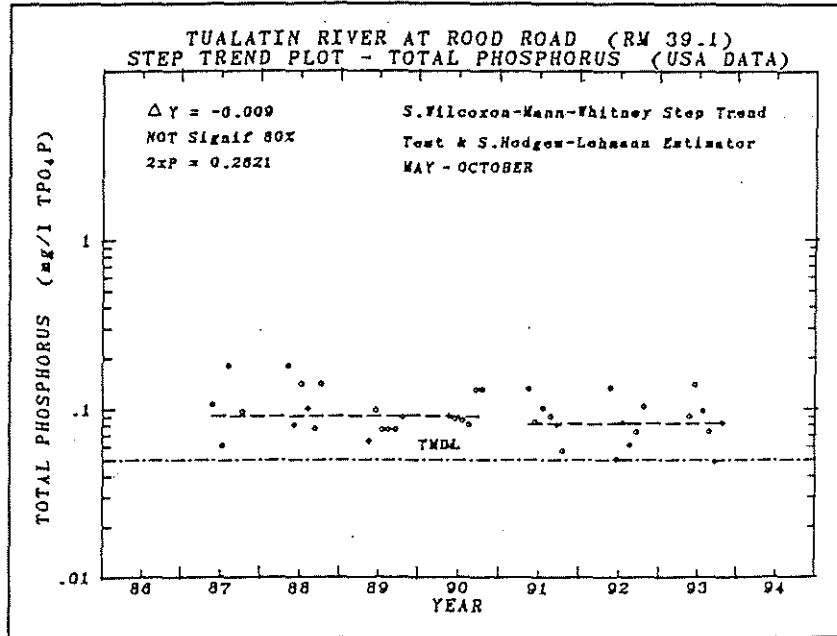
Mike Wiltsey with the DEQ Northwest Region has reviewed key water quality parameters from data gathered by USA and the Oregon Department of Agriculture in the main stem Tualatin River and the lower reaches of Burris and Christensen creeks. This review is not inclusive but is meant to highlight water quality relative to the TMDLs, water quality standards/criteria, and Best Management Practices (BMPs).

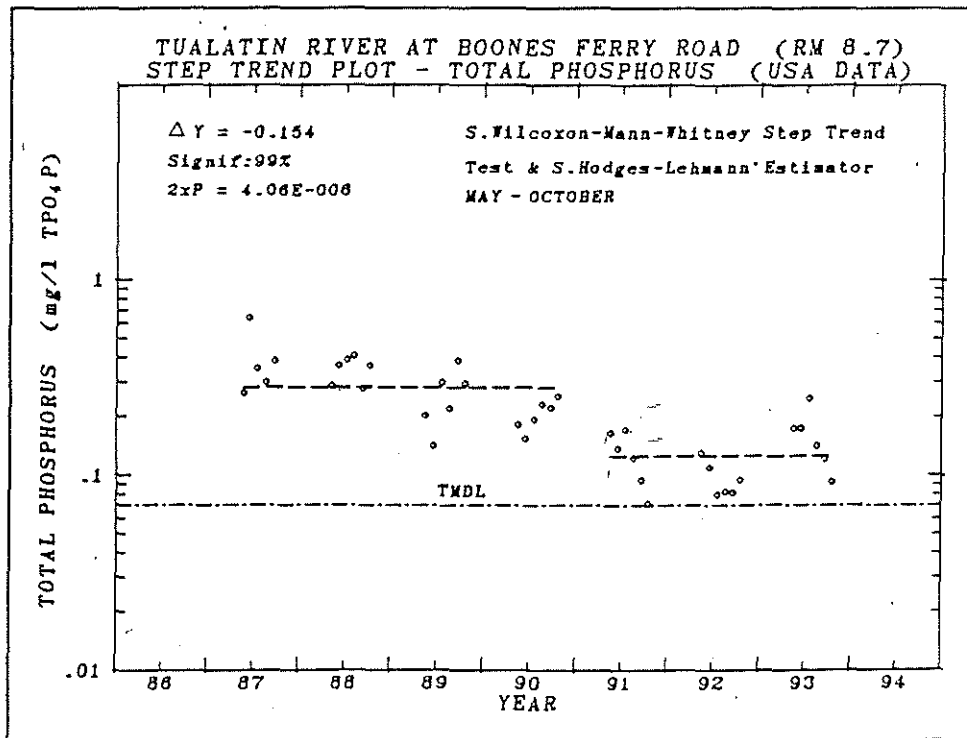
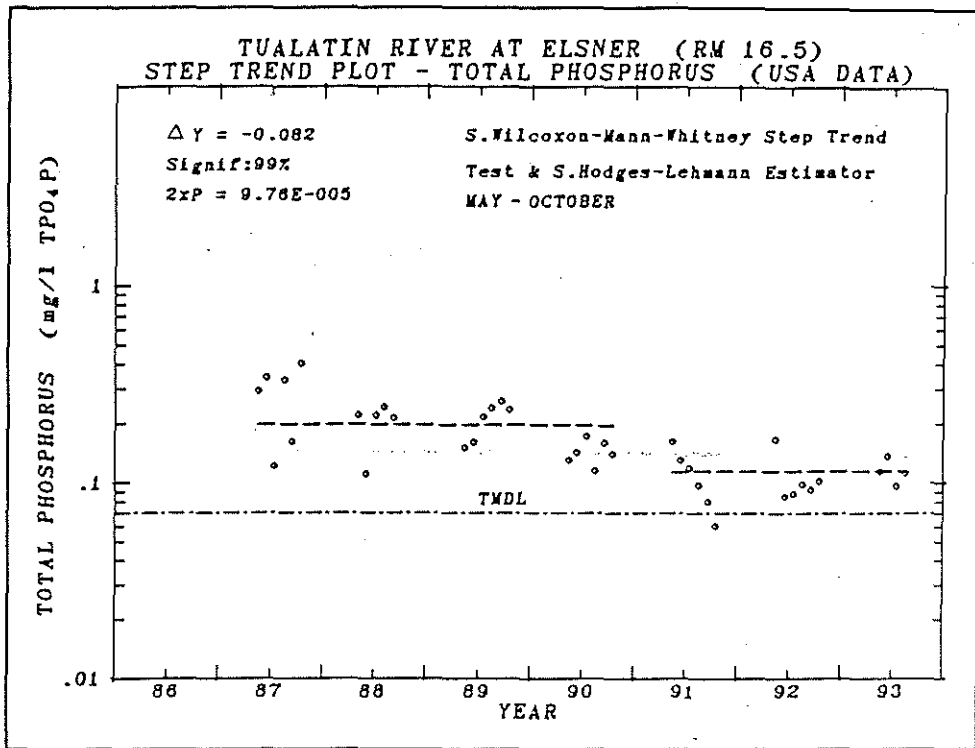
The WQHydro software package by WQHydro Consulting, Portland, Oregon, was used for performing the review.

In very general terms the overall water quality in Tualatin River at the lower reaches does seem to be improving. Using total phosphorus data collected by USA, step trend tests using the Seasonal Wilcoxon-Mann Whitney test were calculated for four main stem Tualatin River sites. The before/after time periods (May through October) used in the step trend test were 1987 to 1990 and 1991 to 1993, respectively. Where more than one monthly sample was collected, data were parsed to one measurement by selecting the value closest to the middle of

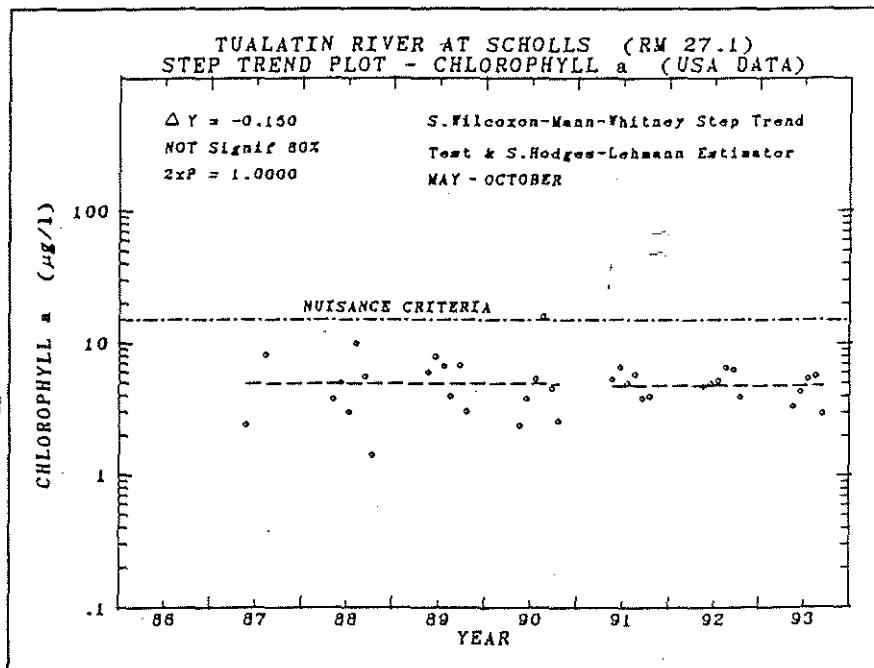
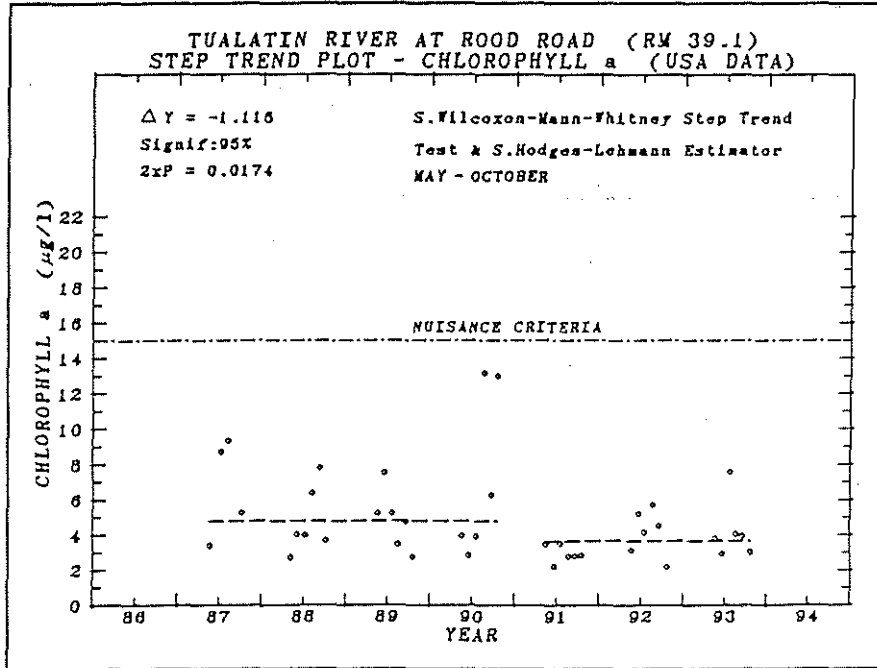
the month. No adjustments to the data were made for variability in streamflow or hour of collection.

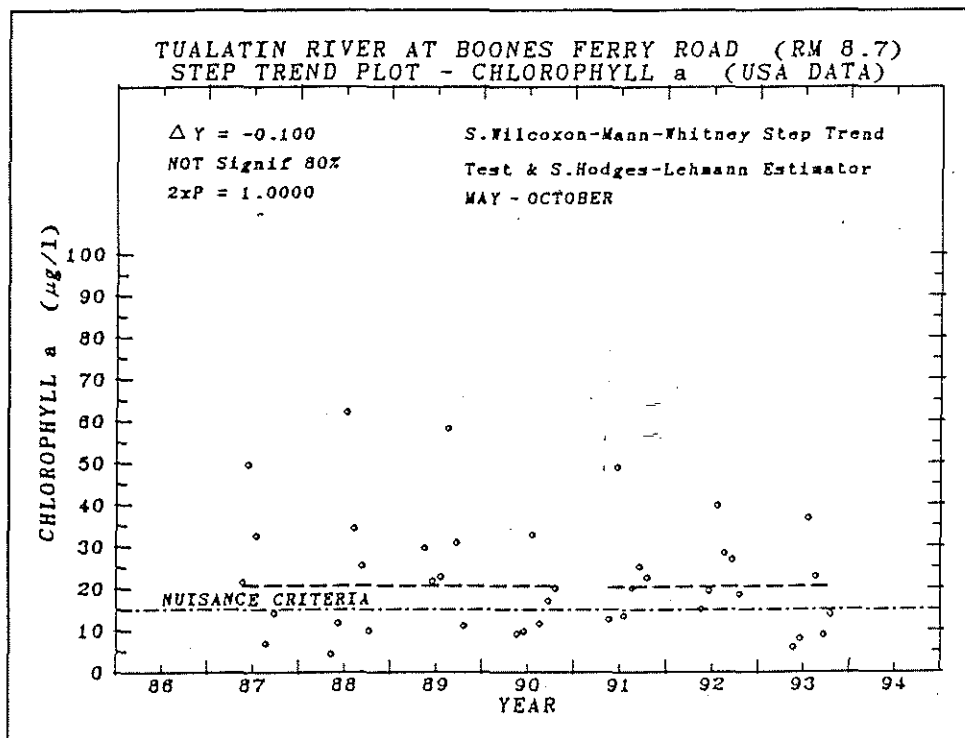
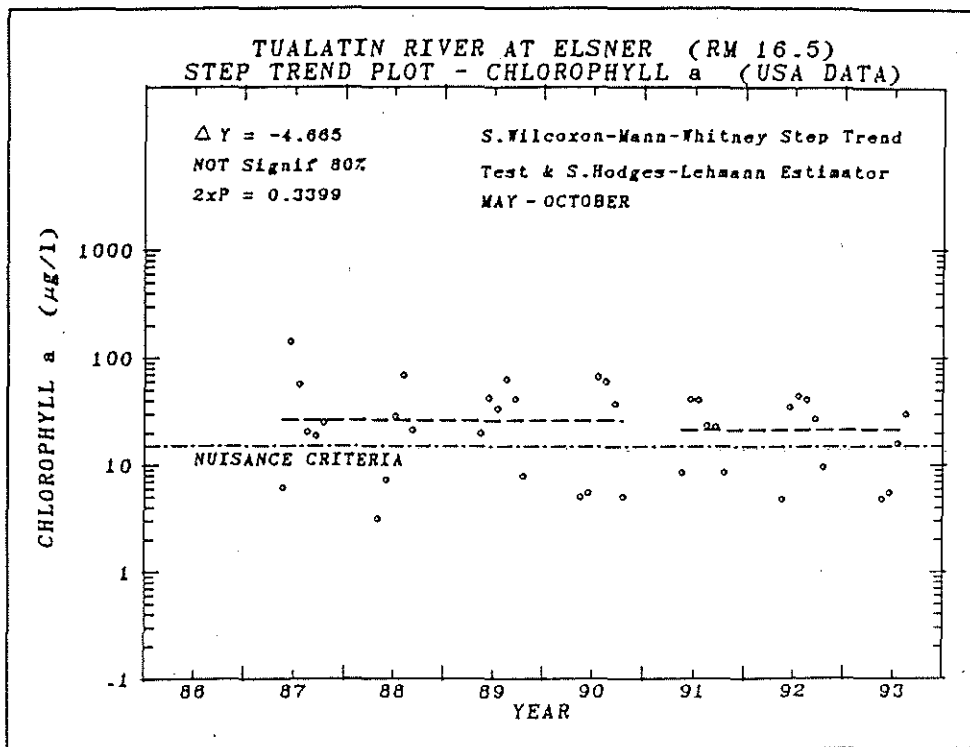
As can be seen on the following step trend plots, no significant trend in total phosphorus was seen at river mile 39.1 with statistically significant decreasing trends in total phosphorus occurring at river miles 27.1, 16.5 and 8.7. However, the phosphorus levels set in the TMDL have not been met.



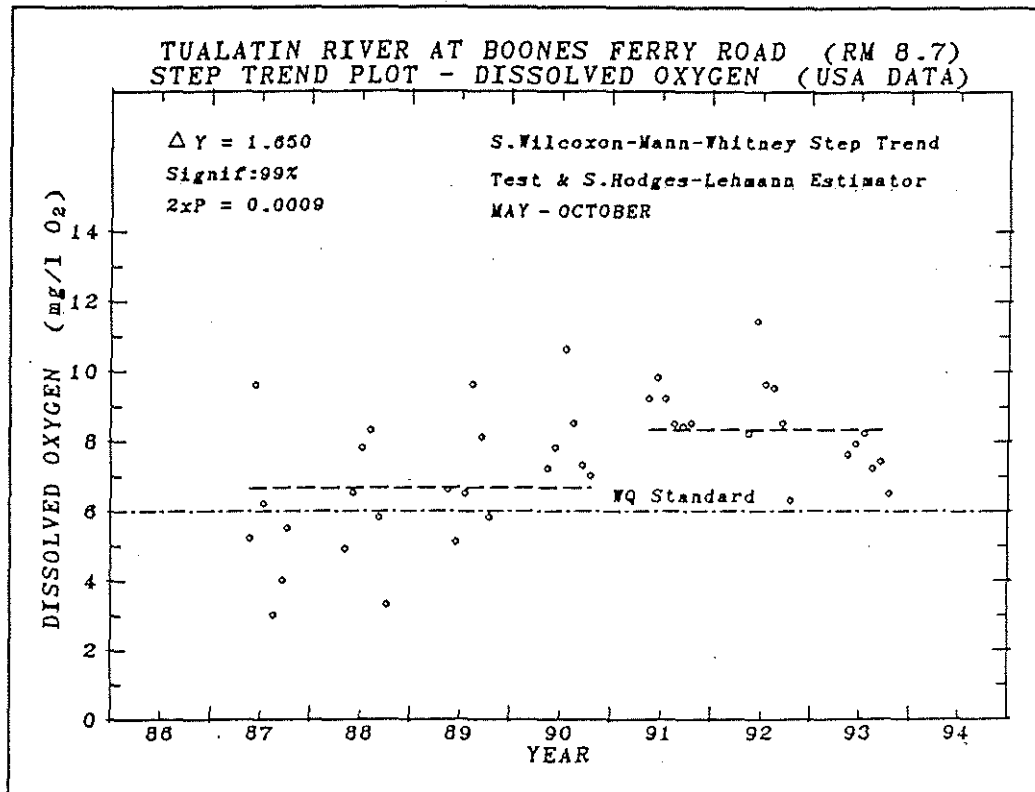


The chlorophyll a action level of 15 $\mu\text{g/l}$, based upon a three month average, has been exceeded below approximately river mile 25 in all years since 1987. Similar to the analyses for phosphorus, step trend tests were calculated for chlorophyll a for four main stem Tualatin River sampling locations. No significant trends were detected (plots follow).



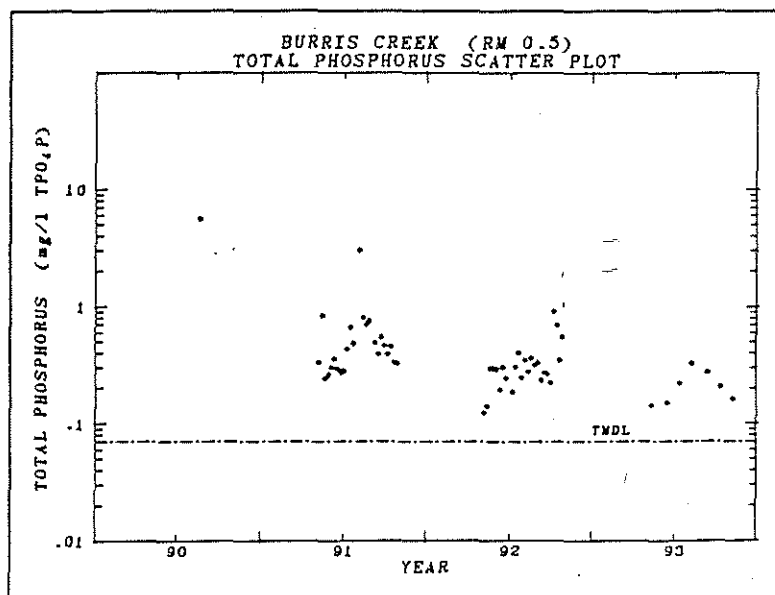
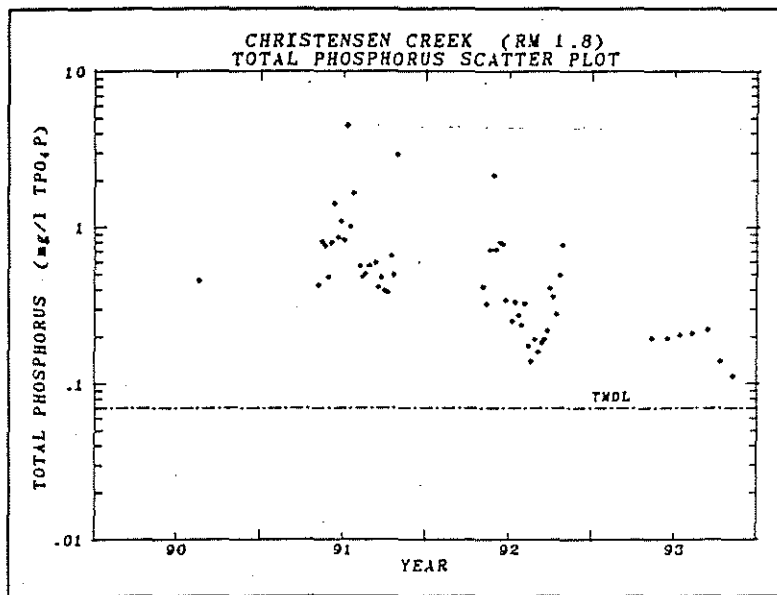


The plot below illustrates a statistically significant increase in dissolved oxygen at river mile 8.5. The data may not fully reflect the dissolved oxygen diurnal variability. To assess whether Tualatin River dissolved oxygen standards are being met during the early morning hours the Department is proposing to conduct a study this summer which would include continuous monitoring at several locations.



Instream total phosphorus reductions are being seen from monitoring on Christensen and Burris Creeks. The improved water quality is a result of the application of Oregon Department of Agriculture BMPs on the creeks. Although a marked decrease in phosphorus levels have been achieved, the loading allocation for those subbasins under the TMDL has not been met.

Future monitoring efforts on the Tualatin River tributaries should focus on providing information to assess the effectiveness of implemented BMPs.



Monitoring for organochlorine pesticides and polychlorinated biphenyls, volatile and semivolatile organic compounds showed that no toxic organic compounds were detected.

Evaluation of the effectiveness of management practices in the agricultural and forestry parts of the basin has been limited. The importance of agricultural best management practices has been demonstrated in the Burris Creek and Christensen Creek subbasins with monitoring over the last three years. In the future the Oregon Department of Agriculture will expand its efforts to measure the effectiveness of management practices that have been put in place. The Department of Forestry plans to maintain some monitoring of changes in water quality as a result of implementation of best management practices.

Urban management practices are even more difficult to assess. The effects of management practices on water quality will probably only be seen over several years as they are implemented over entire subbasins.

Assessment of the effectiveness of local water quality control structures is being done as they are being installed.

PUBLIC AWARENESS AND EDUCATION:

A vigorous program spearheaded by the Unified Sewerage Agency has been initiated to inform the public of water quality concerns in the Tualatin Basin and to assess the level of public awareness. The plan includes a baseline survey to gauge progress and to enhance and possibly modify current strategies in the plan. To this point the DMAs have reached out through publications, educational programs, promotional meetings, workshops, tours and volunteer efforts.

Publications include newsletters, brochures describing streams and riparian areas, doorhangers, commodity newsletters and articles in newspapers. The publications have been distributed through direct mailings, incorporation in billings, placement in public areas, etc.

Volunteer activities include stream monitoring by the general public and school children, riparian and wetland remediation projects and storm drain stenciling.

Educational efforts include the Tualatin River Rangers Water Education Program that reaches approximately 5000 fourth graders each year with programs on wastewater, storm water, and conservation and agreements with the City of Lake Oswego School District to develop a water quality curriculum and to monitor several streams.

Numerous promotional meetings, workshops and seminars on water quality have

been held to inform the public of water quality concerns in the basin.

The Department of Agriculture has concentrated on key commodity groups in its efforts to control erosion and nutrients through demonstration sites, grower field days, and focus sessions on cover cropping strategies.

The Department of Forestry, through "Forest Log", supplies operators with compliance information, recommendations and advice on preventing water quality problems.

Tours of key water quality control sites used to mitigate water quality problem have attracted considerable public interest. Speakers have been made available to a wide variety of organizations. Hot lines are available to respond to complaints related to water quality.

SITE SPECIFIC PROBLEMS;

The Compliance/Implementation Schedule provides that site specific problems, such as streambank erosion sites, illicit discharges, and illegal dump sites, along the Tualatin River and its tributaries be identified, ranked, and corrected and/or addressed in long term restoration plans. That portion of the Tualatin basin within the jurisdictions of USA and Multnomah County was surveyed using aerial photography and video imaging. The City of Lake Oswego is in the process of identifying and correcting site specific problems. The City of Portland inventoried streams in 1991 and plans to reinventory the streams in 1994 using aerial imaging. Clackamas County has not as yet developed a program to identify site specific problems. The Department of Forestry continues to identify problem sites through operation inspections, landslide reporting, and complaint investigations. The Department of Agriculture has identified site specific areas through subbasin inventories that represent approximately two-thirds of the agricultural lands in the basin, basinwide inventories of specific agricultural operations including Confined Feeding Operations and Container Nurseries, and complaints.

IMPLEMENTATION OF MANAGEMENT PRACTICES

The Schedule provides for annual reporting of the progress made toward area-wide adoption of management practices. The urban management practices address new development management, erosion and sediment control, road and street runoff, lawn/landscape chemical management, wetland/riparian protection, and on-site stormwater systems.

Erosion control measures have been developed for all construction sites and for non-construction activities that contribute to off-site erosion. To meet the DEQ

requirement for 65% total phosphorus removal stormwater quality standards, appropriate construction and materials standards as well as design standards have been developed.

The New Development Management program, which considers the establishment and enforcement of regulations for management of stormwater from new developments, was adopted by USA and its member cities. Within that portion of the basin in the USA jurisdiction some of the management process may require off-site water quality projects rather than on-site water quality projects. On-site systems are the strongly preferred option for control of stormwater water quality. However, in the absence of suitable on-site systems, off-site systems may be constructed. If off-site systems are used, in-lieu fees are used to fund the off-site projects. Approximately 72% of the new developments, by acreage, and 58% by number have used on-site systems. USA has evaluated potential sites for off-site systems and depending upon DEQ wetland policy formulation will begin to develop the sites. Other parts of the basin require on-site projects for all new developments.

Stormwater maintenance has included TV line inspection, line cleaning, catch basin cleaning, street sweeping, detention pond maintenance, shoulder work, and open channel and ditch maintenance.

In the Multnomah County portion of the basin a Best Management Practices implementation plan was adopted in 1993 to supplement the Multnomah County Water Quality Management Plan. The City of Portland has identified four sites that will be used in the construction of water quality pollutant reduction facilities to mitigate storm water.

The Department of Agriculture has developed management practices that specifically address nutrient management and erosion control measures, particularly for Confined Animal Feeding Operations and Container Nurseries.

The Oregon Department of Forestry uses the Best Management Practices in the Oregon Forest Practice Rules to limit the impact to streams of timber management activities. All commercial forest management activities are subject to review for rule compliance. Modification of the water classification and protection rules, which are now being completed, will lead to much more refined controls over water quality impacts resulting from forest management practices.

RIPARIAN AREA MANAGEMENT:

Little effort up to now has been made to address these concerns in some of the urban areas. Multnomah County, however, using aerial imagery has identified

high priority riparian areas. The City of Portland is conducting policies that seek to protect and preserve riparian areas in the Fanno Creek drainage. The City of Lake Oswego is in the process of inventorying riparian areas within its jurisdiction and has restored a portion of one stream.

The rule revisions being undertaken by the Oregon Department of Forestry governing forestry practices will provide substantially greater protection for riparian areas.

RULES, ORDINANCES, AND GUIDANCE

Generally the rules and ordinances governing erosion control are considered to be adequate by the DMAs and consequently have not undergone revisions during the last year. With USA acting as the lead agency, all the DMAs contributed to changes that were made to the Erosion Control Plans Technical Guidance Manual in 1993. The City of Lake Oswego is revising its wetlands development standards. The Water Quality Facilities Technical Handbook is currently being revised by the City of Portland.

The legislature in 1993 passed SB 1010 that designated the Oregon Department of Agriculture as the lead agency to address agricultural nonpoint water pollution problems. The legislation provides authority to the Department of Agriculture to develop and implement a water quality management plan for TMDL basins. Agreements may be entered into with other agencies to develop and implement the plan. The plan may require actions to prevent or control water pollution resulting from agricultural activities. Civil penalties may be assessed for violations of the requirements of the plan.

JACKSON BOTTOM WETLAND:

In November, 1993 USA submitted to DEQ a draft Recycled Wastewater Facilities Plan which describes the land application efforts of USA.

After reviewing the data and reports concerning Jackson Bottom DEQ and USA will lay out future sampling and analytical requirements.

CONFINED ANIMAL FEEDING OPERATIONS:

The Oregon Department of Agriculture has evaluated Confined Animal Feeding Operations (CAFO) facilities in the Tualatin basin. An aerial survey of all 52 permitted facilities was followed by ground inspections. In conjunction with administering the CAFO permit program 12 notices of non compliance and 12 stipulation and final orders have been issued. Manure management systems have

been planned and constructed for permitted CAFO's throughout the basin. As part of the management systems, nutrient management plans are being implemented.

CONTAINER NURSERIES PROGRAM:

A program to address runoff from container nursery irrigation has been implemented as required by the Container Nursery Irrigation Water Management Plan. The discharges from container nurseries were evaluated to assess their level of compliance with the management plan initially by letter and subsequently as needed with site inspections. Irrigation tailwater recycling has been implemented on the larger acreage container nurseries. Smaller nurseries have modified their existing irrigation systems and/or adopted more efficient water management strategies.

COUNTY ROAD DITCHES:

Clackamas County, Multnomah County, Washington County, the Oregon Department of Agriculture, and the Oregon Department of Forestry prepared a report in December, 1993 that developed a roadside ditch maintenance program to enhance water quality in the Tualatin basin. The report described how current management practices address water quality through techniques for road shoulder maintenance, vegetation control/maintenance, herbicide application, ditch maintenance, and stream crossings and culverts.

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(C) The stormwater quality control facilities shall be designed to meet the removal efficiency specified in paragraph (A) of this subsection for a mean summertime storm event totaling 0.36 inches of precipitation with an average return period of 96 hours;

(D) The removal efficiency specified in paragraph (A) of this subsection specify only design requirements and are not intended to be used as a basis for performance evaluation or compliance determination of the stormwater quality control facility installed or constructed pursuant to this subsection;

(E) Stormwater quality control facilities required by this subsection shall be approved by a jurisdiction only if the following are met:

(i) For developments larger than one acre, the plat or site plan shall include plans and a certification prepared by an Oregon registered, professional engineer that the proposed stormwater control facilities have been designed in accordance with criteria expected to achieve removal efficiencies for total phosphorus required by paragraph (A) of this subsection;

(ii) The plat or site plan shall be consistent with the area and associated runoff coefficients used to determine the removal efficiency required in paragraph (A) of this subsection;

(iii) A financial assurance, or equivalent security acceptable to the jurisdiction, shall be provided by the developer with the jurisdiction that assures that the stormwater control facilities are constructed according to the plans established in the plat or site plan approval. Where practicable, the jurisdiction shall combine the financial assurance required by this rule with other financial assurance requirements imposed by the jurisdiction;

(iv) Each jurisdiction which constructs or authorizes construction of permanent stormwater quality control facilities, shall file with the Department, an operation and maintenance plan for the stormwater quality control facilities within its jurisdiction. The operation and maintenance plan shall allow for public or private ownership, operation, and maintenance of individual permanent stormwater quality control facilities. The jurisdiction or private operator shall operate and maintain the permanent stormwater control facilities in accordance with the operation and maintenance plan.

(F) Except as required by paragraph (D) of this subsection, the jurisdiction may grant an exception to the subsection (e) of this section if the jurisdiction chooses to adopt and, on a case-by-case basis, impose a one time in-lieu fee. The fee will be an option where, because of the size of the development, topography, or other factors, the jurisdiction determines that the construction of on-site permanent stormwater treatment systems is not practicable or undesirable;

(A) The in-lieu fee shall be based upon a reasonable estimate of the current, prorated cost of the jurisdiction to provide stormwater quality control facilities for the land development being assessed the fee. Estimated costs shall include costs associated with off-site land and rights-of-way acquisition, design, construction and construction inspection;

fees collected pursuant to this paragraph in an account dedicated only to reimbursing the jurisdiction for expenses related to off-site land and rights-of-way acquisition, design, construction and construction inspection of stormwater quality control facilities;

(C) The ordinance establishing the in-lieu fee shall include provisions that reduce the fee in proportion to the ratio of the site's average runoff coefficient (R_p), as established according to the equation in paragraph (3)(e)(A) of this rule;

(D) No new development shall be granted an exemption if the jurisdiction is not meeting an approved time schedule for identifying the location for the off-site stormwater quality control facilities that would serve that development.

(g) The Department may approve other mechanisms that allow jurisdictions to grant exemptions to new development. The Department shall only approve those mechanisms that assure financing for off-site stormwater quality control facilities and that encourage or require on-site retention where feasible;

(h) Subsection (b) of this section shall apply until a jurisdiction adopts ordinances that provide for a program equivalent to subsection (b) of this section, or the Environmental Quality Commission determines such a program is not necessary when it approves the jurisdiction's program plan required by OAR 340-41-470(3)(g).

Stat. Auth.: ORS Ch. 468

Hist.: DEQ 128, f. & e. 1-21-77; DEQ 16-1989, f. & cert. ef. 7-31-89 (and corrected 8-3-89); DEQ 30-1989, f. & cert. ef. 12-14-89

Special Policies and Guidelines

340-41-470 (1) In order to preserve the existing high quality water for municipal water supplies and recreation, it is the policy of the EQC to prohibit any new or increased waste discharges to the waters of:

(a) The Clackamas River Subbasin;

(b) The McKenzie River Subbasin above the Hayden Bridge (river mile 15);

(c) The North Santiam River Subbasin.

(2) The Director or a designee may, however, allow lower water quality on a short-term basis, or to respond to emergencies or to otherwise avoid imminent and serious danger to public health or welfare.

(3) Section (2) of this rule is effective until January 28, 1995.

(4) The Environmental Quality Commission shall investigate, together with any other affected state agencies, the means of maintaining at least existing minimum flow during the summer low flow period.

(5) In order to improve water quality within the Tualatin River subbasin to meet the existing water quality standard for dissolved oxygen, and the 15 ug/l chlorophyll *a* action level stated in OAR 340-41-150, the following special rules for total maximum daily loads, waste load allocations, load allocations, and implementation plans are established:

(a) After completion of wastewater control facilities and implementation of management plans

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later than June 30, 1993, no activities shall be allowed and no wastewater shall be discharged to the Tualatin River or its tributaries without the specific authorization of the Commission that cause the monthly median concentration of total phosphorus at the mouths of the tributaries listed below and the specified points along the mainstream of the Tualatin River, as measured during the low flow period between May 1 and October 31*, of each year, unless otherwise specified by the Department, to exceed the following criteria:

<u>Mainstream (RM)</u>	<u>ug/l</u>	<u>Tributaries</u>	<u>ug/l</u>
Cherry Grove (67.8)	20	Scoggins Cr.	60
Dilley (58.8)	40	Gales Cr.	45
Golf Course Rd. (52.8)	45	Dairy Cr.	45
Rood Rd. (38.5)	50	McKay Cr.	45
Farmington (33.3)	70	Rock Cr.	70
Elsner (16.2)	70	Fanno Cr.	70
Stafford (5.4)	70	Chicken Cr.	70

(b) After completion of wastewater control facilities and implementation of management plans approved by the Commission under this rule and no later than June 30, 1993, no activities shall be allowed and no wastewater shall be discharged to the Tualatin River or its tributaries without the specific authorization of the Commission that cause the monthly median concentration of ammonia-nitrogen at the mouths of the tributaries listed below and the specified points along the mainstream of the Tualatin River, as measured between May 1 and November 15*, of each year, unless otherwise specified by the Department, to exceed the following target concentrations:

<u>Mainstream (RM)</u>	<u>ug/l</u>	<u>Tributaries</u>	<u>ug/l</u>
Cherry Grove (67.8)	30	Scoggins Cr.	30
Dilley (58.8)	30	Gales Cr.	40
Golf Course Rd. (52.8)	40	Dairy Cr.	40
Rood Rd. (38.5)	50	McKay Cr.	40
Farmington (33.3)	1000	Rock Cr.	100
Elsner (16.2)	850	Fanno Cr.	100
Stafford (5.4)	850	Chicken Cr.	100

(c) The sum of tributary load allocations and waste load allocations for total phosphorus and ammonia-nitrogen can be converted to pounds per day by multiplying the instream criteria by flow in the tributary in cfs and by the conversion factor 0.00539. The sum of load allocations waste load allocations for existing or future nonpoint sources and point source discharges to the mainstream Tualatin River not allocated in a tributary load allocation or waste load allocation may be calculated as the difference between the mass (criteria multiplied by flow) leaving a segment minus the mass entering the segment (criteria multiplied by flow) from all sources plus instream assimilation;

(d) The waste load allocation (WLA) for total phosphorus and ammonia-nitrogen for Unified Sewerage Agency of Washington County is determined by subtracting the sum of the calculated load at Rood Road and Rock Creek from the calculated load at Farmington;

(e) Subject to the approval of the Environ-

modify existing waste discharge permits for the Unified Sewerage Agency of Washington County and allow temporary additional waste discharges to the Tualatin River provided the Director finds that facilities allowed by the modified permit are not inconsistent and will not impede compliance with the June 30, 1993 date for final compliance and the Unified Sewerage Agency is in compliance with the Commission approved program plan;

(f) Within 90 days of the adoption of these rules, the Unified Sewerage Agency of Washington County shall submit a program** plan and time schedule to the Department describing how and when the Agency will modify its sewerage facilities to comply with this rule. The program plan shall include provisions and time schedule for developing and implementing a management plan under an agreement with the Lake Oswego Corporation for addressing nuisance algal growth in Lake Oswego;

(g) Within 18 months after the adoption of these rules, Washington, Clackamas, Multnomah Counties and all incorporated cities within the Tualatin River and Oswego Lake subbasins shall submit to the Department a program plan** for controlling the quality of urban storm runoff within their respective jurisdictions to comply with the requirements of subsections (a) and (b) of this section;

(h) After July 1, 1989, Memorandums of Agreements between the Departments of Forestry and Agriculture and the Department of Environmental Quality shall include a time schedule for submitting a program plan** for achieving the requirements of subsections (a) and (b) of this section. The program plans shall be submitted to the Department within 18 months of the adoption of this rule;

(i) Within 120 days of submittal of the program plans** and within 60 days of the public hearing, the Environmental Quality Commission shall either approve or reject the plan. If the Commission rejects the plan, it shall specify a compliance schedule for resubmittal for approval and shall specify the reasons for the rejection. If the Commission determines that an agency has not made a good faith effort to provide an approvable plan within a reasonable time, the Commission may invoke appropriate enforcement action as allowed under law. The Commission shall reject the plan if it determines that the plan will not meet the requirements of this rule within a reasonable amount of time. Before approving a final program plan, the Commission shall reconsider and may revise the June 30, 1993 date stated in subsections (a), (b), and (e) of this section. Significant components of the program plans shall be inserted into permits or memorandums of agreement as appropriate;

(j) For the purpose of assisting local governments in achieving the requirements of this rule, the Department shall:

(A) Within 90 days of the adoption of these rules, distribute initial waste load allocations and load allocations among the point source and nonpoint source management agencies in the basin. These allocations shall be considered interim and may be redistributed based upon the conclusions of the approved program plans;

(B) Within 120 days of the adoption of these

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management agencies as to the specific content of the programs plans;

(C) Within 180 days of the adoption of these rules, propose additional rules for permits issued to local jurisdictions to address the control of storm water from new development within the Tualatin and Oswego Lake subbasins. The rules shall consider the following factors:

(i) Alternative control systems capable of complying with subsections (a) and (b) of this section;

(ii) Maintenance and operation of the control systems;

(iii) Assurance of erosion control during as well as after construction.

(D) In cooperation with the Department of Agriculture, within 180 days of the adoption of this rule develop a control strategy for addressing the runoff from container nurseries.

(6) In order to improve water quality within the Yamhill River subbasin to meet the existing water quality standard for pH, the following special rules for total maximum daily loads, waste load allocations, load allocations and program plans are established:

(a) After completion of wastewater control facilities and program plans approved by the Commission under this rule and no later than June 30, 1994, no activities shall be allowed and no wastewater shall be discharged to the Yamhill River or its tributaries without the authorization of the Commission that cause the monthly median concentration of total phosphorus to exceed 70 ug/l as measured during the low flow period between approximately May 1 and October 31*** of each year.

(b) Within 90 days of adoption of these rules, the Cities of McMinnville and Lafayette shall submit a program plan and time schedule to the Department describing how and when they will modify their sewerage facility to comply with this rule;

(c) Final program plans shall be reviewed and approved by the Commission. The Commission may define alternative compliance dates as program plans are approved. All proposed final program plans shall be subject to public hearing prior to consideration for approval by the Commission;

(d) The Department shall within 60 days of adoption of these rules distribute initial waste load allocations and load allocations to the point and nonpoint sources in the basin. These allocations shall be considered interim and may redistributed based upon the conclusions of the approved program plans.

*Precise dates for complying with this rule may be conditioned on physical conditions (i.e., flow, temperature) of the receiving water and shall be specified in individual permits or memorandums of understanding issued by the Department. The Department shall consider system design flows, river travel times, and other relevant information when establishing the specific conditions to be inserted in the permits or memorandums of understanding. Conditions shall be consistent with Commission-approved program plans** and the intent of this rule.

**For the purpose of this section of the rules, program plan is defined as the first level plan for developing a wastewater management system and describes the present physical and institutional infrastructure and the proposed strategy for

changes including alternatives. A program plan should also include intergovernmental agreements and approvals, as appropriate; time schedules for accomplishing goals, including interim objectives; and a financing plan.

***Precise dates for complying with this rule may be conditioned on physical conditions (i.e., flow, temperature) of the receiving water and shall be specified in individual permits or memorandums of understanding issued by the Department. The Department shall consider system design flows, river travel times, and other relevant information when establishing the specific conditions to be inserted in the permits or memorandums of understanding.

Stat. Auth.: ORS 468.020

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 17-1988, f. & cert. ef. 7-13-88; DEQ 25-1988, f. & cert. ef. 9-16-88; DEQ 18-1989, f. & cert. ef. 7-31-89 (and corrected 8-3-89); DEQ 3-1994, f. & cert. ef. 2-2-94

Sandy Basin

Beneficial Water Uses to be Protected

340-41-482 Water quality in the Sandy River Basin (see Figures 1 and 8) shall be managed to protect the recognized beneficial uses as indicated in Table 7.

Stat. Auth.: ORS Ch. 468

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 9-1985, f. & ef. 8-6-85

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

340-41-485 (1) Notwithstanding the water quality standards contained below, the highest and best practicable treatment and/or control of wastes, activities, and flow shall in every case be provided so as to maintain dissolved oxygen and overall water quality at the highest possible levels and water temperatures, coliform bacteria concentrations, dissolved chemical substances, toxic materials, radioactivity, turbidities, color, odor, and other deleterious factors at the lowest possible levels.

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

(a) Dissolved oxygen (DO):

(A) Main Stem Columbia River (river miles 120 to 147): DO concentrations shall not be less than 90 percent of saturation;

(B) All other Basin waters: DO concentrations shall not be less than 90 percent of saturation at the seasonal low, or less than 95 percent of saturation in spawning areas during spawning, incubation, hatching, and fry stages of salmonid fishes.

(b) Temperature:

(A) Main Stem Columbia River (river miles 120 to 147): No measurable increases shall be allowed outside of the assigned mixing zone, as measured relative to a control point immediately upstream from a discharge when stream temperatures are 68° F. or greater; or more than 0.5° F. increase due to a single-source discharge when receiving water temperatures are 67.5° F. or less; or more than 2° F. increase due to all sources combined when stream

ENVIRONMENTAL QUALITY COMMISSION

- Rule Adoption Item
- Action Item
- Information Item

Attachment D
 Agenda Item E
 January 9-10, 1997
 EQC Meeting

Agenda Item F
 July 23, 1993 Meeting


<p>Title:</p> <p>Tualatin River Watershed Nonpoint Source Management Implementation/Compliance Schedule and Order</p>			
<p>Summary:</p> <p>Although considerable progress has been made by the Designated Management Agencies (DMAs) responsible for implementing programs to reduce nonpoint source pollution in the Tualatin River watershed, the Total Maximum Daily Load (TMDL) for phosphorus was not met by the June 30, 1993 compliance date set in rule. The Commission has the authority to allow continued activities beyond the compliance date. At the January 29, 1993 EQC meeting the Commission was briefed on this issue and concurred with the Department's preference to develop a new Implementation/Compliance Schedule extending beyond the date set in rule. A new schedule has been developed, reviewed by the public, and is presented for EQC consideration. If the schedule is adopted as proposed, the status of the river and pollution control efforts would be reevaluated at the end of the new schedule period (end of 1995) and decisions about continued activities beyond 1995 would be made at that time.</p>			
<p>Department Recommendation:</p> <p>The Department recommends that the Commission adopt the new Implementation/Compliance Schedule and Order and authorize continued activities retroactive to June 30, 1993. This approach will allow activities to continue in the Tualatin River watershed while issuing an order that will require continued aggressive implementation of nonpoint source control efforts.</p>			
<table style="width: 100%; border: none;"> <tr> <td style="width: 33%; border: none;"> <p><i>Mitch Holman</i> _____ Report Author</p> </td> <td style="width: 33%; border: none;"> <p>_____ Division Administrator</p> </td> <td style="width: 33%; border: none;"> <p><i>Bill Hen</i> _____ Director</p> </td> </tr> </table>	<p><i>Mitch Holman</i> _____ Report Author</p>	<p>_____ Division Administrator</p>	<p><i>Bill Hen</i> _____ Director</p>
<p><i>Mitch Holman</i> _____ Report Author</p>	<p>_____ Division Administrator</p>	<p><i>Bill Hen</i> _____ Director</p>	

July 6, 1993 *Accommodations for disabilities are available upon request by contacting the Public Affairs Office at (503)229-5317(voice)/(503)229-6993(TDD).

State of Oregon
Department of Environmental Quality

Memorandum†

Date: July 6, 1993

To: Environmental Quality Commission
From: Fred Hansen, Director 
Subject: Agenda Item F, July 23, 1993, EQC Meeting

Tualatin River Watershed Nonpoint Source Management
Implementation/Compliance Schedule and Order

Statement of the Issue

As a result of citizen legal action, federal regulations (40 CFR 130.7), and chronic violations of water quality standards for dissolved oxygen and pH, Total Maximum Daily Loads (TMDLs) were established for nutrients (total phosphorus and ammonia nitrogen) for the Tualatin River watershed in 1988. These total load limits were then allocated to sources. Waste Load Allocations (WLA) were assigned to point sources and Load Allocations (LA) were assigned to nonpoint sources of water pollution in the basin. Oregon Administrative Rules (OAR 340-41-470) were amended "In order to improve the water quality within the Tualatin River subbasin to meet the existing water quality standard for dissolved oxygen, and the 15 ug/l chlorophyll a action level ..." The rule revisions established compliance concentrations at several points along the main stem of the river and at the mouths of major tributaries. The same rule required development of plans to control nonpoint source (NPS) pollution from urban runoff, and from agricultural and forest lands, in order to achieve the compliance concentrations. The rule states that after June 30, 1993, "no activities shall be allowed..." that cause the compliance concentrations to be exceeded at specified points "without the specific authorization of the Commission." Management plans were developed and implementation is in process. Much has been accomplished by the local and state agencies implementing the plans (see the list of accomplishments in Attachment A). The ammonia nitrogen TMDL has been achieved and there has been significant reductions in phosphorus loading to the river, primarily from point source reductions. The phosphorus TMDL has, however, not been met. Because full compliance with the total phosphorus TMDL was not achieved by June 30, 1993, the Environmental Quality Commission (EQC, Commission) must take action to allow continuation of activities or the Department must initiate actions to cause all contributing activities to cease.

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Adoption of a new compliance schedule by the Commission would constitute an action that will allow activities not specifically prohibited to continue as long as provisions of the compliance schedule are adhered to. A new compliance schedule has been drafted and is presented here for consideration by the Commission. Action taken by the Commission on this issue should be retroactive to June 30, 1993.

Background

The Tualatin River watershed has experienced chronic problems with degraded water quality, resulting from human caused pollution, for many years. At various locations there have been violations of water quality standards for dissolved oxygen, pH, and bacteria. The chlorophyll a action level, an indicator of nuisance algae growth (which is a contributor to both the oxygen and pH violations) has been frequently exceeded. There are also serious concerns with sediment resulting from erosion, and elevated water temperature in the watershed. Efforts have occurred in the past to address some of these water quality problems (in the 1940s, 1960s and 1970s). These efforts focused on two areas: 1) treatment of existing effluent discharges from canneries and sewage treatment plants, and 2) providing additional water for dilution. Historically, little attention was paid to increasing effluent loads that would result from growth and the area-wide, nonpoint source (NPS), loads that come from runoff from construction sites and urban areas, agricultural operations, and forestry activities. As a result, by the 1980s the water quality of the river was again severely degraded.

As a result of federal regulations and citizen legal action in 1986, DEQ began a new program to establish Total Maximum Daily Loads (TMDLs) in-water quality limited basins. The Tualatin River was the first waterbody in Oregon for which TMDLs were established. TMDLs are intended to define the amount of a pollutant that can be added to the system without causing a violation of a water quality standard. For the Tualatin watershed, TMDLs were adopted by EQC in 1988 for phosphorus and for ammonia nitrogen based on protection of the dissolved oxygen and pH standards. It was anticipated that the measures required to achieve these limits would also lead to improvements of other water quality parameters (bacteria, sediment, temperature). At the time the TMDLs were established it was not known how long it would take to achieve the limits. After considerable debate an aggressive, five year, time frame was decided on and a compliance date for achievement of the TMDLs was set for June 30, 1993. The rule required development of plans to improve sewage treatment plants in the watershed and plans to decrease the amount of pollution originating from nonpoint sources. Unified Sewerage Agency of Washington County was required to develop and implement plans to reduce ammonia and phosphorus in sewage treatment plant effluent

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released to the river during the dry months. The following Designated Management Agencies (DMAs) were required to develop plans to control NPS pollution to meet the TMDL for phosphorus and help to achieve the water quality standards: Washington, Clackamas, and Multnomah Counties, all incorporated cities in the basin, the Oregon Departments of Agriculture and Forestry. Commission review of the NPS control plans was required by rule. The cities located in Washington County, through agreement with USA, opted to be included in USA's NPS control plan. The Cities of Portland, Lake Oswego, and West Linn remain as separate DMAs. The Department of Agriculture designated the Washington County Soil and Water Conservation District as a Local Management Agency.

At the August, 1990, EQC meeting most of the plans were approved with compliance schedules. Action was deferred on plans for forestry and agriculture. The Forestry and Agriculture plans were returned to the Commission at the June 14, 1991 meeting. At that time the forestry plan was approved with a compliance schedule. The agriculture plan had been significantly improved but concerns still remained primarily related to the lack of mechanisms to provide reasonable assurance that pollution reduction will occur if voluntary measures proved unsuccessful and lack of stable program funding. In order to proceed with implementation the Commission approved the plan, with a compliance schedule, for a duration of one year and directed the Department of Agriculture to work with the counties to develop model ordinances which could be put in place if necessary and to pursue stable funding. On July 24, 1992 the Commission again considered the agriculture plan. Concerns with the ability to provide reasonable assurance and stable program funding were again raised. Model ordinances had not been developed as directed. Legislation intended to provide funding mechanisms and authority to local Soil and Water Conservation Districts (SWCDs) was found to be flawed by the Attorney General's office and was not implemented. The Commission again approved the plan for a limited duration (through April, 1993), this time urging the SWCDs and counties to work together to develop and implement measures to provide reasonable assurance. When the approval period ran out at the end of April, the Department and all of the DMAs had already begun the process of developing a new proposed implementation and compliance schedule, presented in this staff report, which would authorize activities after the June 30, 1993 TMDL compliance date. As a result, the Department opted not to bring the agriculture plan back to the Commission as a separate item prior to this agenda item.

Nonpoint Source Management Plan Accomplishments

Implementation of the NPS control plans has been ongoing since before the plans were approved. Please see Attachment A for a summary of the most significant accomplishments of each of the Designated Management Agencies. Highlights include:

- ▶ **Planning and Special Studies**
A large amount of planning has been done. Guidance documents have been produced by local agencies for stormwater treatment systems and erosion control on construction sites. Ordinances and programs have been established in an attempt to insure these practices are used in urban areas.
- ▶ **Demonstrations and Pilot Projects**
A number of demonstrations and pilot projects have been done which show that practices can be put in place in the Tualatin River watershed and that these practices will reduce the concentration of pollutants in runoff from urban and agricultural lands.
 - Leaf compost treatment system: phosphorus removal as high as 77% and suspended solids removal of 95%.
 - Wet ponds have shown to have results similar to the compost system and have flood control benefits as well.
 - Reseeding road ditches with low growing grasses and maintaining vegetative cover is effective in reducing pollution from road ditches.
 - Cover crops and mulching shown to substantially reduce sediment and phosphorus in agricultural runoff.
- ▶ **Public Involvement and Education**
Because NPS control requires changes in behavior and changes in how areas are developed and how farm operations are conducted, education and awareness is a key element. A number of brochures, newsletters, workshops, etc., have been produced.
- ▶ **Ambient Monitoring**
A great deal of sampling and analysis has occurred. These efforts will need to continue to provide data for tracking success of pollution control efforts and resolving remaining uncertainties about pollution sources.

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► Financial Assistance Programs

Federal Hydrologic Unit Area (HUA) and Water Quality Incentive Program (WQIP) have been established in the Dairy-McKay Creek area. These programs provide several million dollars to assist agricultural and forestry operators install and operate practices and systems to reduce pollution.

Legislation (SB 1010), which should provide authorities and stable funding mechanisms for agricultural NPS control programs, appears to be moving through the Legislature and is expected to pass. The Washington County Soil and Water Conservation District has submitted to the Department a proposed program and draft farm plan ordinance which, if implemented, will provide the "reasonable assurance" that has been needed in the agricultural NPS control plan. A copy of the SWCDs proposal is included with their written comments in the Presiding Officers Report (see Attachment C). As of this writing, the Department of Agriculture has not indicated whether such a program will be implemented under SB 1010 if it passes.

Authority to Address the Issue

OAR 340-41-470(3), adopted by the EQC in 1988, established TMDLs for the Tualatin River subbasin in order to meet the dissolved oxygen standard and the chlorophyll a action level. The rule required that after June 30, 1993, "no activities shall be allowed and no wastewater shall be discharged to the Tualatin River or its tributaries without the specific authorization of the Commission" that cause the compliance concentrations to be exceeded. Copies of the rule and enabling statutes are available on request. Establishment of TMDLs is required by federal regulations (40 CFR 130.7)

Alternatives and Evaluation

At the January 29, 1993, Commission meeting an information item was presented (Agenda Item F, copy available on request) which briefed the Commission on the expectation that the TMDL for phosphorus would not be achieved by the June 30, 1993 compliance date. At that time five alternatives for proceeding with efforts to reduce NPS pollution after June 30, 1993, were presented. The alternatives were: 1) No Action, 2) Change the Compliance date in the rule, 3) Development of Stipulated Final Order with each management agency, 4) EQC Authorization of continued activities with Memorandum of Agreement, 5) EQC Authorization of continued activities with Clarification of Conditions and Implementation and Compliance Schedule. At that time the Commission concurred with the Department preference to pursue alternative 5. This

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option suggests the EQC use its authority to allow activities to continue in the watershed as long as an implementation/compliance schedule and order is adhered to. Any activities that the Commission wished to prohibit could be specified.

The Department has worked with the Designated Management Agencies (DMAs) during the past six months to develop an implementation/compliance schedule. Participation of the Northwest Environmental Defense Center (NEDC) was also invited and a representative attended some of the early meetings. Public comment was also sought on the draft schedule. Commission action is now requested on the resulting document: Tualatin Sub-basin Nonpoint Source Management Implementation/Compliance Schedule and Order for Designated Management Agencies (DMAs), (Attachment B).

The approach taken in the new schedule was to produce a single document which includes responsibilities of all the DMAs. Tasks which are common to all DMAs, and on which they are expected to work cooperatively are listed first. Some additional tasks which are specific to individual DMAs are also listed. The first page of the schedule provides a purpose statement (to improve the water quality within the Tualatin River subbasin...) and identifies the federal and state regulations under which the program is required. The schedule is intended to encourage a cooperative watershed approach by including all the agencies in a single schedule and asking for monitoring plans and education plans that encompass the entire watershed. A considerable amount of planning and problem identification has been done in the watershed and a number of good demonstration projects have been carried out (see accomplishments in Attachment A). These projects have shown that practices can be put in place in the Tualatin River watershed and that such practices will result in reductions of pollutant concentrations in the runoff from urban and agricultural lands. The currently proposed schedule attempts to change the emphasis from planning and demonstrations to more widespread implementation of practices and correction of identified problems. The schedule runs through 1995 after which a re-evaluation of the implementation program, based on water quality data, will be conducted and decisions about future actions will be made. This schedule will aline the Tualatin program with the bi-annual Water Quality Assessment (305(b)) Report required by the Clean Water Act.

In taking action on the Schedule and Order the Commission has at least four possible alternatives:

1. Adopt the Implementation/Compliance Schedule and Order as currently written and authorize continued activities in the Tualatin River watershed, retroactive to June 30, 1993, provided that the schedule is complied with.

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2. Direct the Department to modify the Implementation/Compliance Schedule and Order based on Commission deliberations, then adopt the Schedule and authorize continued activities in the Tualatin River watershed, retroactive to June 30, 1993, provided that the schedule is complied with.
3. Reject the Implementation/Compliance Schedule and Order and direct the Department to pursue one of the other alternatives identified in the January 29, 1993 staff report (or some other option). Under this alternative the Commission would need to identify what activities would, or would not, be authorized in the interim while another alternative is developed.
4. Reject the Implementation/Compliance Schedule and Order and allow no activities to continue that would cause the monthly median concentration of total phosphorus to exceed the concentrations listed in OAR 340-41-470.

Under any of the first three alternatives the Commission could authorize activities to continue with the exception of any specific activities the Commission identifies as prohibited.

Summary of Any Prior Public Input Opportunity

A public notice of a chance to comment on the proposed new compliance schedule for implementation of pollution control efforts in the Tualatin River and its tributaries was issued on May 10, 1993. A copy of the public notice is available on request. Comments were solicited on both the list of accomplishments of the DMAs and on the draft implementation and compliance schedule. Two informal public information meetings were held, on May 24 and 25, 1993, so that Department and DMA staff could answer questions related to the draft schedule and list of accomplishments. The Department conducted a formal public hearing, on behalf of the Commission, on the evening of Thursday, June 10, 1993, at the Portland General Electric auditorium in Beaverton. Written comments were due by June 17, 1993. A copy of the presiding officer's report, which summarizes all of the oral testimony received and includes a copy of all of the written comments received, is included as Attachment C. A discussion of the major issues raised during the comment period is provided below. The issues are discussed roughly in the order in which they were raised. The order does not reflect relative significance of the issues.

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Issue: County Road Ditches

Commentor(s): Bonnie Hays, Washington County Commission Chair

Comments: Chair Hays stated that Task #14, which deals with county road ditches, should be deleted or modified to make it apply only to urban runoff inside the UGB. She points out that the rule which identifies the responsibility of Washington County with respect to the TMDL directs the county to produce "a program plan for urban storm runoff" within its jurisdiction. She maintains that this language limits the County's responsibility to urban areas of unincorporated Washington County within the territorial boundaries of Unified Sewerage Agency. Chair Hays does, however, acknowledge that the "goals of the compliance schedule are desirable" and states that the County "will continue to upgrade the quality of our rural drainage and vegetation maintenance practices."

Background: Task #14 requires the county to develop and begin implementation of a program to maintain county roadside ditches in such a way to minimize transport of sediment, nutrients, and other pollutants to waters of the state. The intent is to include rural road ditches. This has been an issue since very early on in the Tualatin efforts. Many of the rural county roads are maintained, either mechanically or by use of herbicides, in a way that removes all vegetation from the ditches and adjacent strips of land (this maintenance is either done by the county or by adjacent landowners). In addition, many of the roads are farmed (tilled) right up to the ditch itself. These two things cause sediment and associated pollutants to be efficiently delivered to the ditch with then often drains to the nearest stream.

The Department has suggested that the County should not allow bare soil to be exposed in the road right-of-way, and that, where possible, they convert ditches to vegetated swales. Research by Dr. Richard Horner of the University of Washington and others has shown that road runoff does carry nutrients and sediment, as well as oil, metals, and other toxics, to receiving streams. He has also shown that simple, inexpensive, low technology practices, such as using roadside ditches for biofiltration where possible, reduces the amount of pollution in the runoff before it reaches the stream. Prohibiting the removal of vegetation from the right-of-way would slow runoff from adjoining agricultural operations allowing sediment and other pollutants to settle out before they are delivered to the roadside ditch. This will not only reduce pollution but would also reduce ditch maintenance needs.

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Department action: The Department recommends that task #14 remain in the schedule. As currently written, the task merely requires that a program be developed and implementation begin, "on a priority basis, to maintain county roadside ditches in such a way to minimize transport of sediment, nutrients, and other pollutants to waters of the state." In the original draft of this task only the counties were identified as responsible DMAs. The Oregon Departments of Forestry and Agriculture have been added to clarify that they should work with the counties to achieve the goal of minimizing transport of pollutants, via road ditches, to waters of the state. The Department further recommends review of DEQ rules relevant to this issue be included under Task #6, Rules, Ordinances and Guidance. If clarification in the rule is necessary it would be brought to the Commission with any other necessary revisions identified under Task #6.

Issue: Task #9, Jackson Bottom

Commentor(s): John Jackson, USA
Alan Goodman, Friends of Jackson Bottom

Comments: Mr. Jackson stated that requirements related to Jackson Bottom create confusion and should be removed from the schedule. He states that the requirements for development of reuse plans and management of STP effluent are covered under NPDES permits and other regulations and they should not be included in this compliance schedule as well. He is willing to work with DEQ toward a resolution of this issue. In written testimony submitted later, Mr. Jackson states that if work in Jackson Bottom must be included in this schedule it should reference the work needed and suggest that it be included in modifications to the NPDES permit for the Hillsboro West STP.

Mr. Goodman submitted written comments. He suggests that Task #9 should include objectives for any data gathering and should require submittal of a report, not just data and analysis. He believes that development of a plan to reduce the pollution coming from Jackson Bottom could be developed more quickly than is suggested in #9(e) and suggests 9/30/94 as a completion date. He believes that leakage from the large retention pond should receive more priority and be corrected on a shorter schedule. Finally he believes there should be requirements for public review and comment on reports and plans developed in Task #9.

Background: Jackson Bottom has been used for many years to irrigate effluent, at high application rates, from the Hillsboro West treatment plant during the dry season. It has been known for some time that surface flows entering the river from Jackson Bottom contain high concentrations of phosphorus (and relatively

high chloride). There is also significant potential for sub-surface movement of excess irrigated effluent, or effluent leaking from ponds, to the river. There is a very large effluent retention pond located very near the river that is known to have unaccounted for loss of effluent. These issues have been discussed informally several times during the past few years.

Reclaimed water use plans are required in Division 55 of DEQ's rules. Discharge of effluent from the Hillsboro West STP is addressed in the NPDES permit for that facility. Neither the rules nor the permit address dates by which: reuse plans will be in effect; irrigation rates in Jackson bottom will be reduced to at or below agronomic rates; potential leakage from ponds containing effluent will be addressed; and pollution entering the river from Jackson Bottom will be reduced. The purpose of this task in the compliance order is to set specific dates by which these issues will be addressed and to include a data analysis and retention pond leakage evaluation that is not currently addressed in other documents. The Department does not agree that confusion results for having requirements in the Implementation/Compliance Schedule and in the Hillsboro West Permit. Requirements in the two documents do not contradict each other.

Department Action: The language in Task #9 has been revised to reference NPDES permits and reuse rules. A requirement for public participation in report review and plan development has been added to the current schedule language.

Issue: Task #10, Exemptions from On-Site Stormwater Treatment

Commentor(s): Douglas Roberts, Farmer, Tualatin, OR.
Bonnie Peterson, Tualatin, OR.
Sue Orlaske, Hillsboro business owner.

Comment: Mr. Roberts is concerned about the increasing amount of runoff that is being generated by urbanization and that much of that runoff is entering the river with no treatment. He stated that new developments are being built in the basin without constructing the on-site stormwater treatment facilities which were intended. In-lieu fees are charged but no off-site facilities have been built. Ms. Peterson feels that developers are often given an option of building on-site treatment facilities or paying a fee in-lieu (instead of treating the in-lieu fee as an exemption). She points out that there is no monitoring of the program and no accountability if improper exemptions are made. She is concerned that Task #10 still does not make it clear that use of the in-lieu mechanism to avoid building facilities on-site is to be an exception and it doesn't make it clear what DEQ will do if inappropriate exemptions are made. She points out that it has been five

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years since the rules were passed and she doesn't understand why we should wait until 1994 to begin a process to insure that the program works. She suggests that the delay in getting better on-site treatment now will lead to problems that will have to be fixed later at taxpayer expense. She suggests that no further exemptions should be allowed until issues are resolved.

Ms. Orlaske is also concerned about exemptions from the on-site stormwater treatment requirements. She points out that no regional facilities have been built even though many developments have received exemptions and paid in-lieu fees. Those facilities that have been proposed have all been in-stream facilities which invites delays because of water rights and other issues. She suggests that other options (out of stream or on-site) should be considered to speed up placement of facilities. Finally, she points out that every exemption that is allowed means we are losing ground and suggests that no further exemptions should be allowed until the issues have been resolved.

Background: This is an issue that has been raised several times over the past few years. DEQ rules (340-41-455(3)) require all new development to have permanent stormwater control facilities to reduce pollution loadings associated with the runoff from the development. Exemptions are allowed if an in-lieu fee is collected to pay for off-site facilities and, a determination has been made by the local jurisdiction, on a case-by-case basis, that because of size of the development, topography, or other factors, construction of an on-site treatment facility is impractical or undesirable. "No new development shall be granted an exemption if the jurisdiction is not meeting an approved time schedule for identifying the location for the off-site stormwater quality control facilities that would serve that development." Everyone agrees that exemptions are being granted. There is considerable uncertainty as to how many exemptions have occurred, why they occurred, and what their significance is. (This is because no record keeping or reporting was required.) USA has produced a draft inventory of proposed sites for regional facilities. But no regional facilities have actually been sited, no schedule has been established for siting or building facilities, and no off-site facilities have been built to date. USA has suggested that DEQ removal efficiency requirements are so stringent that the facilities would have to be too large to make them feasible on relatively small developments (15 single family dwellings or less). They have suggested that this requirement needs to be revised (via rule change) if there is to be more use of on-site facilities. In the most recent exchange of correspondence on this issue (April 16, 1993), DEQ requested information on the criteria they use for granting exemptions, a schedule and strategy for finalizing and implementing the proposed facilities site list, and how USA will account for the amount of runoff that is being exempted so that

they can insure that equivalent treatment is being provided off-site. A date for submittal of this information was not specified. The Department has received no additional information.

Department Action: The Department believes Task #10 should remain in the schedule as written. The task is intended to resolve the issues which have been brought up. By the end of August of this year a tracking system will be in place to provide better information on the numbers of exemptions that are being granted, the reasons for the exemptions, and the mechanisms by which equivalent treatment will be provided off site. In early 1994 recommendations will be made for any necessary changes to state or local regulations. If changes to state rules are needed they can be brought to the Commission in a package along with any other revisions identified under Task #6.

Issue: 25 ft. buffers.

Commentor(s): Douglas Roberts, Farmer, Tualatin, OR.
Jack Broome, The Wetlands Conservancy
Susan Langston, Friends Beaverton's Johnson Crk.
Mark Hereim, Beaverton
Mike Houck, Urban Streams Council

Comment: Mr. Roberts stated that construction is occurring within 25 feet of the river.

Mr. Broome discussed the importance of maintaining buffers and commended the existence of the 25 ft. buffers but said he would like to have larger buffers.

Ms. Langston is concerned about destruction of the 25 ft. buffers by new development. She believes that cities frequently exempt developers from the requirement to protect the buffers. She would like to stop exemptions and close loopholes by addressing buffers in Tasks #3, Site Specific Problems, #4, Implementation of Management Practices, and #6, Rules, Ordinances and Guidance. She would like to see more enforcement of ordinances.

Mr. Hereim suggests that when a requirement for a minimum buffer width is set it, in effect, becomes the maximum width that will exist in developed areas. He says that because of the many exemptions that cities grant to these minimum requirements, the 25 ft. minimum doesn't exist.

Mr. Houck stated in written testimony that while regulations may be on the books to protect riparian areas, enforcement and compliance appears to be spotty. He suggests an independent analysis of the efficacy of regulatory measures to protect habitat, open space, and water quality.

Background: The original Tualatin River Basin Completion and Implementation Schedules, adopted by EQC in 1990, included a task which required provision for protection of all streams, wetlands and ponds with adequate (preferably 100 feet) undisturbed buffers. The Department currently has no oversight of implementation of local buffer ordinances and no documentation of frequency of exemptions or violations.

A recent literature review indicates that riparian buffers have been shown to control nutrients. Reductions of nutrients in runoff have been noted with grass buffers as narrow as 12 feet. Most recommendations, however, are considerably wider ranging to over 140 feet and averaging about 70 feet. Larger buffers may be necessary for control of bacteria and sediment. Buffers of 75 feet or more are required in certain applications in California, Connecticut, Maine, Maryland, Massachusetts, New Jersey, New Hampshire, North Carolina, Rhode Island, Washington, and Wisconsin.

Department Action: The Department suggests that review of the effectiveness of local buffer requirements be included under Task #6. The current draft of the compliance/implementation schedule has been revised to reflect that. The Department also suggests that citizens should be involved in the review.

Issue: Department approval of components required in schedule.

Commentor(s): Donna Hempstead, DMA Coordination Committee
John Jackson, USA
Daniel B. Helmick, Clackamas County

Comment: Ms. Hempstead suggests the last sentence on page one of the compliance schedule which states, "All plans, inventories, products, and performance requested in the compliance schedule are subject to Department approval," is too broad and allows DEQ to micromanage DMA programs. She believes the sentence should be deleted.

Mr. Jackson is also concerned about the requirement for DEQ approval. He suggests that DEQ approve a scope of work for each task before commencing that task and that deadlines for tasks consider time for completion of this scoping. Mr. Helmick objects to micromanagement by DEQ and apparently believes that DEQ approval of components required in the schedule amounts to micromanagement.

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Background: Early drafts of the compliance schedule stated DEQ's approval authority with each task and in most cases stated minimum requirements. For example it required "for DEQ approval, a single, coordinated watershed-wide monitoring plan." It specified the need for a quality assurance element, the minimum parameters to be measured, the minimum frequency of sampling, and the minimum set of site locations. The schedule also required "an acceptable, detailed written public awareness plan" and provided examples of the kinds of items that should be included. The schedule did not specify precisely how each task was to be accomplished but rather attempted to provide criteria and examples. The details were, and still are, left up to the management agencies with a caveat that provides for the needs of the Department with respect to state and federal water quality laws (i.e. be acceptable to the Department) The DMA Coordination Committee objected to that approach stating that DEQ was micromanaging their programs. They requested that the specific criteria be removed in order to give greater flexibility to deal with changing circumstances. They requested that the Department remove the approval statement from each task and produce a preamble to the schedule which states the purpose and authorities. Department legal counsel indicated that this approach was acceptable provided that the approval authority of the Department is clearly stated. The result is the current draft schedule.

Department Action: The Department believes that the approval statement must remain in the schedule. It is not the intent to micromanage local programs. The schedule does not dictate methods. The approval authority must remain, however, if the Department is to fulfill its responsibility for insuring compliance with state and federal water quality regulations and standards. The Department is willing to discuss scoping of work as implementation proceeds. This scoping must occur in a timely fashion, however, to allow completion of tasks within the identified time frames in the Implementation/Compliance Schedule and Order.

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Issue: Task #5, Riparian Area Management

Commentor(s): John Jackson, USA
Donna Hempstead, DMA Coordinating Committee
Mark Hereim, Beaverton, OR
John Hession, City of West Linn
Daniel B. Helmick, Clackamas County

Comments: Mr. Jackson suggests that riparian area management may be outside USA's authority.

Ms. Hempstead states that problems in riparian areas can be addressed through tasks #3, Site Specific Problems, and #4 Implementation of Management Practices. She suggests that including it as a separate task may lead to the impression that there will be a restoration program that would in effect create an entirely different program that is outside the scope of this schedule.

Mr. Hereim suggests that tasks #5 and #6, Rules, Ordinances and Guidance, ought to reflect the fact that the absence of riparian areas means that there will be poor water quality and so these areas should be explicitly protected.

Mr. Hession suggests that Task #5 should be removed from the schedule.

Mr. Helmick believes riparian management is necessarily included in Task #3, Site Specific Problems, and that including it as a separate Task #5 would require a program of comprehensive water quality/watershed restoration that goes beyond the TMDL requirements, which he believes are focused on phosphorus removal.

Background: Riparian areas have been severely altered throughout the watershed, particularly on the tributaries. It is well documented that removal of riparian vegetation and alteration of riparian areas has detrimental effects on water quality and that healthy riparian areas help to reduce sediment, nutrients, temperature, and other pollutant loads. This task was included because of the importance of riparian vegetation in water quality protection. The task was worded, in consultation with the DMAs, to make it clear that it is asking for the identification of opportunities to improve riparian areas and to work with landowners to act on these opportunities.

It is also important to recognize that the purpose of the efforts in the Tualatin River watershed are to improve water quality and protect beneficial uses. Reduction of nutrients is an extremely important component of that program but the intent has never been to focus solely on phosphorus. The TMDLs were

Memo To: Environmental Quality Commission
Agenda Item F
July 23, 1993 Meeting
Page 16

established "in order to improve water quality within the Tualatin River subbasin to meet the existing water quality standard for dissolved oxygen, and the 15 ug/l chlorophyll a action level." Compliance with other water quality standards is also required.

Department Action: The Department believes Task #5, Riparian Area Management, should remain in the schedule as currently worded.

Issue: Citizen/Community Involvement

Commentor(s): Mike Houck, Urban Streams Council

Comments: Mr. Houck submitted written testimony that points out that there is no clear provision for actual participation by citizen groups. He suggests that citizen representation should be included throughout the evaluation, monitoring and scheduling and in the activities themselves. He gives specific examples of how citizens could participate in monitoring efforts. He also suggests that in Task #2, Public Awareness/Education, there should be more emphasis on what individual citizens, neighborhood groups, and friends groups can do to make a difference.

Background: Citizen involvement has long been recognized by DEQ staff as essential to the success of all efforts to improve water quality. There was no intention to exclude them from participation. Mr. Houck is correct, however, that citizen participation is not specifically addressed in the draft of the compliance schedule that went out for public comment.

Department Action: The purpose statement in the current draft of the Implementation/Compliance Schedule and Order has been revised to include the intent to involve citizens.

Miscellaneous additional comments:

One letter suggested that a task to inventory the condition of septic systems be added to the compliance schedule. In response, under Task #3, Site Specific Problems, the Department has added failing septic systems to the list of examples of problems to be identified.

One letter suggests that gypsum wall board be prohibited from landfills in order to reduce leachate and promote recycling of gypsum wall board. The Department is aware of no evidence that gypsum wall board in landfills contributes to the water quality standard violations in the Tualatin River.

One letter suggests that a procedure for granting additional extensions beyond December 31, 1995, be addressed in the schedule. The annual reporting and status reports required in the proposed compliance schedule will be used to assess future compliance and determine future needs. If the watershed is still exceeding TMDL goals after 1995 a revised compliance schedule may need to be developed in a process similar to the one that has resulted in the current proposed schedule.

Conclusions

- ▶ Considerable progress has been made by Designated Management Agencies to begin to implement programs to reduce nonpoint source pollution in the Tualatin River watershed.
- ▶ In spite of this progress, the TMDL for Phosphorus in the Tualatin River was not met by the June 30, 1993 compliance date set in rule.
- ▶ The TMDL rule requires that no activities that contribute to exceedance of the TMDL shall be allowed after the compliance date without the specific authorization of the Commission. The Commission must take action if any contributing activities are to be allowed to continue. An appropriate action could be the authorization of continued activities provided that the DMAs comply with an order which specifies tasks and schedules for continued progress toward reducing pollution after June 30, 1993.
- ▶ The Department and the Designated Management Agencies have produced a proposed new Implementation/Compliance Schedule and Order.
- ▶ The public has been provided an opportunity to comment on the proposed schedule and the Department has responded to comments received.

Memo To: Environmental Quality Commission
Agenda Item F
July 23, 1993 Meeting
Page 18

Recommendation for Commission Action

It is recommended that the Commission adopt alternative 1 as discussed above under Alternatives and Evaluation. This is consistent with the Commission's concurrence with the Department's preferred approach discussed at the January 29, 1993 EQC meeting. This approach will allow activities to continue in the Tualatin River Watershed while issuing an order that will require continued aggressive implementation of nonpoint source control efforts. At the end of the implementation/compliance schedule period (end of 1995) the status of the river and pollution control efforts would be reevaluated. Decisions related to authorization of future activities could be made at that time.

Attachments

- A. Tualatin River Nonpoint Source Management Plan Implementation Program Accomplishments Since 1990.
- B. Tualatin Sub-basin Nonpoint Source Management Implementation/Compliance Schedule and Order.
- C. Proposed New Compliance Schedule for Implementation of Pollution Control Efforts in the Tualatin River and Its Tributaries, Presiding Officer's Report on Public Hearing.

Memo To: Environmental Quality Commission
Agenda Item F
July 23, 1993 Meeting
Page 19

Reference Documents (available upon request)

1. Statutory Authority
2. OAR 340-41-470(3), Tualatin River TMDL Rule
3. Agenda Item F, January 29, 1993, EQC Meeting -- Report on Tualatin Basin Nonpoint Source Control Program Implementation and Compliance Date.
4. A Chance to Comment on ... Proposed New Compliance Schedule for Implementation of Pollution Control Efforts in the Tualatin River and Its Tributaries.

Approved:

Section:

Al Habel

Division:

Water Quality

Report Prepared By: Mitch Wolgamott

Phone: 229-6691

Date Prepared: June 24, 1993


DMW:crw
SW\WC11\WC11621.5
6 July 93

State of Oregon
Department of Environmental Quality

Memorandum

Date: December 24, 1996

To: Environmental Quality Commission

From: Langdon Marsh, Director 

Subject: Agenda Item F, DEQ v. Russell Henry and Lane Ward - Appeal of Hearing Order
Re: Violation and Assessment of Civil Penalty, EQC Meeting: January 10, 1997

Background

Lane R. Ward (hereinafter "Ward") owns real property known as Lot 5-12, Section 1 and Lots 1-6, Section 2 of Eola Heights Subdivision in Polk County, Oregon. Russell Henry, dba Henry Dozing and Excavating (hereinafter "Henry") was hired by Ward to clear the real property.

On July 30, 1994, the Salem Fire Department responded to a complaint of an open burn on the property owned by Ward. When the Fire Department arrived, they discovered Henry conducting the burns. Per the Fire Department Referral for Open Burning Violation, there were eight piles of debris which contained brush, tree limbs and stumps. The Salem Fire Department did not issue a fee because of "confusion on jurisdiction."

On August 9, 1994, the Salem Fire Department responded to a complaint of an open burn on the property owned by Ward. When the Fire Department arrived, they discovered Henry conducting the burns. Per the Fire Department Referral for Opening Burning Violation, there were six piles of debris which contained brush, tree limbs, stumps, paper, tires, bottles, metal machine parts and other miscellaneous wood products. The Salem Fire Department did not issue a fee because of "confusion on jurisdiction."

Prior to starting the fires, Henry contacted the Willamette Valley Communications Daily Burning Information number and learned that agricultural burning was allowed on July 30 and August 9, 1994. Henry did not have a permit to burn agricultural debris on either day.

On November 10, 1994, the Department issued a Notice of Assessment of Civil Penalty to Ward and Henry. The Notice stated that each had violated OAR 340-23-060 and OAR 340-23-042. The total civil penalty assessed was \$5,626. The penalty was based on estimates of the volume of the burns and the economic benefits received by the avoidance of lawful disposal. Ward and Henry, in their response to the Notice contended that the debris was agricultural waste and since agricultural burning was allowed on each of the dates, there was no violation.

The matter was referred to a hearing officer for taking evidence and completion of an order. In the Hearing Order Regarding Violation and Assessment of Civil Penalty, dated April 19, 1996, the hearing officer concluded that, based on the factual record:

Memo To: Environmental Quality Commission

Agenda Item F, DEQ v. Russell Henry and Lane Ward - Appeal of Hearing Order Re: Violation and Assessment of Civil Penalty, EQC Meeting: January 10, 1997

Page 2

- (1) The property was located within six miles of the corporate city limit of Salem, Oregon.
- (2) The debris was not agricultural debris but was, instead, "Demolition Waste" as defined in OAR 340-23-030(13). The fact that the debris included trees did not make the waste agricultural. The hearing officer then found Ward and Henry liable for the assessed civil penalty for violating OAR 340-23-060, which prohibits demolition open burning within six miles of the corporate city limit of Salem, Oregon on July 30, 1994 and August 9, 1994, and violating OAR 340-23-042(2) which prohibits open burning of automobile parts or other materials that "normally emits dense smoke or noxious odors" on August 9, 1994.

On May 6, 1996, Henry appealed the Order. Ward did not appeal the Order. Henry took exception to the hearing officer's Order as follows:

- (1) Henry takes exception to the Department's estimate of the weight of the debris. He also takes exception to the fact that the hearing officer did not consider "knowledge or intent" even though Henry did not intend to violate the law.
- (2) Henry takes exception to the finding that the property was located within six miles of the Salem city limit.
- (3) Henry takes exception to the finding that the waste was "demolition waste" and not "agricultural debris or waste".
- (4) Henry takes exception to the finding that the hearing officer concluded that all the piles contained demolition waste. There was no evidence introduced regarding how many of the burn piles contained demolition waste and whether some contained only agricultural debris.
- (5) He claims there was insufficient evidence to show that the land was not used for agricultural purposes.
- (6) Henry takes exception to the finding that there were eight piles, rather than seven on July 30, 1994. Henry testified at the hearing that there were seven piles while the Department's witnesses testified that there were eight. No findings regarding credibility were made by the hearing officer.
- (7) There was no evidence produced at the hearing of when Henry was hired by Ward.
- (8) Henry takes exception to the finding that the property was slated for development. He testified that he was hired to do land clearing and it was unclear if any lots would be sold for development in the future.

The Department responded to the exceptions as follows:

- (1) Per OAR 340-23-030(22), land-clearing waste is demolition waste. "All waste material generated by land clearing is demolition waste[.]" OAR 340-23-030(22). Henry testified that he was hired to conduct land clearing for Ward.
- (2) For the waste to be agricultural waste, the waste must be generated "on land currently used or intended to be used primarily for the purpose of obtaining a profit in money by raising, harvesting and selling crops..." OAR 340-23-030. Henry testified at the hearing that the lots had

Memo To: Environmental Quality Commission

Agenda Item F, DEQ v. Russell Henry and Lane Ward - Appeal of Hearing Order Re: Violation and Assessment of Civil Penalty, EQC Meeting: January 10, 1997

Page 3

been advertised for sale for development and trees may be planted on the unsold lots. Henry did not have a permit to conduct agricultural burning on either day.

(3) The property is located within six miles of the city limit of Salem as evidenced by a scaled map which was Exhibit 14 of the hearing record. Henry did not object to this evidence at the hearing.

(4) The Department made the most conservative and advantageous penalty calculation available to Henry. The penalty was not aggravated based on intent or knowledge. A representative from the Processing Recovery Center estimated that the waste weighed between 250 and 300 pounds per cubic yard. The Department's lower standard of 200 pounds per cubic yard as stated in the open burning guidelines was used since the Department could not verify that the debris weighed more. Henry did not present evidence to contradict this finding at the hearing.

(5) As previously stated, all the piles contained demolition waste so the hearing officer did not err in failing to determine how many burn piles contained demolition waste. Furthermore, the hearing officer did not err in failing to determine the volume of statewide prohibited materials which was contained in the piles. The Department made the most conservative findings possible including that the magnitude of the violation was set at "minor" and there was no economic benefit assessed for this violation.

(6) Henry admitted to the fact that he was hired by Ward to clear the property in both his Answer and stipulated to the fact at the hearing.

The Department also requests that the Commission raise the amount of the civil penalty assessed in the Order. The Department used the most conservative estimates available to determine the civil penalty. The amount of debris was greater than was estimated since the piles had been burning for several hours prior to the Fire Department's arrival. Furthermore, the economic benefit calculation did not include all the identified piles, nor the cost of transporting the material to a disposal site. Also, the Department requests that the Commission increase the penalty to reflect the intent of Henry in igniting the burns.

In Henry's answer to the request to increase the penalty amount, he states that there is evidence to decrease the amount of the penalty since Henry received telephone approval to conduct the burns. Furthermore, the Department has not introduced any new evidence to show why the penalty should be increased.

Authority of the Commission with Respect to the Issue

The Department has the authority to assess civil penalties for violations under OAR Chapter 340, Division 23. The Commission has the authority to review the appeal of the Order under OAR Chapter 340, Division 11.

Memo To: Environmental Quality Commission

Agenda Item F, DEQ v. Russell Henry and Lane Ward - Appeal of Hearing Order Re: Violation and Assessment of Civil Penalty, EQC Meeting: January 10, 1997

Page 4

Alternatives and Evaluation

The Commission may do any of the following:

- (1) Adopt the Order dated April 19, 1996 as its own;
- (2) Reduce the civil penalty assessed, as requested by Henry;
- (3) Raise the civil penalty assessed, as requested by the Department.

Attachments

1. Letter to Stephen F. Mannenbach from Susan Greco, dated December 16, 1996.
2. Respondent's Motion to Strike "Motion to Deny", dated August 12, 1996.
3. Motion to Deny Respondent's Motion to Dismiss, and Request for Hearing, dated August 7, 1996.
4. Motion to Dismiss and Answering Brief, dated July 18, 1996
5. Notice of Appeal and Department's Answering Brief to Respondent's Exceptions and Brief, dated July 9, 1996
6. Exceptions and Brief, dated June 7, 1996
7. Notice of Appeal, dated May 9, 1996
8. Hearing Order Regarding Violation and Assessment of Civil Penalty, dated April 19, 1996.
9. Exhibits 1 through 23 from hearing conducted on December 7, 1995.

Reference Documents (available upon request)

Oregon Administrative Rules, Chapter 340, Division 23

Report Prepared By: Susan M. Greco
Phone: (503) 229-5213

December 16, 1996

Stephen F. Mannenbach
133 S.W. Academy
P.O. Box 220
Dallas OR 97338

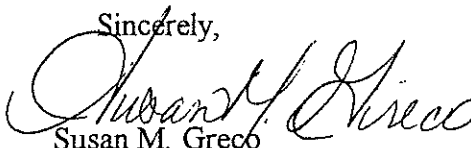
RE: Case No. AQOB-WR-94-289

Dear Mr. Mannenbach:

The appeal by Mr. Henry has been set for the regularly scheduled Environmental Quality Commission meeting on Friday, January 10, 1997. The meeting will convene at 8:30 a.m. and this matter will be heard in the regular course of the meeting. The meeting will be held at the Department's headquarters at 811 S.W. 6th Avenue, Room 3A, Portland, Oregon. Attached you will find an agenda for the meeting. As soon as the record is available, I will forward the same to you.

If you should have any questions or should need special accommodations, please feel free to call me at (503) 229-5213 or (800) 452-4011 ex. 5213 within the state of Oregon.

Sincerely,


Susan M. Greco
Rules Coordinator

cc: Les Carlough, DEQ Enforcement



811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696
TDD (503) 229-6993

DEQ-1



Attachment 1 - 1 page

RECEIVED

AUG 14 1996

OFFICE OF THE DEPUTY DIRECTOR

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION
OF THE STATE OF OREGON

IN THE MATTER OF:

CASE NO. AQOB-WR-994-289

RUSSELL R. HENRY, JR., dba
HENRY DOZING & EXCAVATING, and
LANE WARD,

RESPONDENT'S MOTION TO
STRIKE "MOTION TO DENY"

(POLK COUNTY)

Respondents.

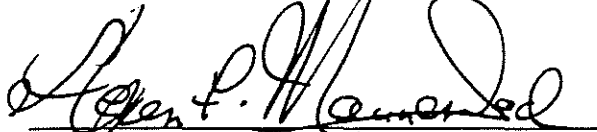
Respondent Russell R. Henry, Jr., dba Henry Dozing and
Excavating, by and through his attorney, Stephen F. Mannenbach, hereby
moves to strike in its entirety the "Motion to Deny" document filed by
Leslie Carlough on behalf of the ODEQ on the grounds and for the
reasons that there is no such motion as a motion to deny a motion to
dismiss.

POINTS AND AUTHORITIES

ORCP 21 E.

DATED this 10th day of August, 1996.

RESPECTFULLY SUBMITTED:



Stephen F. Mannenbach

OSB No. 80300

Attorney for Respondent/Appellant Henry

1 - Respondent's Motion to Strike "Motion to Deny"

Attachment 2-
2 pages

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CERTIFICATE OF MAILING

I, Stephen F. Mannenbach, do hereby certify that I am the attorney for the within-named Respondent-Appellant, Russell R. Henry, Jr., dba Henry Dozing & Excavating; that on the 12th day of August, 1996, I mailed a copy of the foregoing **RESPONDENT'S MOTION TO STRIKE "MOTION TO DENY"**, directed to:

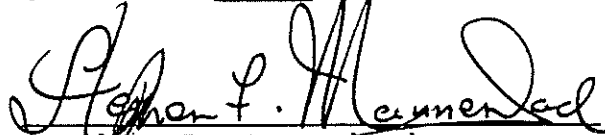
Susan Greco
Environmental Quality Commission
811 SW 6th Avenue, 7th Floor
Portland, OR 97204

Mark Hoyt
Attorney at Law
1191 Capitol Street NE
Salem, OR 97301-1102
(Attorney for Lane Ward)

Les Carlough
DEQ Enforcement Section
2020 SW 4th Avenue, Suite 400
Portland, OR 97201

that being their mailing addresses, and prepaid postage thereon.

DATED at Dallas, Oregon, this 12th day of August, 1996.



Stephen F. Mannenbach
OSB No. 80300
Attorney for Respondent/Appellant Henry

jav:C:\CLIENT\HENRY\STRIKE.MOT

2 - Respondent's Motion to Strike "Motion to Deny"

RECEIVED

APR 09

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION
OF THE STATE OF OREGON

IN THE MATTER OF:
RUSSELL R. HENRY, JR. dba/
Henry Dozing & Excavating, and
LANE WARD,

Respondents/Appellants.

OFFICE OF THE DEPUTY DIRECTOR
MOTION TO DENY
RESPONDENT HENRY R. WARD
JR.'S MOTION TO DISMISS, AND
REQUEST FOR HEARING

No. AQOB-WR-94-289
POLK COUNTY

Russell R. Henry, Jr., doing business as Henry Dozing and Excavating (Respondent) filed a Motion to Dismiss and Answering Brief to the Department's Notice of Appeal and Answering Brief.

Respondent moved to dismiss the Department of Environmental Quality's Answering Brief for alleged reasons outlined below:

1. "The ODEQ's response to Respondent/Appellant Henry's exceptions did not individually address each exception as is customary in responding to briefs."

The Department believes its Answering Brief addresses all exceptions raised in Respondent's Answer. The Department is not aware of the existence of any form or style requirements regarding the manner in which a Brief must be organized, and therefore chose to organize the brief to heighten clarity and avoid needless duplication.

2. "The response did not cite from or quote from the transcript of the Hearing."

The Department's Answering Brief cites and quotes from tapes of the hearing prepared by the Environmental Quality Commission's Hearing Officer and authenticated by the Environmental Quality Commission's Rules Coordinator.

3. "The response was not served within thirty (30) days of the time that appellant's [Respondent's] brief was served in violation of OAR 340-11-132(4)(b)."

The Commission received Respondent's brief on June 10, 1996, as memorialized in a letter, prepared by Susan M. Greco, Environmental Quality Commission Rules Coordinator, to Mr. Henry on June 11, 1996. The Department's brief was due on July 10, 1996. The Department timely

Attachment 3 - 3 pages

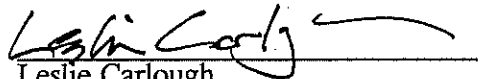
1 filed a Notice of Appeal and Answering Brief on July 9, 1996, as memorialized in a letter, prepared by
2 Susan M. Greco, Environmental Quality Commission Rules Coordinator, to Mr. Mannenbach and Mr.
3 Carlough on July 9, 1996.

4 For the reasons stated above, the Department moves that the Commission deny Respondent's
5 Motion to Dismiss.

6 The Department requests that the Rules Coordinator schedule a hearing before the Commission.
7

8 DATED this 7th Day of August, 1996.
9

10 RESPECTFULLY SUBMITTED:

11 
12 Leslie Carlough
13 Environmental Law Specialist
14 Department of Environmental Quality
15 Representative for Appellee
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CERTIFICATE OF MAILING

I hereby certify that I served Motion to Deny Respondent Henry R. Ward Jr.'s Motion to Dismiss, and Request for Hearing, Case No. AQOB-WR-94-289.

Susan Greco
Environmental Quality Commission
811 SW 6th Avenue, 7th Floor
Portland, OR 97204

Mark Hoyt
Attorney at Law
1191 Capitol Street NE
Salem, OR 97301-1102
(Attorney for Lane Ward)

Stephen F. Mannenbach
Attorney at Law
133 SW Academy
PO Box 220
Dallas, OR 97338

by mailing a true copy of the above by placing it in a sealed envelope, with postage prepaid, at the U.S. Post Office in Portland, Oregon on August 8, 1996.

A handwritten signature in cursive script, appearing to read "Bonnie Maschke", written in black ink on a white background.

RECEIVED

JUL 22 1996

OFFICE OF THE DEPUTY DIRECTOR

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION

OF THE STATE OF OREGON

IN THE MATTER OF:

RUSSELL R. HENRY, JR., dba
HENRY DOZING & EXCAVATING, and
LANE WARD,

Respondents.

CASE NO. AQOB-WR-994-289

**MOTION TO DISMISS AND
ANSWERING BRIEF**

(POLK COUNTY)

(REQUEST FOR ORAL ARGUMENT)

The Oregon Department of Environmental Quality (ODEQ) has filed an answering brief to Respondent/Appellant Henry's Exceptions and Brief, and has also requested for the first time in that brief without new evidence that the fine be increased in the amount of \$450.00.

The ODEQ's response to Respondent/Appellant Henry's exceptions did not individually address each exception as is customary in responding to briefs. The response did not cite from or quote from the transcript of the hearing. The response was not served within thirty (30) days of the time that appellant's brief was served in violation of OAR 340-11-132(4)(b). As a consequence, for the reasons set forth above, the Answering Brief should be dismissed in its entirety.

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1 - Motion to Dismiss and Answering Brief

Attachment 4- 3 pages

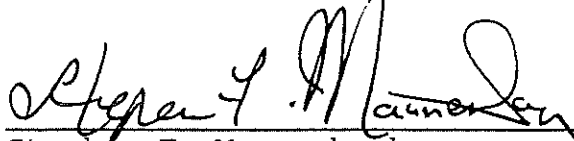
1 ANSWER TO REQUEST BY THE ODEQ TO RAISE
2 THE PENALTY FOR INTENTIONAL CONDUCT

3 Respondent/Appellant Henry pointed out in his Exceptions and
4 Brief that the proposed order stated that knowledge or intent "is
5 relevant only regarding the amount of the penalty." The ODEQ states
6 that knowledge or intent is not relevant and that it has no discretion
7 to reduce the amount of penalty based upon lack of knowledge or
8 intent. It then argues that there was intent sufficient to "increase"
9 the penalty. However, the issue is mitigation. As pointed out in the
10 initial Exceptions and Brief, the proposed form of order provides that
11 the referee can change the amount based upon knowledge or intent. The
12 ODEQ is twisting this language to state that knowledge or intent is
13 only relevant to increasing, not decreasing, the amount of civil
14 penalty. Clearly, there is testimony in the record that is known to
15 the ODEQ which shows that Respondent/Appellant Henry did receive
16 telephonic approval to go ahead with the burns. This is
17 uncontroverted. This certainly shows no aggravation as stated by the
18 ODEQ.

19 Respondent/Appellant Henry requests oral argument on his
20 Exceptions and this Response.

21 DATED this 18th day of July, 1996.

22 RESPECTFULLY SUBMITTED:

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24 

25 Stephen F. Mannenbach
26 OSB No.80300
Attorney for Respondent/Appellant Henry

2 - Motion to Dismiss and Answering Brief

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CERTIFICATE OF MAILING

I, Stephen F. Mannenbach, do hereby certify that I am the attorney for the within-named Respondent-Appellant, Russell R. Henry, Jr., dba Henry Dozing & Excavating; that on the 18th day of July, 1996, I mailed a copy of the foregoing **MOTION TO DISMISS AND ANSWERING BRIEF**, directed to:

Susan Greco
Environmental Quality Commission
811 SW 6th Avenue, 7th Floor
Portland, OR 97204

Mark Hoyt
Attorney at Law
1191 Capitol Street NE
Salem, OR 97301-1102
(Attorney for Lane Ward)

Les Carlough
DEQ Enforcement Section
2020 SW 4th Avenue, Suite 400
Portland, OR 97201

that being their mailing addresses, and prepaid postage thereon.

DATED at Dallas, Oregon, this 18th day of July, 1996.



Stephen F. Mannenbach
OSB No. 80300
Attorney for Respondent/Appellant Henry

jr:C:CLIENTHENRYRESPONSE

JUL 09 1996

1 IN THE MATTER OF:)
 2 RUSSELL R. HENRY, JR. dba/)
 3 Henry Dozing & Excavating, and)
 4 LANE WARD,)
 5)

NOTICE OF APPEAL AND
 DEPARTMENT'S ANSWERING BRIEF
 TO RESPONSE OF THE DEPUTY DIRECTOR
 OF THE DEPARTMENT OF ENVIRONMENTAL QUALITY
 TO WARD, JR.'S EXCEPTIONS AND BRIEF

6 Respondents/Appellants.)

No. AQOB-WR-94-289
 POLK COUNTY

7
 8 **I. BACKGROUND**

9 1. On July 30, 1994, and August 9, 1994, the Salem Fire Department responded to open
 10 burns on property owned by Lane Ward in the Eola Heights Subdivision in Polk County. The Fire
 11 Department discovered Henry R. Russell, Jr., doing business as Henry Dozing & Excavating,
 12 conducting the open burns.

13 2. On November 10, 1994, the Department of Environmental Quality (Department)
 14 issued a Notice of Civil Penalty Assessment, jointly and severally, against Respondents Russell
 15 Henry and Lane Ward. The Notice assessed a penalty of \$5,126 for the illegal open burning of
 16 demolition debris and a penalty of \$500 for the illegal open burning of rubber tires, plastic, wire,
 17 automobile parts, and other materials that may not be open burned in Oregon.

18 3. On November 23, 1994, Respondent Ward appealed the Notice and requested a
 19 hearing. On November 29, 1994, Respondent Henry (hereinafter Henry) appealed the Notice and
 20 requested a hearing.

21 4. On December 21, 1994, the Department met with Henry and his attorney at the time,
 22 Michael Ross, to gather any new information Henry could offer, and to address any concerns
 23 Respondents might have had.

24 5. On December 7, 1995, the Commission's Hearing Officer held a hearing on the
 25 matter. Testimony was presented by the Department and Respondent Henry. Respondent Ward did
 26 not attend.

27 ///

Attachment 5 - 9 pages

1 6. On April 19, 1995, the Hearing Officer issued a "Hearing Order Regarding Violation
2 and Assessment of Civil Penalty No. AQOB-WR-94-289, Polk County." The Order found that
3 "Respondents Ward and Henry violated OAR 340-23-060(4)(a)(B) on July 30, 1994, and August 9,
4 1994, and OAR 340-23-042(2) on August 9, 1994, and therefore are jointly and severally liable for
5 a total civil penalty of \$5,626."

6 7. On May 9, 1996, Henry appealed the Order and filed an Exceptions and Brief with
7 the Commission on May 10, 1996. Ward did not appeal the Order.

8 **II. THE DEPARTMENT'S RESPONSES TO RESPONDENT HENRY'S EXCEPTIONS**

9 Henry's "Exceptions and Brief" contains 10 enumerated "Exceptions." Because most of the
10 exceptions involve more than one issue and because some raise the same issues, the Department's
11 responses are organized by issue rather than enumerated exception.

12 A. RESPONDENTS DID CONDUCT THE OPEN BURNING 13 OF DEMOLITION DEBRIS

14 Henry claims that the open burns Respondents conducted were not illegal open burning of
15 demolition waste, and takes exception to the Finding of Fact No. 5 and the ULTIMATE
16 FINDINGS. Henry claims that these open burns were land-clearing, that land-clearing open burns
17 are not demolition burns, that land-clearing open burns are "agricultural" open burns, and that
18 Respondents had conducted these open burns under permit. These issues are addressed below.

19 1. Land-clearing waste is demolition waste. Pursuant to OAR 340-23-030(22),

20 "Land clearing" means the removal of trees, brush, logs, stumps, debris or man
21 made structures for the purpose of site clean-up or preparation. All waste material
22 generated by land clearing is demolition waste except those materials which are
23 included in the definitions of agricultural wastes, yard debris (domestic waste), and
24 slash." (emphasis added).

25 Respondents conducted land-clearing open burns, which are demolition burns according to the above
26 rule unless, as Henry alleges, the material burned was agricultural waste.

27 2. Respondents' waste was not agricultural waste. In order to meet the regulatory
28 criteria that would make the burns "agricultural" open burns, Respondents must have generated the
29 waste to be burned "on land currently used or intended to be used primarily for the purpose of

1 obtaining a profit in money by raising, harvesting and selling crops" OAR 340-23-030(2,4)
2 (emphasis added). At hearing, Henry testified that he was hired to clear the land to make it "look
3 nice" because it was a "jungle" with "blackberries twenty feet up into the trees." He testified that
4 the Respondents had decided to clear the land "to see what we got," and that the subdivided lots had
5 been advertised for sale for eighteen months. While Henry claimed Respondents may plant trees
6 on the unsold lots for "tax deferral," neither respondent has ever alleged that their primary purpose
7 in clearing the land was to initiate an agricultural operation. Respondents' open burns were not
8 agricultural open burns because Respondents did not have as their primary objective the use of the
9 land for an agricultural operation. Based on the evidence presented at hearing, the Hearing Officer
10 properly found that "Respondent Ward contracted with respondent Henry for land clearing for the
11 purposes of selling the land for development purposes." See Finding of Fact No. 4.

12 3. In any event, Respondents did not have a permit for an agricultural burn. Captain
13 Tom Whelan and Deputy Fire Marshal Jim Tuebner of the Salem Fire Department testified that
14 Respondents did not have an agricultural burn permit, and would not have been given a burn permit
15 because of the large size of the piles and because this was land-clearing waste, not agricultural
16 waste. At Hearing, Henry did not present any evidence to show he had obtained an agricultural
17 burn permit, or any burn permit.

18 B. THE PROPERTY ON WHICH THE BURNS TOOK PLACE WAS WITHIN
19 SIX MILES OF SALEM.

20 The Department did present evidence that the open burns occurred within six miles of the
21 corporate city limits of Salem. Henry claims that the Department did not present evidence to show
22 that the open burn occurred within six miles of Salem, and therefore takes exception to Finding of
23 Fact No. 3. Henry is not correct. The Department entered into evidence at the hearing, Exhibit
24 14, a scaled map showing the property where the burns took place to be within six miles of Salem.
25 Captain Tom Whelan testified that the sites where Respondents conducted the burns were within six
26 miles of Salem. Respondents did not object to this evidence at hearing and provided no evidence
27 to controvert the Department's evidence.

1 The Department takes exception to Henry's allegation on Respondent's Exceptions and Brief,
2 page 3, line 11 concerning testimony of Les Carlough. Les Carlough, the Department's
3 Representative in the matter, did not testify at the hearing.

4 C. CALCULATION OF THE PENALTY

5 1. The Department did not aggravate the penalty based on knowledge or intent. Henry
6 claims that the Hearings Officer erred in not considering evidence concerning Respondents'
7 knowledge or intent, and that the Hearings Officer could have adjusted the penalty under the
8 Hearing Officer's CONCLUSIONS AND REASONS. The Department had not aggravated the
9 penalty based on Respondents' knowledge or intent, as would be allowed pursuant to OAR 340-12-
10 045(1)(c)(D). Consequently, the penalty calculation already contained the finding which was most-
11 advantageous to Respondents -- the Hearings Officer could not have lowered the penalty based on
12 knowledge or intent. However, based on information presented at the Hearing, the Hearings Officer
13 could have raised the penalty based on Respondents' intent (see Paragraph III.B below).

14 2. The Department has already made the most-conservative estimate of economic benefit
15 possible under the facts. At the hearing, the Department's Open Burning Specialist Claudia Davis
16 testified concerning the method in which she calculated the economic benefit portion of the penalty.
17 Ms. Davis explained that she used a factor of 200 pounds per cubic yard in calculating the weight
18 of the material. Ms. Davis explained that she based that determination on a Department "Open
19 burning violation guideline sheet" which was admitted as Exhibit 12. That "Open burning violation
20 guideline sheet" sets a density of 200 pounds per cubic yard for demolition debris. Respondent's
21 debris was demolition debris (see Paragraph II.A.1 above). Respondents did not allege at the
22 hearing that they believed this estimate to be incorrect, and did not present evidence to contravene
23 this finding.

24 Ms. Davis explained that in a prior, informal meeting Mr. Henry had suggested that he
25 believed the material would have weighed between 50 and 225 pounds per cubic yard. Ms. Davis
26 testified that she had attempted to verify that estimate with the Processing Recovery Center which
27 accepts land-clearing debris. Ms. Davis testified that a representative at the Processing Recovery

1 Center had told her the material would weigh 250 to 300 pounds per cubic yard. After finding no
2 reasonable basis on which to lower the Department's standard of 200 pounds per cubic yard which
3 was established in the Department open burning guidelines, Ms. Davis proceeded to use that
4 conservative estimate. Respondents did not raise this issue in their Answers to the Notice, nor have
5 they present any evidence that the Department's standard estimate was unreasonable.

6 D. "PROHIBITED MATERIALS"

7 1. All of the piles contained demolition waste. Henry claims that the Hearings Officer
8 erred in failing to determine how many of the burn piles contained demolition waste. The Hearings
9 Officer did not err because there was uncontroverted testimony at hearing that all of the piles
10 contained demolition waste from land-clearing.

11 2. Respondents' penalty for the open burning of materials which may not be open burned
12 in Oregon was based on a the most-conservative finding most advantageous to Respondents. Henry
13 claims that the Hearing Officer erred in failing to consider the volume of rubber tires, plastic, wire,
14 automobile parts, and other materials subject to the OAR 340-23-042(2) statewide prohibition on
15 open burning (prohibited materials). Any such failure by the Hearings Officer would have been
16 harmless error because the Department had already made the most-conservative findings possible
17 related to the volume of the prohibited materials burned.

18 Two elements of the penalty rely on the volume of the prohibited material burned:

19 a. Magnitude of the violation. The Department had found that the violation was of
20 "minor" magnitude because of the lack of information on which to base a higher magnitude. This
21 is the most-conservative estimate possible leading to the lowest penalty.

22 b. Economic benefit of noncompliance. The Department did not assess any economic
23 benefit for this violation because of the lack of information on which to base a finding of economic
24 benefit. This is the most-conservative estimate possible leading to the lowest possible penalty.

25 Therefore, the Hearings Officer did not err in not considering the volume of prohibited
26 materials burned because the Department had already made the findings most advantageous to
27 Respondents.

1 4. Respondent Henry ignited the open burns of the prohibited material. Henry claims
2 that the Hearings Officer erred by not considering where the prohibited materials originated.
3 Pursuant to OAR 340-23-042(2),

4 "No person shall cause or allow to be initiated or maintained any open burning of any
5 . . . plastic, wire insulation, automobile part, . . . rubber product, . . . or any other
6 material which normally emits dense smoke or noxious odors."

7 Regardless of who placed the rubber tires, plastic, wire, automobile parts on the property, when
8 Respondents ignited them, Respondents caused the illegal open burning of the prohibited materials
9 which is the basis of the violation. Where the materials originated or who placed the materials on
10 the property is not relevant to the violation.

11 3. The "prohibited" materials were not added to the piles after Respondents lit the fires.
12 Henry claims that someone might have added the materials to the fires after the fires were burning.
13 This is a new issue not raised at hearing, and is not consistent with Henry's testimony presented at
14 hearing. Oregon law requires that "all open burning shall be constantly attended by a responsible
15 person or an expressly authorized agent until extinguished." OAR 340-23-040(1). Henry testified
16 that he constantly attended his open burns.

17 E. LANE WARD HIRED RUSSELL HENRY

18 Henry now takes exception to the Hearing Officer's Finding of Fact No. 2 which states that
19 states:

20 On July 30, 1994 and August 9, 1994, respondent Lane R. Ward hired Russell
21 Henry, doing business as Henry Dozing and Excavating, to clear the real property
22 [in] the Eola Heights Subdivision"

23 Previously, Henry had admitted the truth of this fact in Section 1 of his Answer to the Notice of
24 Civil Penalty Assessment, and had stipulated to this fact at the hearing.

25 III. NOTICE OF APPEAL

26 The Department hereby provides notice that the Department intends that the Commission
27 review the Hearing Officer's Final Order, and that the Commission could raise the amount of the
28 penalty.

///

1 A. RAISING THE PENALTY TO REFLECT ECONOMIC BENEFIT.

2 There was testimony at hearing that the Department used conservative estimates at each step
3 in calculating economic benefit and that the actual benefit Respondents received was higher than
4 alleged in the Notice of Assessment of Civil Penalty. Specifically, the following uncontroverted
5 testimony was given at trial by Claudia Davis, the Department's Open Burning Specialist:

6 Department: Could you please recap the possible errors in these estimates, at what point
7 did you use conservative measures and at what point did you use measures
that could be overestimates?

8 Davis: I did not use any overestimates at all. I underestimated the volume because
9 I did not use all the pile sizes. I underestimated the costs of disposal because
I didn't include transportation costs. And I also used the least expensive
10 method of disposal that I could find.

11 Department: It seems like a lot of money; why is the economic benefit so large?

12 Davis: Because of the large amount of material involved.

13 Department: Why should the Department include all of that amount in its calculation of the
penalty?

14 Davis: This was a very serious violation because of the amount of material involved
15 and the prohibited material included. If we make the economic benefit less
16 where a person can come out ahead if they pay a penalty instead of disposing
of it properly, they won't have any incentive to use an approved disposal
method and it also gives competitors who do follow the rules an unfair burden
-- they are not as competitive.

17 Ms. Davis testified that she used conservative estimates at each step of the calculations in
18 determining the amount of economic benefit Respondents gained by illegally burning the material
19 rather than lawfully disposing of it. Henry testified that he burned more materials than the Fire
20 Department and DEQ estimated because, on each day, the piles had been burning about three hours
21 before the Fire Department arrived; Henry explained, "by the time the fire department got there,
22 the piles were burnt down." Davis also testified that she underestimated the economic benefit by
23 not including all the identified piles in the calculation, and by not including the costs of transporting
24 the material to a disposal facility. No testimony was given on the transportation costs. However,
25 through testimony and documents entered into evidence, the Commission could find that
26 Respondents
27

1 benefitted by an additional \$117 to \$639 based on the piles of material not included in the original
2 calculation.

3 B. RAISING THE PENALTY TO REFLECT INTENTIONAL CONDUCT.

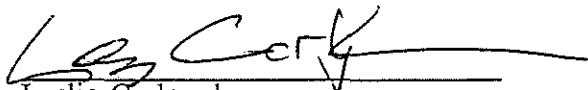
4 As described in Paragraph II.C.1, the Department had based its penalty calculation on the
5 most-conservative finding regarding knowledge or intent. However, testimony was introduced at
6 the hearing that shows the respondents had agreed to clear the land and that Henry ignited the burns
7 and attended the burns. Pursuant to OAR 340-12-045(1)(c)(D), referencing OAR 340-12-030(9),
8 the Department shall aggravate the penalty by increasing the "R" factor in the penalty calculation
9 when the person conducts the violation with the "conscious objective to cause the result of the
10 conduct." Testimony presented at the hearing shows that Respondents had a conscious objective to
11 burn the debris to clear the land, and that they did open burn the debris. Pursuant to OAR 340-12-
12 045, the penalty assessed for the open burning of demolition debris should reflect Respondents'
13 intentional conduct and should be aggravated by \$450.

14 III. PROPOSED FINDINGS OF FACT AND ORDER

15 The Department proposes that the Commission amend the Exhibit 1 attached to the Hearing
16 Officer's Order Regarding Violation and Assessment of Civil Penalty by including those piles
17 initially left out of the economic benefit calculation, and by including an aggravating factor for
18 Respondents' intentional conduct. The amended Findings of Fact should be reflected by the
19 ORDER.

20 DATED this 9th Day of July, 1996.

21
22 RESPECTFULLY SUBMITTED:

23 
24 Leslie Carlough
25 Environmental Law Specialist
26 Department of Environmental Quality
27 Representative for Appellee

CERTIFICATE OF MAILING

I hereby certify that I served Notice of Appeal and Department's Answering Brief to Respondent Henry R. Ward, Jr.'s Exceptions and Brief, Case No. AQOB-WR-94-289.

Susan Greco
Environmental Quality Commission
811 SW 6th Avenue, 7th Floor
Portland, OR 97204

Mark Hoyt
Attorney at Law
1191 Capitol Street NE
Salem, OR 97301-1102
(Attorney for Lane Ward)

Stephen F. Mannenbach
Attorney at Law
133 SW Academy
PO Box 220
Dallas, OR 97338

by mailing a true copy of the above by placing it in a sealed envelope, with postage prepaid, at the U.S. Post Office in Portland, Oregon on July 9, 1996.


Department of Environmental Quality

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Department of Environmental Quality

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION

OF THE STATE OF OREGON

IN THE MATTER OF:

CASE NO. AQOB-WR-994-289

RUSSELL R. HENRY, JR., dba
HENRY DOZING & EXCAVATING, and
LANE WARD,

EXCEPTIONS AND BRIEF

Respondents.

(POLK COUNTY)

Respondent, Russell R. Henry, Jr. (hereinafter "Respondent"), dba Henry Dozing & Excavating, excepts as follows to the proposed form of order:

EXCEPTION NO. 1

On page 4 of the proposed form of order, under the paragraph "CIVIL PENALTY," the hearings officer assessed a civil penalty which Respondent Henry claimed was "exorbitant." It was stated by Ms. Davis at the hearing that Respondent Henry believed the weight of the material in the piles was "between 50 and 75 lbs per cubic yard and the limbs from the land clearing probably would have weighed 150 to 225 lbs per cubic yard." Ms. Davis stated that she talked to a landfill representative that said the weight would be between 200 and 300 lbs per cubic yard "if it had been packed with heavy equipment." Ms. Davis then testified that the respondent "had scooped the piles together with heavy equipment." There was no evidence that the debris "had been packed with heavy equipment." It was stated by someone who

1 - Exceptions and Brief

Attachment 6 - 9 pages

1 was not there prior to the burn that the piles had been "scooped"
2 together. Consequently, the assessment of weight per cubic yard was
3 highly speculative and there was insufficient evidence to support the
4 weight utilized in assessing the civil penalty. Additionally,
5 Respondent Henry has remained consistent in claiming it was an
6 agricultural burn, rather than a demolition burn. Obviously,
7 demolition material from destroyed buildings would weigh significantly
8 more than brush, such as blackberry bushes.

9 Additionally, this exception involving the calculation of the
10 civil assessment is broadened to include the fact that the referee
11 stated under the "CIVIL PENALTY" portion of the proposed form of order
12 that:

13 "The referee cannot consider any mitigating factors that
14 were not already considered at the time DEQ calculated the
penalty."

15 However, on page 3, under the heading "CONCLUSIONS AND REASONS,"
16 the referee stated that "knowledge or intent is relevant only
17 regarding the amount of penalty." Consequently, the referee can
18 consider mitigating factors such as "knowledge or intent," even though
19 she states otherwise in her proposed form of order. Respondent Henry
20 takes exception to the assessment of the civil penalty inasmuch as the
21 hearings referee did not consider "knowledge or intent," even though
22 there was ample evidence before her that Respondent Henry did not know
23 that it was not a burn day, and did not intend to violate the law.
24 Consequently, the hearings referee could have, according to her
25 "CONCLUSIONS AND REASONS," adjusted the penalty accordingly.

26 ///

2 - Exceptions and Brief

1 * * *

2 EXCEPTION NO. 2

3 Respondent Henry takes exception to Finding of Fact No. 3 which
4 states as follows:

5 "The real property at issue is within six miles of the
6 corporate city limit of the City of Salem in Polk County,
Oregon."

7 There was insufficient evidence presented at the hearing regarding the
8 distance of the real property from the Salem city limit.
9 Mr. Carlough, who testified at the hearing, stated that he did not
10 have any evidence to show that the property was within six miles of
11 the corporate city limit of Salem. Mr. Carlough asked the hearings
12 referee to take official notice that the burn was within six miles as
13 a "judicial noticeable fact." The hearings referee, in response,
14 stated that:

15 "I will say on my order whether or not I will take the same
16 notice of that fact."

17 Finding of Fact No. 3 was made without the judge saying in her order
18 whether she could or would take notice of a fact not put in evidence.
19 The judge simply made a finding of fact without doing what she said
20 she would do at the time of the hearing. Consequently, this finding
21 of fact cannot stand, and its removal would not allow the assessment
22 of the civil penalty against the respondent. As a result, there is
23 insufficient direct proof that OAR 340-23-060 (4) was violated by the
24 respondent. It provides a demolition open burn is prohibited within
25 six miles of a corporate city limit. Consequently, the DEQ did not
26

3 - Exceptions and Brief

1 meet its burden to provide sufficient evidence of this alleged fact.
2 It simply failed to provide the necessary evidence.

3 * * *

4 EXCEPTION NO. 3

5 Respondent Henry takes exception to the "ULTIMATE FINDINGS" as
6 follows:

7 "Respondents Ward and Henry caused the open burning of
8 demolition waste on July 30, 1994 within six miles of the
corporate city limit of Salem, Oregon."

9 Finding of Fact No. 5 states that "respondent Henry caused the open
10 burning of land clearing debris including brush, tree limbs, and
11 stumps", which does not constitute demolition waste as set forth in
12 the ultimate findings. Mr. Whelan, who testified on behalf of the
13 DEQ, stated that he saw "brush, stumps and ruminants associated with
14 land clearing" burning in the piles. Respondent Henry testified at
15 the hearing that, prior to making the piles that were burned, he had
16 harvested timber off of the real property and considered this an
17 agricultural burn. Additionally, he testified that he had permission
18 for the burn, and he provided evidence of that permission at the time
19 of the hearing. Consequently, Respondent Henry takes exception to the
20 inconsistency between the finding of fact and the ultimate findings
21 inasmuch as the ultimate findings describe the burn piles as
22 containing "demolition" waste, rather than agricultural debris or
23 agricultural waste. See Finding No. 10 which describes "agricultural
24 debris."

25 ///

26 ///

4 - Exceptions and Brief

1 * * *

2 EXCEPTION NO. 4

3 Respondent Henry takes exception to "ULTIMATE FINDINGS" as
4 follows:

5 "Respondents Ward and Henry caused the open burning of
6 demolition waste, rubber tires, metal machine parts, and
7 glass on August 9, 1994, within six miles of the corporate
8 city limit of Salem, Oregon."

9 There was no determination regarding how many of the alleged burn
10 piles contained alleged demolition waste, and whether some may have
11 contained only agricultural debris. As noted in the exception above,
12 there is no evidence that the burn occurred within six miles of the
13 corporate city limit of Salem, Oregon, and there is no testimony
14 regarding the volume, weight, or location of the alleged demolition
15 waste of rubber tires, metal machine parts, and glass. For an
16 example, if only one of the piles contained demolition waste, and the
17 rest of them contained only agricultural waste, this would be
18 significant in determining the amount of a civil penalty.
19 Additionally, there is an issue regarding whether hidden materials
20 that were dumped on someone's real property, and later covered by
21 vegetation, constitute demolition waste within the intent of that term
22 if it was not from a demolition that occurred on the site.

23 * * *

24 EXCEPTION NO. 5

25 Excepts generally to all of the "ULTIMATE FINDINGS," and
26 "CONCLUSIONS AND REASONS," on the grounds and for the reasons that the
proposed "FINDINGS OF FACT" do not support them. The burden was upon

5 - Exceptions and Brief

1 the Oregon Department of Environment Quality to present sufficient
2 evidence that would allow the hearings referee to make findings to
3 support a civil penalty. The findings, as a matter of law, are
4 insufficient to support the civil penalty that is proposed to be
5 assessed against the respondent. Additionally, there was no testimony
6 elicited at the hearing that the land, prior to the time of the burn,
7 was not used as agricultural land. There was testimony of timber
8 harvest off of the land. There was no testimony regarding how alleged
9 demolition materials came onto the piles. It is possible that these
10 items were put on the piles by a third party after the burns had
11 begun. However, there is no clear evidence regarding how these
12 materials came to become part of the burn piles.

13 * * *

14 **EXCEPTION NO. 6**

15 Respondent Henry excepts to Finding of Fact No. 5 on the grounds
16 and for the reasons that, although the hearings officer made no
17 finding as to credibility, she chose to find as a fact that there were
18 eight piles, rather than seven piles as testified to at hearing by
19 Respondent Henry, on the burn that occurred on July 30, 1994.

20 When there are issues of fact in dispute, and there are two
21 witnesses who testify differently as to those facts, the hearings
22 referee needs to explain why she accepted one person's testimony over
23 that of another on the same issue of fact. Respondent Henry testified
24 that there were seven piles on July 30, 1994. There was testimony
25 from a DEQ witness that there were eight piles. The hearings referee
26

1 found that there were eight piles without explaining why she chose the
2 testimony of one witness over that of a party.

3 * * *

4 EXCEPTION NO. 7

5 Respondent Henry takes exception to Finding of Fact No. 2
6 inasmuch as there was no evidence regarding "when" Respondent Ward
7 hired Respondent Henry. The hearings referee states that Respondent
8 Henry was hired on July 30, 1994, and August 9, 1994, the dates of the
9 burns. However, there is no testimony to support such a finding of
10 fact regarding when Mr. Henry was hired by Respondent Ward.

11 * * *

12 EXCEPTION NO. 8

13 Respondent Henry excepts to Finding of Fact No. 4 on the grounds
14 and for the reasons that it is inaccurate, based upon the testimony
15 presented to the hearings officer. Respondent Henry testified at the
16 hearing that he was hired to remove and sell timber from the real
17 property. He was subsequently hired to do land clearing. He
18 testified that it was not clear when any development would occur, or
19 when any sale of lots would occur in the future. Consequently, the
20 finding of fact is not accurate as stated by the hearings officer.

21 * * *

22 EXCEPTION NO. 9

23 The definition of demolition waste excludes agricultural waste
24 and yard debris. Clearly, one DEQ witness described the content of
25 the burn piles in terms of agricultural waste. Even the hearings
26 officer, in Finding of Fact No. 10, described the burning of

1 "agricultural debris." The Oregon Department of Environmental Quality
2 has chosen, nonetheless, to characterize all of the burn as demolition
3 waste burn, rather than as agricultural waste burn. There was no
4 evidence presented by the Oregon Department of Environmental Quality
5 that there was no preexisting agricultural operation on the real
6 property. It did not meet its burden of proof in that regard.

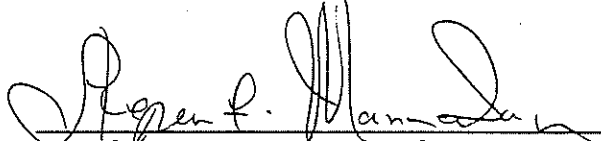
7 * * *

8 **PROPOSED FINDINGS OF FACT AND ORDER**

9 It is proposed by Respondent Henry that the findings of fact show
10 that there was a failure of proof on the part of the Oregon DEQ to
11 allow the assessment of any civil penalty based upon the DEQ's failure
12 to meet its burden of proof as set forth in the exceptions above.

13 DATED this 7th day of June, 1996.

14 RESPECTFULLY SUBMITTED:

15 

16 Stephen F. Mannenbach

17 OSB No. 80300

18 Attorney for Respondent/Appellant Henry

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CERTIFICATE OF MAILING

I, Stephen F. Mannenbach, do hereby certify that I am the attorney for the within-named Respondent-Appellant, Russell R. Henry, Jr., dba Henry Dozing & Excavating; that on the 7th day of June, 1996, I mailed a copy of the foregoing **EXCEPTIONS AND BRIEF**, directed to:

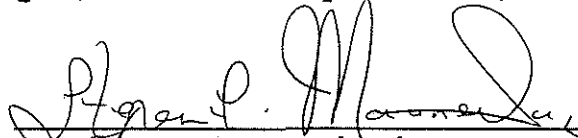
Susan Greco
Environmental Quality Commission
811 SW 6th Avenue, 7th Floor
Portland, OR 97204

Mark Hoyt
Attorney at Law
1191 Capitol Street NE
Salem, OR 97301-1102
(Attorney for Lane Ward)

Les Carlough
DEQ Enforcement Section
2020 SW 4th Avenue, Suite 400
Portland, OR 97201

that being their mailing addresses, and prepaid postage thereon.

DATED at Dallas, Oregon, this 7th day of June, 1996.


Stephen F. Mannenbach
OSB No. 80300
Attorney for Respondent/Appellant Henry

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BEFORE THE ENVIRONMENTAL QUALITY COMMISSION
OF THE STATE OF OREGON

IN THE MATTER OF:

RUSSELL R. HENRY, JR., dba
HENRY DOZING & EXCAVATING, and
LANE WARD,
Respondents.

CASE NO. AQOB-WR-994-289

NOTICE OF APPEAL

(POLK COUNTY)

Respondent, Russell R. Henry, Jr., dba Henry Dozing &
Excavating, hereby gives notice of his intent to appeal the
proposed hearing order prior to entry of a Final Order.

POINTS AND AUTHORITIES:

OAR 340-11-132(2) and OAR 340-11-132(3).

DATED this 9th day of May, 1996.

/s/ Stephen F. Mannenbach
Stephen F. Mannenbach
OSB No.80300
Attorney for Respondent/Appellant

Attachment 7- 2 pages

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CERTIFICATE OF MAILING

I, Stephen F. Mannenbach, do hereby certify that I am the attorney for the within-named Respondent-Appellant, Russell R. Henry, Jr., dba Henry Dozing & Excavating; that on the 9th day of May, 1996, I mailed a copy of the foregoing NOTICE OF APPEAL, directed to:

Julie Emmal
Hearings Officer
Employment Department
State of Oregon
800 NE Oregon, No. 6
Portland, OR 97232

Mark Hoyt
Attorney at Law
1191 Capitol Street NE
Salem, OR 97301-1102
(Attorney for Lane Ward)

Les Carlough
DEQ Enforcement Section
2020 SW Fourth, 4th Floor
Portland, OR 97201-4987

Susan Greco
DEQ
811 SW Sixth Avenue
Portland, OR 97204

that being their mailing addresses, and prepaid postage thereon.

DATED at Dallas, Oregon, this 9th day of May, 1996.

/s/ Stephen F. Mannenbach
Stephen F. Mannenbach
OSB No. 80300
Attorney for Respondent/Appellant

juv:\CLIENT\HENRY\APPEAL.NOT

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION
OF THE STATE OF OREGON

IN THE MATTER OF:)
)
Henry Russell, dba Henry Dozing & Excavating,)
and Lane Ward,)
Respondents)
HEARING ORDER REGARDING
VIOLATION AND ASSESSMENT
OF CIVIL PENALTY
NO. AQOB-WR-94-289
POLK COUNTY

BACKGROUND

The Department of Environmental Quality issued a Notice of Civil Penalty Assessment on November 10, 1994, under Oregon Revised Statutes (ORS) Chapter 183 and 468.126 through 468.140, and Oregon Administrative Rules (OAR) chapter 340, Divisions 11 and 12. On November 23, 1994, Mark C. Hoyt, attorney for respondent Lane Ward, appealed the Notice and requested a hearing. On November 29, 1994, Michael Ross, attorney for Russell Henry, appealed the Notice and requested a hearing.

A hearing was held on December 7, 1995, in the Department of Environmental Quality (DEQ) offices in Salem, Oregon before hearings officer J. Emmal. Respondent Ward waived personal appearance. Respondent Russell Henry appeared pro se. Leslie Carlough, environmental law specialist, represented DEQ, with three witnesses.

ISSUES

Did respondents Lane Ward and Russell Henry, dba Henry Dozing & Excavating, violate OAR 340-23-060(4)(a)(B), on July 30, 1994, and August 9, 1994? If the respondents violated the law were the penalties appropriate under OAR 340-12-045?

FINDINGS OF FACT

1. Lane R. Ward owned the real property known as Lots 5 through 12 of Section 1, and Lots 1 through 6 of Section 2 of Eola Heights Subdivision on Aster Street Northwest, in Polk County, Oregon on July 30, 1994 and August 9, 1994.
2. On July 30, 1994 and August 9, 1994, respondent Lane R. Ward hired Russell Henry, doing business as Henry Dozing and Excavating, to clear the real property known as Lots 5 through 12 of Section 1, and Lots 1 through 6 of Section 2 of Eola Heights Subdivision on Aster Street Northwest, in Polk County, Oregon.
3. The real property at issue is within six miles of the corporate city limit of the City of Salem in Polk County, Oregon.
4. Respondent Ward contracted with respondent Henry for land clearing for the purposes of selling the land for development purposes.
5. On July 30, 1994, respondent Henry caused the open burning of land clearing debris including brush, tree limbs, and stumps. This debris was burned in eight piles of approximately seven feet in height and thirty feet in diameter.
6. On July 30, 1994, the Salem Fire Department responded to a call from a neighbor regarding the burning by respondent Henry on the real property at issue. By the time the Salem Fire Department

arrived, most of the piles had burned down. The Salem Fire Department extinguished two fires because the fires were spreading to nearby woods.

7. Prior to starting the fires, respondent Henry contacted Willamette Valley Communications Daily Burning Information and learned agricultural burning was allowed on that day.

8. On July 30, 1994, the Salem Fire Department provided respondent Henry with a Burning Incident Report which stated he had conducted an illegal burn in that it was a stack burn that was out of control. The Salem Fire Department did not issue a fee against the respondents because of "confusion on jurisdiction."

9. On August 9, 1994, respondent Henry caused the open burning of land clearing debris including brush, tree limbs, stumps, rubber tires, glass, and metal machine products. The debris was burned in six piles. Prior to starting the fires, respondent Henry called to hear the recording which allowed agricultural burning. The Salem Fire Department did not issue a fee against the respondents because of "confusion on jurisdiction."

10. Respondent Henry did not have a permit to burn agricultural debris on either July 30, 1994 or August 9, 1994.

11. The real property was used by other persons, other than the respondents, for the disposal of waste materials not native to the land.

ULTIMATE FINDINGS

Respondents Ward and Henry caused the open burning of demolition waste on July 30, 1994 within six miles of the corporate city limit of Salem, Oregon.

Respondents Ward and Henry caused the open burning of demolition waste, rubber tires, metal machine parts, and glass on August 9, 1994 within six miles of the corporate city limit of Salem, Oregon.

APPLICABLE LAW

OAR 340-23-060(4) states in part:

***, Demolition open burning is prohibited within special control areas including the following:

- (a) Areas in or within six miles of the corporate city limit of:...
- (B) In Polk County, the city of Salem.

OAR 340-23-030(4) states:

"Agriculture Waste" means any waste material actually generated or used by an agricultural operation, excluding those materials described in OAR 340-23-042(2).

OAR 340-23-030(13) states:

"Demolition Waste" means any material actually resulting from or produced by ... the clearing of any site for land improvement or clean-up excluding yard debris ... and agricultural waste.

OAR 340-23-042(2) states:

STATE OF OREGON - EMPLOYMENT DEPARTMENT

No person shall cause or allow to be initiated or maintained any open burning of any ... automobile part...rubber product...or any other material which normally emits dense smoke or noxious odors.

CONCLUSIONS AND REASONS

Two violations were alleged. They will be considered separately.

Open burning of Demolition Waste:

July 30, 1994

DEQ has the burden of establishing a violation by a preponderance of the evidence and the agency met its burden. Respondents Ward and Henry were engaged in land clearing for the purpose of land development. In this process, respondents created demolition waste as defined by the above rule. The respondents caused the open burning of demolition waste within the prohibited area of Polk County, Oregon.

The respondents argued that the waste was agricultural because the debris contained trees and other material and that the land may be used for agriculture in the future if no lots are sold for housing. Respondents' argument was not persuasive. The law is clear in that demolition waste is waste that is generated in preparation of development. The fact that the tree material was included does not make the waste agricultural, especially when the trees were not generated or used in an agricultural operation.

Respondents also argue that the open burning of agricultural waste was allowed at the time the burning took place. Since it has now been determined that the waste was not agricultural, this argument has no merit. Further, agricultural waste can only be burned if a valid permit has been issued.

Violation of the applicable law does not require a particular state of mind. It applies a strict liability standard, so knowledge or intent is relevant only regarding the amount of penalty.

Open burning of prohibited materials:

August 9, 1994

DEQ again met its burden of establishing the violations on this date. Again, respondents caused the open burning of prohibited material, specifically metal machine parts and rubber tires which are prohibited at all times. Respondent argued that these materials were found on the site as a result of the dumping by other persons during the past years. It is reasonable that such material may be found on real property that someone may consider available for dumping, but this does not excuse the illegal disposal of such materials.

The referee is not insensitive to the confusion of respondent Henry as to the jurisdiction of the open burning on this land. However, as stated before, the intent of the parties is not relevant to a determination of whether the violations actually occurred.

CIVIL PENALTY

The evidence presented at hearing supported the civil penalties assessed by DEQ. Respondents argued that the economic benefit calculated by DEQ was exorbitant. However, respondent did not present evidence to support this argument. The referee cannot consider any mitigating factors that were not already considered at the time DEQ calculated the penalty. Therefore, the calculations of civil penalty of Hearing Exhibit 3 (Exhibits Number 1 and 2 of the Notice of Assessment of Civil Penalty) are attached to the order and by this reference are incorporated herein and adopted by the referee as the determination of civil penalty.

ORDER

Respondents Ward and Henry violated OAR 340-23-060(4)(a)(B) on July 30, 1994 and August 9, 1994 and OAR 340-23-042(2) on August 9, 1994, and therefore are jointly and severally liable for a total civil penalty of \$5,626.

Dated this 19th day of April, 1996.

ENVIRONMENTAL QUALITY COMMISSION



J. Emmal
Hearings Officer

Appeal Rights

If you are not satisfied with this decision, you have 30 days to appeal it to the Environmental Quality Commission. See Oregon Administrative Rule (OAR) 340-11-132. If you wish to appeal the Commission's decision, you have 60 days to file a petition for review with the Oregon Court of Appeals from the date of service of the order by the Environmental Quality Commission. See, ORS 183.480 *et seq.*

STATEMENT OF MAILING

AGENCY CASE NO. AQOB-WR-94-289
HEARINGS CASE NO. 95-DEQ-005

I certify that the attached Final Order was served through the mail to the following parties in envelopes addressed to each at their respective addresses, with postage fully prepaid.

Russell Henry (Certified)
5910 Windsor Island Road, #39
Keizer, OR 97303

Lane Ward (Certified)
c/o Mark Hoyt, Attorney
1191 Capitol Street NE
Salem, OR 97301-1102

Mark Hoyt, Attorney (Certified)
1191 Capitol Street NE
Salem, OR 97301-1102
(Sent with Lane Ward's certified copy)

Les Carlough
DEQ Enforcement Section
2020 SW Fourth, 4th Floor
Portland, OR 97201-4987

Susan Greco
DEQ
811 SW Sixth Avenue
Portland, OR 97204

Mailing/Delivery Date: 04-19-96
Hearings Clerk: AH

STATE OF OREGON - EMPLOYMENT DEPARTMENT

EXHIBIT 1

FINDINGS AND DETERMINATION OF RESPONDENT'S CIVIL PENALTY PURSUANT TO OREGON ADMINISTRATIVE RULE (OAR) 340-12-045

VIOLATION 1: Open burning of demolition waste in violation of OAR 340-23-060(4)(a)(B).

CLASSIFICATION: This is a Class II violation pursuant to OAR 340-12-050(2)(g).

MAGNITUDE: The magnitude of the violation is major. The selected magnitude category in OAR 340-12-090(1)(f)(A) provides that the magnitude of an open burn shall be major if the material constitutes more than five cubic yards. The Department estimates that the volume of your burns exceeded 5 cubic yards, therefore the magnitude is major.

CIVIL PENALTY FORMULA: The formula for determining the amount of penalty of each violation is:

$$BP + [(0.1 \times BP) \times (P + H + O + R + C)] + EB$$

"BP" is the base penalty which is \$750 for a Class II major magnitude violation in the matrix listed in OAR 340-12-042(3)(b).

"P" is Respondent's prior significant actions and receives a value of 0 because the Department has not taken prior significant actions against Respondent.

"H" is the past history of Respondent in taking all feasible steps or procedures necessary to correct any prior significant action(s) and receives a value of 0 because the Department has not taken prior significant actions against Respondent.

"O" is whether or not the violation was a single occurrence or was repeated or continuous during the period of the violation and receives a value of 2 because the illegal open burns were repeated on two days. Respondent conducted the illegal open burns on July 30, 1994, and again on August 9, 1994.

"R" is the cause of the violation and receives a value of 0 because the Department lacks sufficient evidence on which to base a finding.

"C" is Respondent's cooperativeness in correcting the violation and receives a value of 0 because the effects of the violation could not be corrected.

"EB" is the approximate dollar sum of the economic benefit that the Respondent gained through noncompliance, and receives a value of \$4,226. The economic benefit is the cost of lawful disposal that Respondent avoided. The cost avoided is calculated by estimating the volume of the material burned using the dimensions of the piles provided by the fire department, multiplying the volume of the material burned by its density to obtain a weight, and then multiplying the weight by the amount the Coffin Butte Regional Landfill charges for tipping. Because the Department has the burden to show the derivation of the approximated economic benefit, and because the Department has measurements of only two of the six piles of burning debris on August 9, 1994,

the Department has chosen to omit the economic benefit gained through burning those other four piles. Our calculation is as follows:

1. $(8 \text{ piles} \times 122 \text{ yd}^3 \text{ on July 30, 1994}) + (1 \text{ pile} \times 8 \text{ yd}^3 \text{ on August 9, 1994}) + (1 \text{ pile} \times 174 \text{ yd}^3 \text{ on August 9, 1994}) = 1,158 \text{ yd}^3$
2. $1,158 \text{ yd}^3 \times 0.1 \text{ tons per yd}^3 = 115 \text{ tons}$
3. $115 \text{ tons} \times \$36.75 \text{ per ton cost of tipping} = \$4,226 \text{ economic benefit}$

PENALTY CALCULATION:

$$\begin{aligned} \text{Penalty} &= \text{BP} + [(0.1 \times \text{BP}) \times (\text{P} + \text{H} + \text{O} + \text{R} + \text{C})] + \text{EB} \\ &= \$750 + [(0.1 \times \$750) \times (0 + 0 + 2 + 0 + 0)] + \$4,226 \\ &= \$750 + [\$75 \times 2] + \$4,226 \\ &= \$750 + \$150 + \$4,226 \\ &= \$5,126 \end{aligned}$$

EXHIBIT 2

FINDINGS AND DETERMINATION OF RESPONDENT'S CIVIL PENALTY
PURSUANT TO OREGON ADMINISTRATIVE RULE (OAR) 340-12-045

VIOLATION 2: The open burning of materials which are prohibited from being open burned at all times pursuant to OAR 340-23-042(2).

CLASSIFICATION: This is a Class I violation pursuant to OAR 340-12-050(1(u)).

MAGNITUDE: The magnitude of the violation is minor. From pictures taken of the scene, it appears that the volume of prohibited material burned was less than one cubic yard. OAR 340-12-090(1)(f)(C) provides that the magnitude of the violation is minor if the volume of the material burned is less than one cubic yard.

CIVIL PENALTY FORMULA: The formula for determining the amount of penalty of each violation is:
$$BP + [(0.1 \times BP) \times (P + H + O + R + C)] + EB$$

"BP" is the base penalty which is \$500 for a Class I minor magnitude violation in the matrix listed in OAR 340-12-042(3).

"P" is Respondent's prior significant actions, and receives a value of 0 because the Department has not taken prior significant actions against Respondent.

"H" is the past history of Respondent in taking all feasible steps or procedures necessary to correct any prior significant actions, and receives a value of 0 because the Department has not taken prior significant actions against Respondent.

"O" is whether or not the violation was a single occurrence or was repeated or continuous during the period of the violation, and receives a value of 0 because the Department lacks sufficient evidence on which to base a finding.

"R" is the cause of the violation, and receives a value of 0 because the Department lacks sufficient evidence on which to base a finding.

"C" is Respondent's cooperativeness in correcting the violation, and receives a value of 0 because the effects of the violation could not be corrected.

"EB" is the approximate dollar sum of the economic benefit that the Respondent gained through noncompliance, and receives a value of 0 because the Department lacks evidence on which to base a finding.

PENALTY CALCULATION:

$$\begin{aligned} \text{Penalty} &= \text{BP} + [(0.1 \times \text{BP}) \times (\text{P} + \text{H} + \text{O} + \text{R} + \text{C})] + \text{EB} \\ &= \$500 + [(0.1 \times \$500) \times (0 + 0 + 0 + 0 + 0)] + \$0 \\ &= \$500 + [\$50 \times 0] + \$0 \\ &= \$500 + \$0 + \$0 \\ &= \$500 \end{aligned}$$

November 17, 1995

Russell Henry
5910 Windsor Island Rd. #39
Keizer, OR 97303

Re: DEQ v. Russell Henry/Lane Ward
Case No. AQOBWR94289

The Employment Department has contracted to hold contested case hearings for the Department of Environmental Quality (DEQ).

This contested case hearing has been scheduled as follows:

Date: Thursday, December 7, 1995
Time: 8:00 A.M.
Location: Upstairs Conference Room
DEQ Headquarters
750 Front Street NE
Salem, OR
(503) 378-8240

Les Carlough of the DEQ Enforcement Section, 229-5422, will be representing DEQ at this hearing.

The hearings officer will be Julie Emmal.

If you have any questions, please call me at Portland Hearings Section, 503 731-4041.

Sincerely,

Julie Emmal /AH

Julie Emmal
Administrative Law Judge

Enclosure
ah

cc: Les Carlough, Enforcement Section, DEQ
Susan Greco, DEQ
Lane Ward c/o
Mark Hoyt, Attorney

John A. Kitzhaber
Governor



800 NE Oregon Street, #6
Portland, OR 97232
(503) 731-4041
FAX (503) 731-4042

File

ex 1

NOV. 10 1994

CERTIFIED MAIL P 178 548 977

Lane R. Ward
P.O. Box 17190
Salem, OR 97305

Re: Notice of Civil Penalty Assessment
AQOB-WR-94-289
Polk County

Dear Mr. Ward,

On July 30, 1994, The Salem Fire Department responded to fires occurring on property owned by you and located at at lots 5 through 12 of Section 1 and lots 1 through 6 of section 2 of the Eola Heights Subdivision on Aster Street NW in Salem. Upon arrival, the Fire Department found open fires, burning out of control, in eight large piles of land-clearing debris (demolition waste). The fires produced heavy smoke prompting complaints from neighbors.

Oregon Administrative Rule (OAR) 340-23-060(4)(a)(B) prohibits the burning of demolition waste within six miles of the corporate city limit of Salem. Pursuant to OAR 340-23-040(2), "Each person who is in ownership, control, or custody of the real property on which open burning occurs . . . shall be considered a responsible person for the open burning." The burn occurred on property owned by you, and was in violation of the Department's rules. Therefore, you are subject to a civil penalty for that violation.

On August 9, 1994, the Salem Fire Department again responded to fires at the same addresses. The Fire Department found open fires occurring in six large piles of demolition debris from land-clearing activities. This debris also contained rubber tires, plastic, wire, automobile parts and miscellaneous scraps of metal.

Pursuant to OAR 340-23-042(2), "No person shall cause or allow to be initiated or maintained any open burning of any wet garbage, plastic, wire insulation, automobile part, . . . rubber product, . . . or of any other material which normally emits dense smoke or noxious odors." The burn occurring on your property contained these prohibited materials. Pursuant to OAR 340-23-040(2), "Each person who is in ownership, control, or custody of the real property on



811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696
TDD (503) 229-6993

DEQ-1



etj

which open burning occurs . . . shall be considered a responsible person for the open burning." The burn occurred on property owned by you, and was in violation of the Department's rules. Therefore, you are subject to a civil penalty for that violation.

The civil penalty schedule provides for a penalty of up to \$10,000 per day for each violation of these rules. In the enclosed notice, I have assessed a civil penalty, jointly and severally against you and Mr. Russell Henry, of \$5,126 for the illegal open burning of demolition waste on July 30 and August 9, 1994, and \$500 for the burning of prohibited materials, for a total penalty of \$5,626. In determining the amount of the penalty, I used the procedures set forth in OAR 340-12-045. The Department's findings and civil penalty determinations are attached to the Notice as Exhibits 1 and 2.

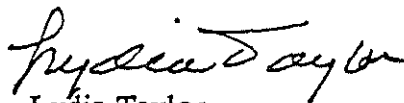
Appeal procedures are outlined within Section V of the Notice. If you fail to either pay or appeal the penalty within twenty (20) days, a Default Order will be entered against you.

If you wish to discuss this matter, or if you believe there are mitigating factors which the Department might not have considered in assessing the civil penalty, you may request an informal discussion by attaching your request to your appeal. Your request to discuss this matter with the Department will not waive your right to a contested case hearing.

I look forward to your cooperation and efforts to comply with the open burning rules in the future. However, if additional violations occur, you may be assessed additional civil penalties.

Copies of referenced rules are enclosed. If you have any questions about this action, please contact Les Carlough with the Department's Enforcement Section in Portland at 229-5422 or toll-free at 1-800-452-4011.

Sincerely,



Lydia Taylor
Interim Director

LT:lac

(GC.6 12/07/92)

Enclosures

cc: Western Region, Salem Office, DEQ
Western Region, Eugene Office, DEQ
Air Quality Division, DEQ
Department of Justice
Environmental Protection Agency
Environmental Quality Commission
Fred Avera, Polk County District Attorney

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION
OF THE STATE OF OREGON

IN THE MATTER OF)
RUSSELL HENRY, dba/ Henry Dozing &)
Excavating; and LANE R. WARD,)
Respondents.)
NOTICE OF ASSESSMENT
OF CIVIL PENALTY
No. AQOB-WR-94-289
POLK COUNTY

I. AUTHORITY

This Notice of Assessment of Civil Penalty (Notice) is issued by the Department of Environmental Quality (Department) pursuant to Oregon Revised Statutes (ORS) 468.126 through 468.140, ORS Chapter 183 and Oregon Administrative Rules (OAR) Chapter 340, Divisions 11 and 12.

II. FINDINGS

1. On or about July, 30, 1994, and August 9, 1994, Respondent Lane R. Ward owned the real property known as lots 5 through 12 of Section 1 and lots 1 through 6 of section 2 of the Eola Heights Subdivision on Aster Street NW in Polk County, Oregon.

2. On or about July, 30, 1994, and August 9, 1994, Respondent Russell Henry, doing business as Henry Dozing & Excavating, was hired by Respondent Lane R. Ward to clear the real property known as lots 5 through 12 of Section 1 and lots 1 through 6 of section 2 of the Eola Heights Subdivision on Aster Street NW in Polk County, Oregon

III. VIOLATIONS

1. On or about July 30, and August 9, 1994, Respondents caused or allowed the open burning of demolition waste within six miles of the corporate limits of Salem in violation of OAR 340-23-060(4)(a)(B), adopted pursuant to ORS Chapters 468 and 468A. Specifically, Respondents caused or allowed the open-burning of eight large piles of land-clearing debris on July 30, 1994, and six large piles of land-clearing debris on August 9, 1994, on land owned or controlled by Respondent Ward. Respondents' open burns occurred within six miles of the city limits of Salem in Polk County. Both Respondents are responsible for the open burning pursuant to OAR 340-23-

ex 3

3. New matters alleged in the Answer shall be presumed to be denied unless admitted in subsequent pleading or stipulation by the Department or Commission.

Send the request for hearing and Answer to: DEQ Rules Coordinator, Management Services Division, 811 S.W. Sixth Avenue, Portland, Oregon 97204. Following receipt of a request for hearing and an Answer, Respondents will be notified of the date, time and place of the hearing.

Failure to file a timely request for hearing and Answer may result in the entry of a Default Order for the relief sought in this Notice.

Failure to appear at a scheduled hearing or meet a required deadline may result in dismissal of the request for hearing and also an entry of a Default Order.

The Department's case file at the time this Notice was issued may serve as the record for purposes of entering the Default Order.

VI. OPPORTUNITY FOR INFORMAL DISCUSSION

In addition to filing a request for a contested case hearing, Respondents may also request an informal discussion with the Department by attaching a written request to the hearing request and Answer.

VII. PAYMENT OF CIVIL PENALTY

The civil penalty is due and payable ten (10) days after an Order imposing the civil penalty becomes final by operation of law or on appeal. Respondents may pay the penalty before that time. Respondents' check or money order in the amount of \$5,626 should be made payable to "State Treasurer, State of Oregon" and sent to the Business Office, Department of Environmental Quality, 811 S.W. Sixth Avenue, Portland, Oregon 97204.

11/10/94
Date

Lydia Taylor
Lydia Taylor, Interim Director

EXHIBIT 1

FINDINGS AND DETERMINATION OF RESPONDENT'S CIVIL PENALTY
PURSUANT TO OREGON ADMINISTRATIVE RULE (OAR) 340-12-045

VIOLATION 1: Open burning of demolition waste in violation of OAR 340-23-060(4)(a)(B).

CLASSIFICATION: This is a Class II violation pursuant to OAR 340-12-050(2)(g).

MAGNITUDE: The magnitude of the violation is major. The selected magnitude category in OAR 340-12-090(1)(f)(A) provides that the magnitude of an open burn shall be major if the material constitutes more than five cubic yards. The Department estimates that the volume of your burns exceeded 5 cubic yards, therefore the magnitude is major.

CIVIL PENALTY FORMULA: The formula for determining the amount of penalty of each violation is:
$$BP + [(0.1 \times BP) \times (P + H + O + R + C)] + EB$$

"BP" is the base penalty which is \$750 for a Class II major magnitude violation in the matrix listed in OAR 340-12-042(3)(b).

"P" is Respondent's prior significant actions and receives a value of 0 because the Department has not taken prior significant actions against Respondent.

"H" is the past history of Respondent in taking all feasible steps or procedures necessary to correct any prior significant action(s) and receives a value of 0 because the Department has not taken prior significant actions against Respondent.

"O" is whether or not the violation was a single occurrence or was repeated or continuous during the period of the violation and receives a value of 2 because the illegal open burns were repeated on two days. Respondent conducted the illegal open burns on July 30, 1994, and again on August 9, 1994.

"R" is the cause of the violation and receives a value of 0 because the Department lacks sufficient evidence on which to base a finding.

"C" is Respondent's cooperativeness in correcting the violation and receives a value of 0 because the effects of the violation could not be corrected.

"EB" is the approximate dollar sum of the economic benefit that the Respondent gained through noncompliance, and receives a value of \$4,226. The economic benefit is the cost of lawful disposal that Respondent avoided. The cost avoided is calculated by estimating the volume of the material burned using the dimensions of the piles provided by the fire department, multiplying the volume of the material burned by its density to obtain a weight, and then multiplying the weight by the amount the Coffin Butte Regional Landfill charges for tipping. Because the Department has the burden to show the derivation of the approximated economic benefit, and because the Department has measurements of only two of the six piles of burning debris on August 9, 1994,

the Department has chosen to omit the economic benefit gained through burning those other four piles. Our calculation is as follows:

1. $(8 \text{ piles} \times 122 \text{ yd}^3 \text{ on July 30, 1994}) + (1 \text{ pile} \times 8 \text{ yd}^3 \text{ on August 9, 1994}) + (1 \text{ pile} \times 174 \text{ yd}^3 \text{ on August 9, 1994}) = 1,158 \text{ yd}^3$
2. $1,158 \text{ yd}^3 \times 0.1 \text{ tons per yd}^3 = 115 \text{ tons}$
3. $115 \text{ tons} \times \$36.75 \text{ per ton cost of tipping} = \$4,226 \text{ economic benefit}$

PENALTY CALCULATION:

$$\begin{aligned} \text{Penalty} &= \text{BP} + [(0.1 \times \text{BP}) \times (\text{P} + \text{H} + \text{O} + \text{R} + \text{C})] + \text{EB} \\ &= \$750 + [(0.1 \times \$750) \times (0 + 0 + 2 + 0 + 0)] + \$4,226 \\ &= \$750 + [\$75 \times 2] + \$4,226 \\ &= \$750 + \$150 + \$4,226 \\ &= \$5,126 \end{aligned}$$

EXHIBIT 2

FINDINGS AND DETERMINATION OF RESPONDENT'S CIVIL PENALTY
PURSUANT TO OREGON ADMINISTRATIVE RULE (OAR) 340-12-045

VIOLATION 2: The open burning of materials which are prohibited from being open burned at all times pursuant to OAR 340-23-042(2).

CLASSIFICATION: This is a Class I violation pursuant to OAR 340-12-050(1(u)).

MAGNITUDE: The magnitude of the violation is minor. From pictures taken of the scene, it appears that the volume of prohibited material burned was less than one cubic yard. OAR 340-12-090(1)(f)(C) provides that the magnitude of the violation is minor if the volume of the material burned is less than one cubic yard.

CIVIL PENALTY FORMULA: The formula for determining the amount of penalty of each violation is:

$$BP + [(0.1 \times BP) \times (P + H + O + R + C)] + EB$$

"BP" is the base penalty which is \$500 for a Class I minor magnitude violation in the matrix listed in OAR 340-12-042(3).

"P" is Respondent's prior significant actions, and receives a value of 0 because the Department has not taken prior significant actions against Respondent.

"H" is the past history of Respondent in taking all feasible steps or procedures necessary to correct any prior significant actions, and receives a value of 0 because the Department has not taken prior significant actions against Respondent.

"O" is whether or not the violation was a single occurrence or was repeated or continuous during the period of the violation, and receives a value of 0 because the Department lacks sufficient evidence on which to base a finding.

"R" is the cause of the violation, and receives a value of 0 because the Department lacks sufficient evidence on which to base a finding.

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"EB" is the approximate dollar sum of the economic benefit that the Respondent gained through noncompliance, and receives a value of 0 because the Department lacks evidence on which to base a finding.

PENALTY CALCULATION:

$$\begin{aligned} \text{Penalty} &= \text{BP} + [(0.1 \times \text{BP}) \times (\text{P} + \text{H} + \text{O} + \text{R} + \text{C})] + \text{EB} \\ &= \$500 + [(0.1 \times \$500) \times (0 + 0 + 0 + 0 + 0)] + \$0 \\ &= \$500 + [\$50 \times 0] + \$0 \\ &= \$500 + \$0 + \$0 \\ &= \$500 \end{aligned}$$

WALLACE W. LIEN, P.C.

ATTORNEYS AT LAW

1191 CAPITOL STREET NE
SALEM, OREGON 97301-1102

OFFICE (503) 585-0105
FAX (503) 585-0106



CAPITOL HOUSE-Cir. 1918
MAILING ADDRESS: P.O. BOX 5668
SALEM, OREGON 97304-0668

WALLACE W. LIEN

MARK C. HOYT

MARK D. SHIPMAN

November 23, 1994

DEQ Rules Coordinator
Management Services Division
811 SW Sixth Avenue
Portland, OR 97204

Re: Notice of Assessment of Civil Penalty
Case No. AQOB-WR-94-289
Polk County

Dear Rules Coordinator:

Enclosed for filing please find respondent Lane R. Ward's request for an informal discussion, Answer to the Notice of Assessment of Civil Penalty and Request for contested case hearing in the above-referenced matter.

Should you require any additional information, please contact me. I look forward to hearing from you regarding the scheduling of an informal discussion and the contested case hearing in this matter.

If you have any questions or concerns regarding this matter, please feel free to contact me at your convenience.

Yours truly,

A large, stylized handwritten signature in black ink, appearing to read 'Mark C. Hoyt'.

Mark C. Hoyt

MCH:mca

Encs: 1) Request for Opportunity for Informal Discussion
2) Answer and Request for Contested Case Hearing

cc: Mr. Lane Ward

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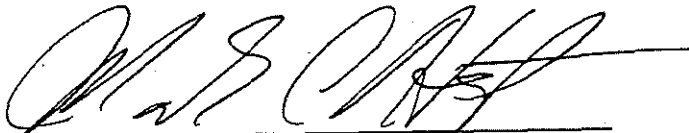
BEFORE THE ENVIRONMENTAL QUALITY COMMISSION
OF THE STATE OF OREGON

IN THE MATTER OF)
RUSSELL HENRY, dba Henry Dozing &)
Excavating; and LANE R. WARD,) Case No. AQOB-WR-94-289
)
Respondents.)

REQUEST FOR OPPORTUNITY FOR INFORMAL DISCUSSION

Comes now Respondent Lane R. Ward, by and through Mark C. Hoyt, of attorneys for Respondent, and pursuant to Section VI. of the Notice of Assessment of Civil Penalty, requests an informal discussion with the Department regarding mitigating factors and other relevant considerations in this matter. This request for informal hearing in no way waives Respondent's right to a contested case hearing, and Respondent specifically reserves the right thereto.

Dated this 28th day of November, 1994.



MARK C. HOYT, OSB #92341

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BEFORE THE ENVIRONMENTAL QUALITY COMMISSION
OF THE STATE OF OREGON

IN THE MATTER OF)
RUSSELL HENRY, dba Henry Dozing &)
Excavating; and LANE R. WARD,) Case No. AQOB-WR-94-289
)
Respondents.)

ANSWER AND REQUEST FOR CONTESTED CASE HEARING

Comes now Respondent Lane R. Ward, by and through Mark C. Hoyt, of attorneys for Respondent, and does hereby answer the Notice of Assessment of Civil Penalty and requests a contested case hearing in this matter.

I. AUTHORITY

Respondent does not contest the authority of the Department in this matter.

II. FINDINGS

Respondent admits paragraphs 1 and 2 of the Findings contained within the Notice of Assessment of Civil Penalty in this case.

III. VIOLATION

Respondent is without knowledge or information sufficient to form a belief as the truth of the allegations in Paragraphs 1 and 2 of subsection III of the Notice of Assessment of Civil Penalty, and therefore denies the allegations contained therein.

IV. ASSESSMENT OF CIVIL PENALTIES

Respondent denies that he owes or is responsible for any civil penalties arising out of the conduct alleged in the Notice of Assessment of Civil Penalty.

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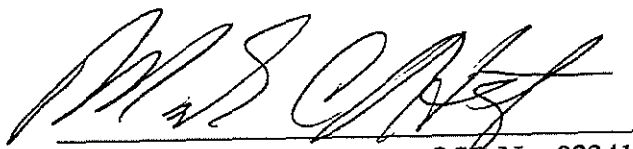
V. REQUEST FOR CONTESTED CASE HEARING

Respondent does hereby request a contested case hearing be held in this matter pursuant to agency rules and regulations.

VI. REQUEST FOR INFORMAL DISCUSSION

Pursuant to the request attached hereto, Respondent does hereby request an informal discussion with the Department regarding this matter to determine whether this matter can be otherwise resolved.

Dated this 20th day of November, 1994.



MARK C. HOYT, OSB No. 92341
Of Attorneys for Respondent Ward

CERTIFICATE OF FILING

I hereby certify that I filed the foregoing ANSWER AND REQUEST FOR CONTESTED CASE HEARING with the Environmental Quality Commission at the following address:

DEQ Rules Coordinator
Management Services Division
811 S.W. Sixth Avenue
Portland, OR 97204

by mail, with proper postage affixed on November 23, 1994, by depositing the original thereof in the United States Post Office at Salem, Oregon.

DATED this 23rd day of November, 1994.



MARK C. HOYT, OSB #92341
P.O. Box 5668
Salem, Oregon 97304

P.O. Box 448
140 S.E. Mill Street
Dallas, Oregon 97338
(503) 623-2434
FAX: 623-3032

BLIVEN & ROSS, P.C.

ATTORNEYS AT LAW

Mark A. Bliven
Michael Ross

November 29, 1994


DEQ Rules Coordinator
Management Services Division
811 S.W. Sixth Ave.
Portland, OR 97204

Re: Russell Henry, #AQOB-WR-94-289

Dear Friends:

Enclosed for filing please find an Answer and Request for Hearing/Informal Discussion in the above case. Please direct all future correspondence regarding this case to me.

Sincerely,


Michael Ross
Attorney at Law

MRi
cc: Client
Enclosures

ex 5

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION
OF THE STATE OF OREGON

1 IN THE MATTER OF RUSSELL) ANSWER TO NOTICE OF ASSESSMENT
2 HENRY, dba/ Henry Dozing &) OF CIVIL PENALTY
3 Excavating; and LANE R.) NO. AQOB-WR-94-289.
4 WARD,) POLK COUNTY
5 Respondents.) REQUEST FOR HEARING

6 Comes now Respondent Russell Henry, by and through his
7 attorneys, Bliven & Ross, P.C., and Answers the Notice of
8 Assessment of Civil Penalty as follows:

9 1.

10 Admits paragraphs I; II; III, except denies paragraph III.2.

11 2.

12 Except as admitted in paragraph 1., Respondent Russell Henry
13 denies each and every other allegation of fact contained in the
14 Notice of Assessment of Civil Penalty.

15
16 As an affirmative defense, and by way of mitigation,
17 Respondent Russell Henry alleges as follows:

18 3.

19 At all times during any burning, adequate fire fighting
20 personnel and equipment were present to ensure safety.

21 4.

22 All burning was done at a time when agricultural burning was
23 permitted.

24 5.

25 Materials burned consisted of normal debris from clearing of
26

1 - ANSWER

1 the land, such as briars, blackberry bushes, and limbs. Any
2 other materials burned were unknown to Respondent Russell Henry
3 at the time of the burning.

4 6.

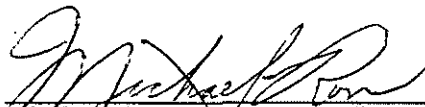
5 At the time of the first burn, Respondent Russell Henry
6 spoke with the fire fighters who came when the fires were nearly
7 out. He was never informed that the burning was a violation, and
8 did not believe the burning was a violation. Had Respondent
9 Russell Henry been so advised, he would not have conducted the
10 second burn.

11 WHEREFORE, having fully answered the Notice of Assessment of
12 Civil Penalty, Respondent Russell Henry prays that the civil
13 penalty be revoked, or such other relief as may be deemed
14 appropriate.

15 CONTESTED CASE HEARING REQUESTED.

16 Respectfully submitted,

17 BLIVEN & ROSS, P.C.

18 
19 Michael Ross, OSB #80363
20 of Attorneys for Respondent Henry
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BEFORE THE ENVIRONMENTAL QUALITY COMMISSION
OF THE STATE OF OREGON

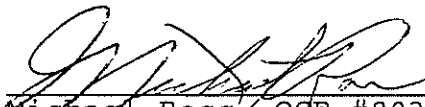
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3 IN THE MATTER OF RUSSELL) NO. AQOB-WR-94-289
4 HENRY, dba/ Henry Dozing &) POLK COUNTY
5 Excavating; and LANE R.)
6 WARD,) REQUEST FOR HEARING AND
7 Respondents.) INFORMAL DISCUSSION

8 Comes now Respondent Henry Russell, by and through his
9 attorney, Michael Ross, OSB #80363, and requests this matter be
10 set down for hearing as a contested case.

11 Respondent further requests an informal discussion pursuant
12 to paragraph VI of the Notice of Assessment of Civil Penalty
13 previously filed herein.

14 DATED this 9th day of November, 1994.

15 BLIVEN & ROSS, P.C.

16
17 
18 Michael Ross, OSB #80363
19 of Attorneys for Respondent Henry
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BLIVEN & ROSS, P.C.

ATTORNEYS AT LAW

14 Mill Street

Dallas, Texas 75201

(505) 823-2434

SEP 23 1994

RECEIVED
AUG 12 1994

FIRE DEPARTMENT REFERRAL FOR OPEN BURNING VIOLATIONS

MAIL TO: DEPARTMENT OF ENVIRONMENTAL QUALITY
750 Front St. NE, Suite 120, Salem, OR 97310

CITY OF SALEM
FIRE DEPT.

Please complete both sides of this form. The Department's actions will be based on the information supplied by you. It is particularly important to have a detailed report for serious incidents or those involving repeat violations that may result in enforcement action. Thank you!

INCIDENT Date 7-30-94 Time 10:44 F.D. Incident/Alarm No. 94-06550
VIOLATOR'S NAME Russell Henry INCIDENT # 33003400 ASTOR ST NEW
ADDRESS Salem CITY Salem ZIP 97304
Violator's Telephone 340-2509 COUNTY Marion 55RFPD

Does this incident involve the owner of a duplex, triplex or fourplex? Yes No

VIOLATOR'S Mailing Address (if different) 5510 W. W. Dr. Is (R) #398 PROPERTY OWNER'S NAME Lane R. Ward
Kerzer OR zip 97307 Address (if known) P.O. Box 17190 zip 97305

VOLUME OF MATERIAL BURNED: BURN BARREL(s)
8 PILE(s) SIZE: Height 7 ft. Diameter 30 ft Width ft Length ft

TYPE OF BURN: RESIDENTIAL DEMOLITION (including Land Clearing)
 CONSTRUCTION COMMERCIAL INDUSTRIAL AGRICULTURAL

MATERIAL BURNED: Yard Trimmings Brush Tree limbs Stumps Paper
 Miscellaneous wood products (lumber, plywood, etc) Cardboard *Plastics*
 Tires *Decomposable Garbage* *Wire Insulation* *Asphaltic Material*
 Auto parts *Petroleum Products* *Rubber Products* *Animal Remains*
 Other

Estimated percentage of prohibited material (marked with "*") in burn: %

OTHER: Was the burn located in a Special Open Burning Control Area? Yes
Was the burn being conducted on a day, or at a time when open burning was prohibited?
Was the burn being attended by a responsible person? Yes, but see Comments
Did they admit to igniting the burn? Yes

COMMENTS: No water present at scene, no permit, fires set too close to adjacent woods resulting in

FIRE DEPARTMENT Salem Officer T. Whelan Phone 588-6121
Signed T. Whelan Date 8-11-94

(See other side)

need for engine company suppression notes.
** No Salem Fee due to confusion on jurisdiction!*
ent 4

Fire Department Open Burning Referral
ADDITIONAL EVIDENCE & INFORMATION

Incident/Alarm No. 6950 Incident Date 7-30-94

This section must be completed by an officer who observed the open burning and questioned the responsible party. Please write in the first person ("I saw," "I asked," etc.). If the case is contested, the Department will ask you to be available for the contested case hearing. Thank you!

1. Who did you talk to and what did they have to say about the incident?

Russell Henry. He said he had a permit. When asked, he said he didn't need a water supply since he had a cat and a million dollar liability policy. When he saw that the fires were out of control he stated "they" should never have.

2. What did you observe being burned? (Volume, percentages, numbers, etc.; if possible, estimate amounts and types of materials burned prior to your arrival.) How long was the fire burning? How much smoke?

Trees, stumps and underbrush pushed into approx 8 piles. Heavy smoke. I received a final complaint from a neighbor approx 2200 hrs that evening. Mr Henry assured one of our men he would monitor the piles all night.

3. Where was the fire located on the property? (Attach a sketch or diagram if needed for clarity.) If not at the incident address, be specific as to where (e.g., "adjoining lot east of house.")

Fires at various locations both N. + S of Aster St NW.

4. What happened when you asked the party to extinguish the fire? I extinguished

2 fires which were spreading into woods adjacent to downwind subdivision. I allowed the rest to burn assuming he was in compliance with permit.

5. What is the distance to the nearest residence, public road, or public impact? Is this a residential area?

Public Road - 10 ft. Residence - 450 ft. Yes, although subject property was, according to Mr Henry, going to be planted with merchantable timber.

6. Other comments regarding this incident or past incidents or mitigating factors:

Scenario regarding number & type of burn piles was dealt with by other shifts on 8-9 and 8.

Signature T. Whelan Title Captain Date 8-11-94

SEP 23 1994

FIRE DEPARTMENT REFERRAL FOR OPEN BURNING VIOLATIONS

MAIL TO: DEPARTMENT OF ENVIRONMENTAL QUALITY, 750 Front St. NE, Suite 120, Salem, OR 97310

Please complete both sides of this form. The Department's actions will be based on the information supplied by you. It is particularly important to have a detailed report for serious incidents or those involving repeat violations that may result in enforcement action. Thank you!

INCIDENT Date AUGUST 9 1994 Time 13:58 F.D. Incident/Alarm No. 94 07349
VIOLATOR'S NAME MR. ROSS HENRY INCIDENT ADDRESS 3400 BLASTER ST. NW
Violator's Telephone 390-2569 CITY SALEM ZIP 97304
COUNTY POLK STATE OREGON

Does this incident involve the owner of a duplex, triplex or fourplex? [] Yes [X] No

VIOLATOR'S Mailing Address 5510 WINDSOR ISLAND RD #39 (if different) KEIZER, OR ZIP 97130 PROPERTY OWNER'S NAME LANE R. WARD Address PO BOX 17190 zip 97305 SALEM, OR

VOLUME OF MATERIAL BURNED: 2 BURN BARREL(s)
PILE(s) SIZE: Height ft. Diameter ft Width ft Length ft

TYPE OF BURN: [] RESIDENTIAL [X] DEMOLITION (including Land Clearing)
[] CONSTRUCTION [] COMMERCIAL [] INDUSTRIAL [] AGRICULTURAL

MATERIAL BURNED: [] Yard Trimmings [X] Brush [X] Tree limbs [X] Stumps [X] Paper
[X] Miscellaneous wood products (lumber, plywood, etc) [] Cardboard [] *Plastics*
[X] *Tires* [] *Decomposable Garbage* [] *Wire Insulation* [] *Asphaltic Material*
[] *Auto parts* [] *Petroleum Products* [X] *Rubber Products* [] *Animal Remains*
[X] Other BOTTLES (GLASS), METAL MACHINE PARTS

Estimated percentage of prohibited material (marked with "**") in burn: 3%

OTHER: Was the burn located in a Special Open Burning Control Area? YES

Was the burn being conducted on a day or at a time when open burning was prohibited? NO

Was the burn being attended by a responsible person? NO

Did they admit to igniting the burn? YES

COMMENTS: MR HENRY SAID THAT HE'D BEEN DOING IT THIS WAY FOR 10 YEARS. No Fee due to confusion on jurisdiction, 9-13-94

FIRE DEPARTMENT SALEM Officer CRAIG SNWELY Phone 588-6245
Signed [Signature] Date 8-9-94

(See other side)

et.7

Fire Department Open Burning Referral
ADDITIONAL EVIDENCE & INFORMATION

Incident/Alarm No. 7349

Incident Date 8-9-94

This section must be completed by an officer who observed the open burning and questioned the responsible party. Please write in the first person ("I saw," "I asked," etc.). If the case is contested, the Department will ask you to be available for the contested case hearing. Thank you!

1. Who did you talk to and what did they have to say about the incident?

I talked to Mr. Russ Henry. I asked him if he had a permit to burn the debris from his land clearing efforts. He said he had an Agricultural Permit and that he had called in this morning and was told that agricultural burning was allowed. Mr. Henry could not produce a permit and following further question

2. What did you observe being burned? (Volume, percentages, numbers, etc.; if possible, estimate amounts and types of materials burned prior to your arrival.) How long was the fire burning? How much smoke?

6 Bulldozed piles of Debris Varying in size from 3' HIGH x 12' Diameter to 15' HIGH x 30' Long x 20' wide. Neighbor states that these piles were ignited on 8-8-94 and allowed to burn continuously all day and thru the night into today (8-9-94)

Where was the fire located on the property? (Attach a sketch or diagram if needed for clarity.) If not at the incident address, be specific as to where (e.g., "adjoining lot east of house.")

6 Fires @ Various Locations in the Eola Heights Subdivision Section 1 Lots 1-12 & Section 2 Lots 1-6.

4. What happened when you asked the party to extinguish the fire? MR. HENRY

DID NOT HAVE ANY MEANS TO TRANSPORT OR SUPPLY WATER TO THE BURN PILES ON SITE. MR. HENRY LEFT THE SITE PRIOR TO SFD DFM'S ARRIVAL and did not return.

5. What is the distance to the nearest residence, public road, or public impact? Is this a residential area?

6. Other comments regarding this incident or past incidents or mitigating factors:

NO AG BURNING PERMIT ISSUED. NO WATER SUPPLY ON SITE. MORE THAN 2 MILES. FIRES NOT EXTINGUISHED AT NIGHT. ILLEGAL MATERIAL ADDED TO PILES.

Signature

Title

CAPTAIN

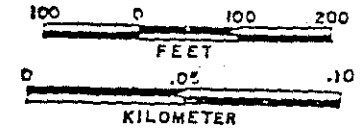
Date 8-9-94

this copy for 10 years



of 8

SCALE 1:2400



SEE MAP 7 3 30

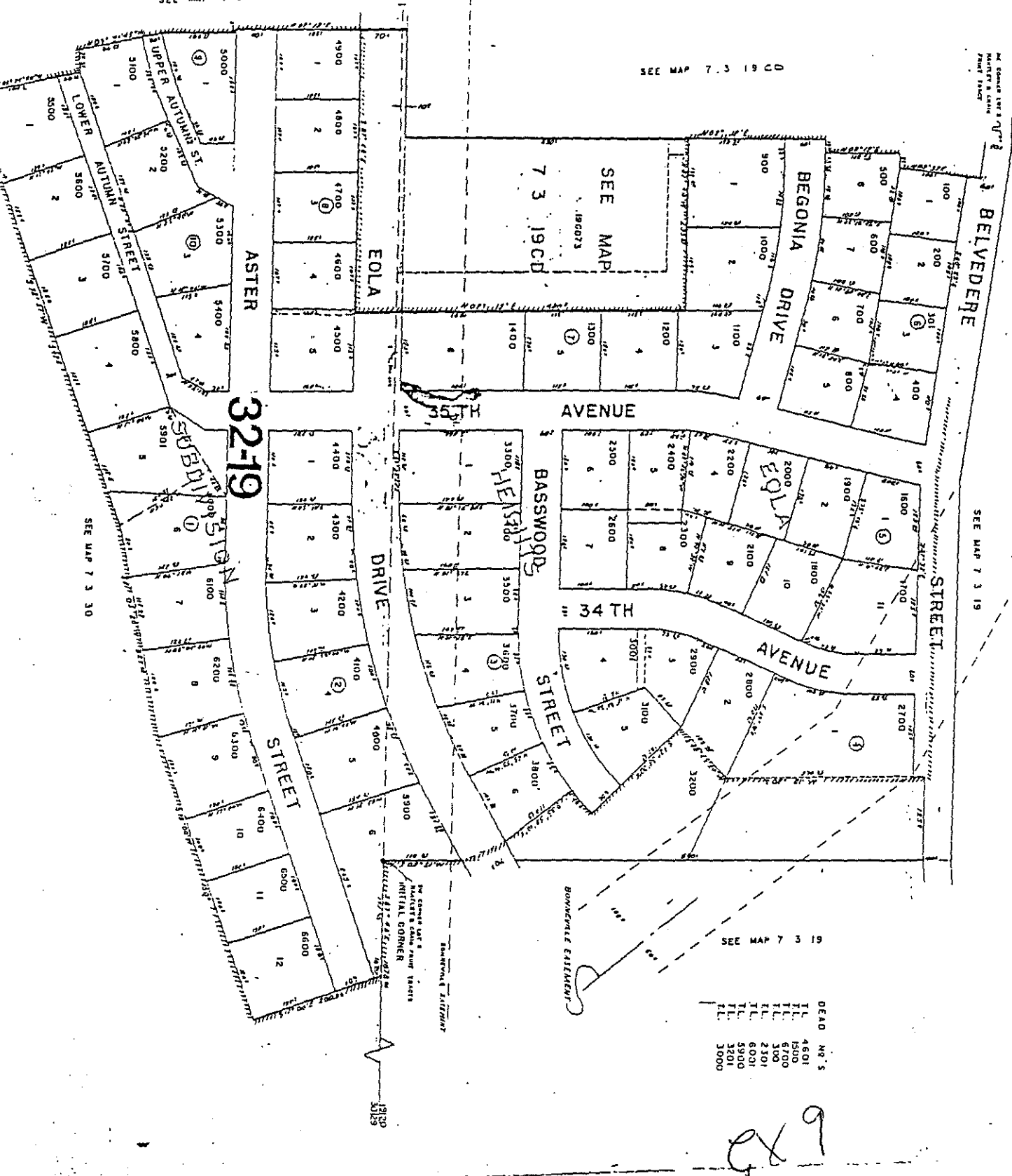
SEE MAP 7 3 19 CD

SEE MAP 7 3 19

SCALE 1:100

SW 1/4 SE 1/4 SEC. 19 T7S R3W WM
POLK COUNTY

7 3 19CD
B INDEX



DEAD NO. 5

T.L.	4601
T.L.	4700
T.L.	4800
T.L.	300
T.L.	2101
T.L.	6001
T.L.	5900
T.L.	3201
T.L.	3000

629

↑
N

0410

Babswood

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ASTOR

THURM'S

WILSON

WILSON

WILSON

WILSON

WILSON

Photograph Log

Location: 3300 - 3400 Block of Aster Street NW, Salem, Oregon

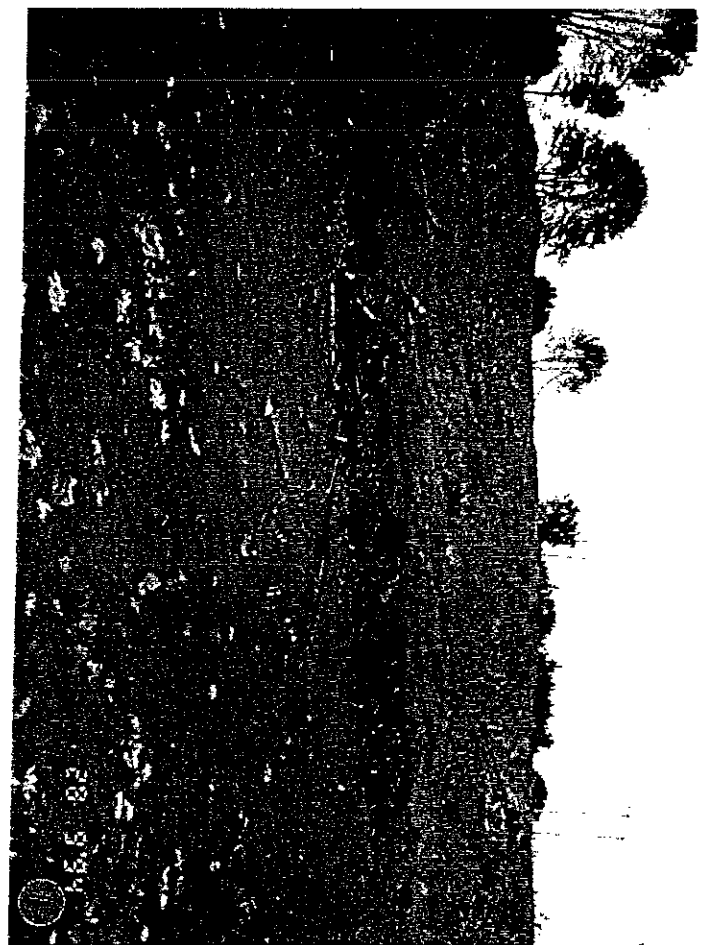
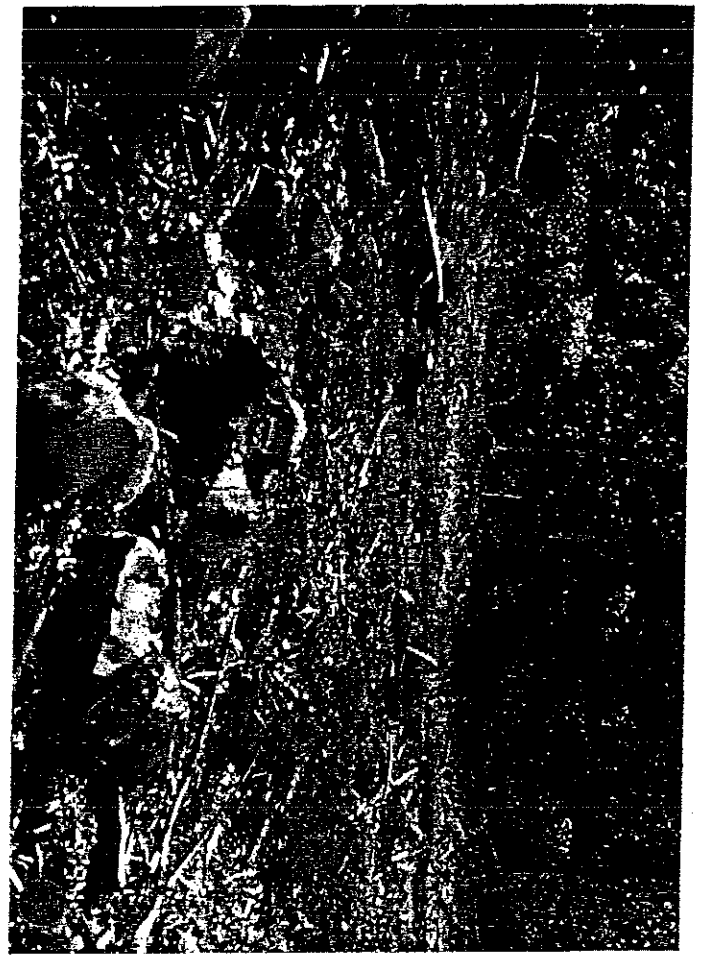
Date Photographs Taken: 9-28-94

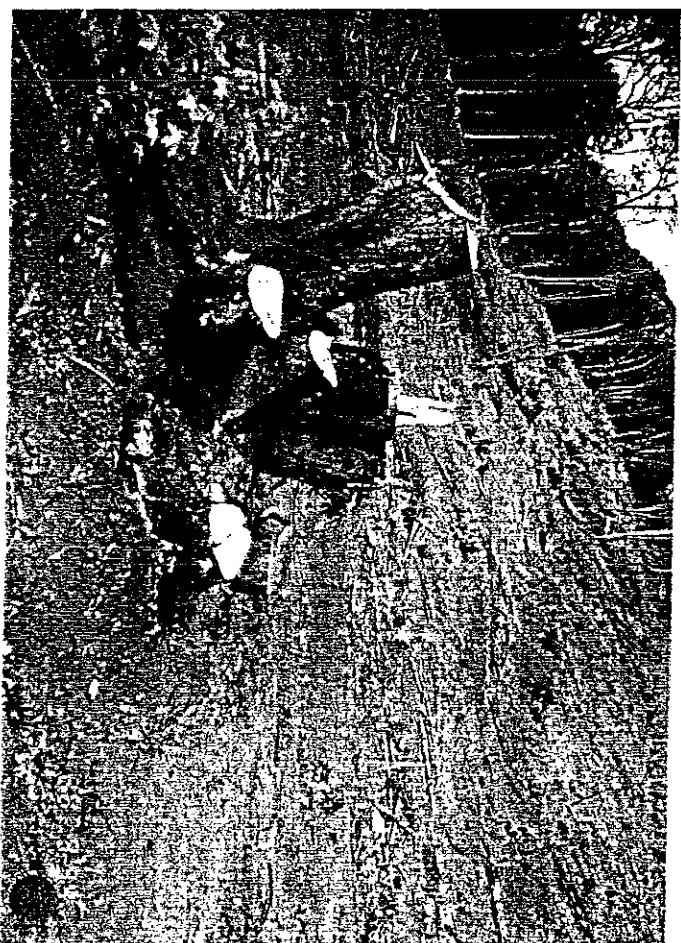
Photographer: Claudia Davis

<u>Pile #</u>	<u>Photograph #</u>	<u>Description of Pile</u>
1	n/a	Charred wood
2	n/a	Can, charred wood, metal, bottle, wheel rim (Smoldering on 10-03-94 at 1:55 p.m.)
3	n/a	Charred wood, stumps, metal, bottle, wire
4	n/a	Bottles, wire, cans, plastic, rebar, small piece of carpet, charred wood
5	n/a	Plastic, wire, charred wood
6	13	Charred wood
7	3 & 4	Charred wood and stumps
8	5	Charred wood and stumps
9	1 & 2	Charred wood
10	6 - 8	Charred wood, metal, bottle, stump
11	n/a	Charred wood, metal
12	9	Charred wood, cans
13	n/a	Charred wood, stumps
14	10 & 12	2 tires, wire, wheel rim, cans, metal, charred wood
15	11	Hub cab, metal, charred wood, bottle, plastic lid, cans
16	n/a	Charred wood

Claudia Davis

ex 11









OPEN BURNING VIOLATION GUIDELINES

CLASS III	Residential, single family (NO prohibited material ¹)
Use	≤ 1 cu yd or 1 burn barrel (MINOR)
Response	1 - 5 cu yd or 2 burn barrels (MODERATE)
"C"	≥ 5 cu yds or 3 burn barrels (MAJOR)
CLASS II	Residential, duplex/triplex/fourplex (NO prohibited material ¹)
Use	≤ 1 cu yd or 1 burn barrel (MINOR)
Response	1 - 5 cu yds or 2 burn barrels (MODERATE)
"C"	≥ 5 cu yds or 3 burn barrels (MAJOR)
CLASS II	Commercial & dwellings for > 4 families (NO prohibited material ¹)
Use	Construction
Response	Demolition (including Land Clearing)
"A/B"	4th Priority Agricultural
	≤ 1 cu yd (MINOR)
	1 - 5 cu yds (MODERATE)
	≥ 5 cu yds (MAJOR)
	< 15 tires
CLASS I	Industrial
Use	Prohibited Material
Response	Class III & II w/significant prohibited material
"A" or "B"	≤ 1 cu yd (MINOR)
	1 - 5 cu yds (MODERATE)
	≥ 5 cu yds (MAJOR)
	≥ 15 tires

¹de minimis application: Small quantities or minor kinds of prohibited material will not be counted for Open Burning Class II and Class II violations.

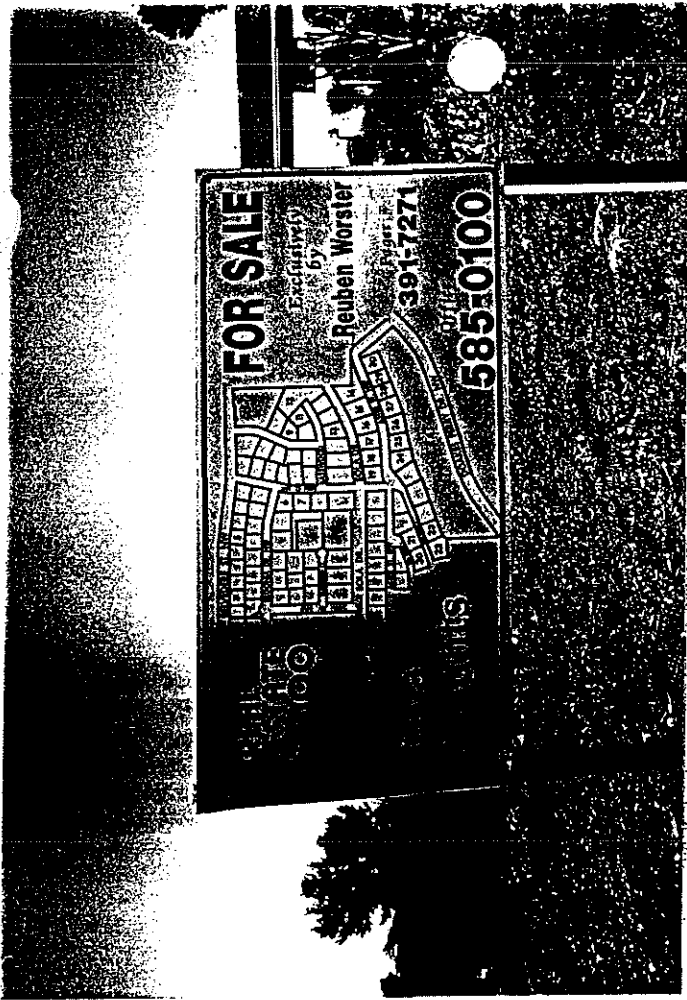
CLASS I EQUIVALENTS:

- 2 x CLASS II
- 1 x CLASS II + 2 x CLASS III
- 3 x CLASS III

VOLUME EQUIVALENTS:

- 1 cu yd ≈ 6 garbage cans
- 25 cu yds ≈ garbage truck
- 50 gallon burn barrel ≈ 6.68 cu ft
- 33 gallon garbage can ≈ 4.41 cu ft
- 1 cu yd ≈ 200 lbs
- 5 tires = 1 cu yd

ex 12



13

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SALEM

Not all streets may be shown on map or listed in street guide.



Skylife Graphics

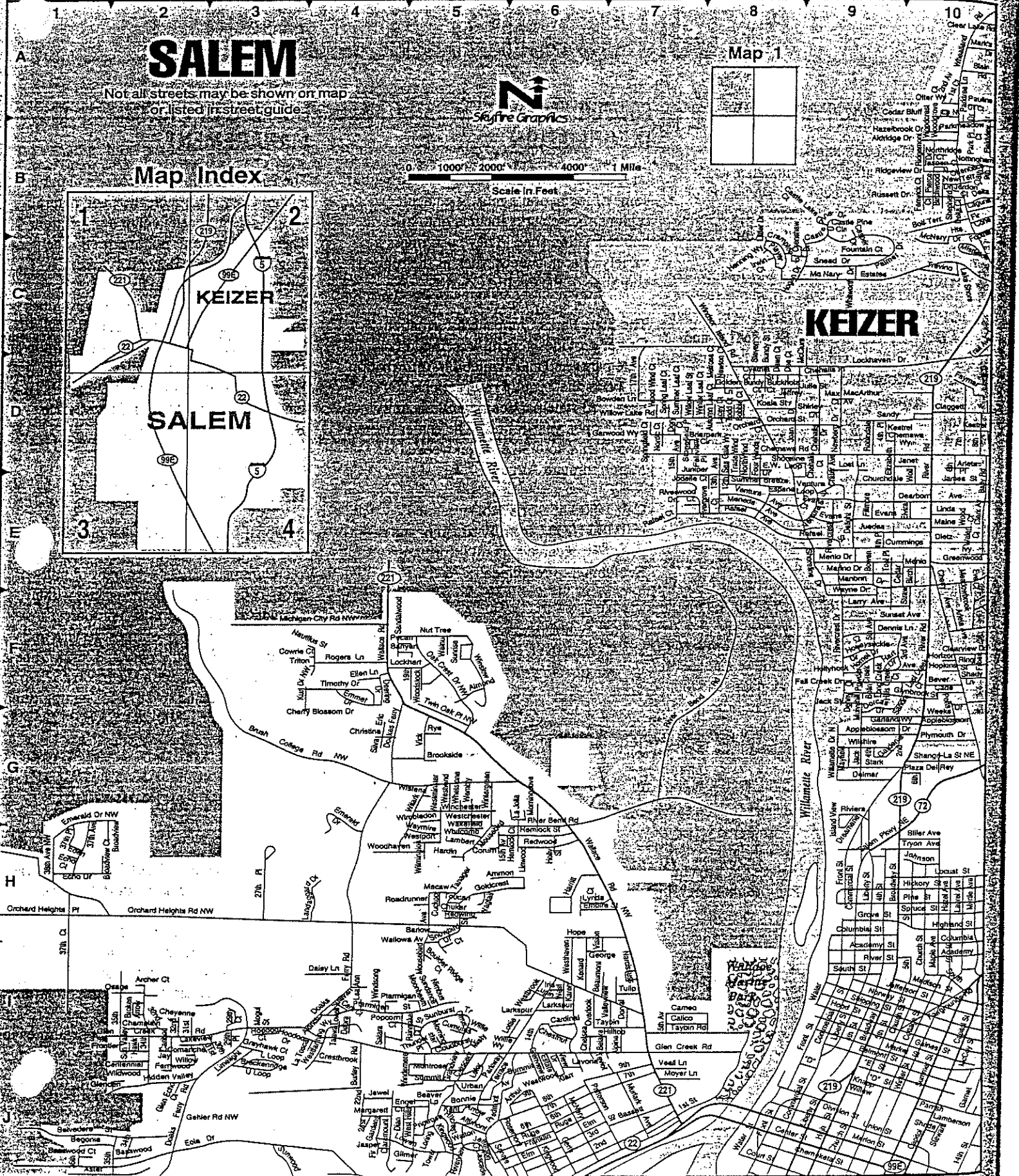
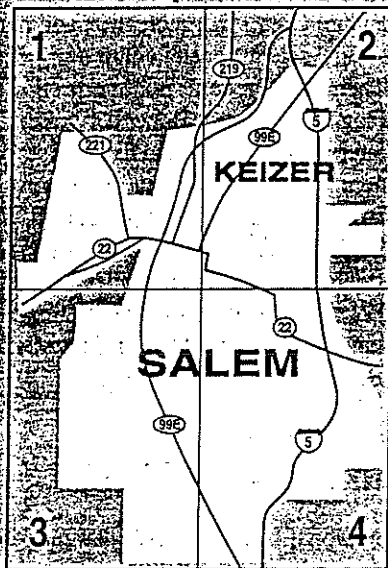
Map 1



0 1000' 2000' 4000' 1 Mile

Scale in Feet

Map Index



State of Oregon
Department of Forestry / Department of Re
Notification Number: 95-552-30379

15

Attached is the processed information from the Notification of Operation and/or
Please review this information and retain for future referenc

- [X] - Notice is given to the State Forester that an operation will be conducted on the lands described herein (ORS 527.670).
- [X] - A Permit to Operate Power Driven Machinery is issued for the lands described herein (ORS 477.625). EXPIRES END OF 1995.
- [] - A Permit to Clear Rights-of-Way is issued for the lands described herein (ORS 477.685).
- [X] - A Notice is given to the State Forester and the Department of Revenue of the intent to harvest timber (ORS 321.550).



I. WHERE TIMBER HARVESTING IS A PART OF THE PROPOSED OPERATION:

District: West Oregon
Office: Dallas
County: Yamhill
WOSTOT:

- A. NOTICE TO TIMBER OWNER: Party owning the harvested timber at the point it is first measured is shown in the section marked TIMBER OWNER and is responsible for payment of the Oregon Timber Taxes.
- B. NOTICE TO LANDOWNER: Party shown in the section marked LANDOWNER is responsible for reforestation of the site if so required.

Date Received: 4/20/95
Time Received: 1338

II. PRIOR APPROVAL BY THE STATE FORESTER AND WRITTEN PLANS:

15 DAY WAITING PERIOD REQUIRED
Waived by Eldon Yates 4/21/95

- [] - A PRIOR APPROVAL may be required before certain activities can commence on the Operation.

***** NOTICE *****
The State Forester has determined the following PROTECTED RESOURCES are located within or adjacent to your operation area:

A WRITTEN PLAN may be required for the situations indicated by an [X] Below. Approval of a WRITTEN PLAN or a WRITTEN WAIVER must be obtained from the Forest Practices Forester before any portion of the OPERATION may commence.

- [] - Within 100' of a large lake or Type F or Type D stream. [OAR 629-24-113(a)]
- [] - Within 300' of a wildlife resource site listed in the 1984 ODF/ODFW Cooperative Agreement. [OAR 629-24-113(b)]
- [] - Within 300' of any resource identified in the 700, 800, or 2300 series administrative rules. [OAR 629-24-113(c)]
- [] - Within 300' of a state or federally listed threatened or endangered wildlife resource site. [OAR 629-24-113(d)]

Operator:
Russell Henry
Henry Dozing
4882 Lancaster Dr. #23
Salem, OR 97305-1742
Phone: 392-2569

Landowner:
Jack Temple
20501 SE Cherry Blossom Ln.
Amity, OR 97101
Phone: 835-3843

Please contact the Forest Practices Forester on the Unit Information sheet for further information on requirements that may be necessary to meet before activities/operation begin.

Timberowner:
Russell Henry

4882 Lancaster Dr. #23
Salem, OR 97305-1742
Phone: 392-2569

Signed by: Russell Henry - Representing the Operator

Henry Dozing
Russell Henry
4882 Lancaster Dr. #23
Salem, OR 97305-1742

Michael W. Templeton

James E. Brown
State Forester

District Forester

4/21/95

UNIT INFORMATION

Page: 1

Notification#: 95-30379

FPF: Eldon Yates
Phone: 623-8146

FP	L
FPA	L

Activities: Clear cut

Site: No Protected Waters within 100 ft
No mass soil movement
Slope of 0% to 35%

Unit#: 1

Start Date: 5/01/95 End Date: 12/31/95

Acres 9	Est Harvst MBF	Rd Constr Ft
------------	-------------------	-----------------

Methods: Dozer

Government Lots	N		E		N		W		S		W		S		E		S		T W P	R G E	Harv Unit#	Reg Use		
	n	n	s	s	n	n	s	s	n	n	s	s	n	n	s	s	E	C						
																	33		04S		03W			WV1

Watershed: n/a
Special Concerns: Timber Age < 30 Years

(55204684)
Active

HENRY DOZING & EXCAVATING
 5510 WINDSOR IS. RD. #39
 KEIZER, OR 97303
 (503) 390-2569

DATE 9-9- 19 74

TO _____

ADDRESS CAL-ORE PARTNERS

100 SOUTH ST. HENRI

CITY _____ STATE _____ ZIP _____

SALVADORA AR 72115

TERMS _____ AMOUNT PAID _____

ARSA ON PROGRESS 10000

PLEASE RETURN THIS PORTION WITH YOUR PAYMENT

DATE	DESCRIPTION	CHARGES	CREDITS	BALANCE
<u>9-9-74</u>	<u>PLUMBING + BRUSH DISPOSE</u>			
	<u>SCRETS ON SULLIVAN BLVD</u>	<u>1500</u>	<u>150000</u>	<u>0</u>
<u>9-9-74</u>	<u>PLUMBING + BRUSH DISPOSE</u>			
	<u>DRIVE THROUGH REST STOP ST.</u>	<u>1510.00</u>	<u>151000</u>	<u>0</u>
	<u>PAID IN FULL 7-9-74</u>			
	<u>THINK LINE</u>			
	<u>RUSSELL R HENRY</u>			
	<u>2.51*</u>	<u>541.24</u>	<u>2774</u>	

16

STATEMENT



17



81

Willamette Valley Communications
Daily Burning Information

BURNING INFORMATION

TUESDAY AUGUST 9, 1994 THE DEPARTMENT OF AGRICULTURE ADVISES THAT BURNING IS ALLOWED:

4TH CLASS AGRICULTURAL BURNING 1100 - 2000 HRS.
STACK BURNING 1100 - 2000 HRS.
PROPANE BURNING 1100 - 2000 HRS.
PREP BURNING 1000 - 1300 HRS.

MESSAGE CONTINUED

PROJECTED WEATHER FACTORS

TEMP. 80

HU? 39%

AM LIGHT & VARIABLE

PM NORTHWEST AT 7 MPH

F.S.I. 61

DEPARTMENT OF STATE POLICE
OREGON EMERGENCY MANAGEMENT DIVISION
DEPT. DUTY OFFICER / R KIRK

Backyard burning is prohibited within six miles
of the Salem/Keizer City limits and
within three miles of any city
having a population of one-thousand to
45-thousand people.

Agricultural Burning is allowed by permit only
within the Salem City limits, then only on days
when agricultural burning is allowed.

To report an illegal burning incident, call 588-6111

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BURN# 588-6420

8-10-94

After discussion with Mr. Henry & neighboring Departments, it is clear that to much confusion exists to charge the recovery fee. Spring Valley - DEQ & Dept of Ag had given permission to Ag Burn. They do not utilize written permits.

July 30th to August 9th NO BURN

CLEARED BRUSH FROM July 30th to August 9th with Mr. Justice to stop burning

LARGEST QUANTITY OF BRUSH BURNED JULY 30th FIRE

AUGUST 9th FIRE SMALL BURN

REAL ESTATE SIGN WAS NOT POSTED FOR 6 MONTHS AFTER BURNING

CLEARING & BURNING DEBRIS FROM WOOD CUTTING OPERATION

HENRY'S RESPONSIBILITY TO CLEAR WHEN HOUSING DEVELOPMENT STARTS

SEE DICTIONARY FOR MEANING OF DEBRIS

SEE DICTIONARY FOR MEANING OF CROOP

20

SALEM FIRE DEPARTMENT BURNING INCIDENT REPORT



Dear Citizen:

In response to a citizen complaint, the Salem Fire Department responded to and investigated a report of illegal burning at 3300-3400 Aster NW
Salem

The Fire Department is required by Administrative Rules of the State Department of Environmental Quality (adopted by reference by the Oregon State Fire Marshal) to report all findings of illegal burns. By action of your governing body, you will also be charged a fee for the Department's response if the fire is considered illegal. The fee is based on an hourly rate per fire vehicle/crew with a 1/2 hour minimum.

Through my investigation, I have concluded that the burn is illegal for the reason(s) listed on this notice.

You may be contacted by DEQ, and you will most likely be billed by the City for the Fire Department's response. If you are billed by the City, you may request a review of any unique/mitigating circumstances by calling 588-6245.

We would like to work with you in order to prevent any future illegal burns. If you have any questions or would like additional burning information, please call the BACKYARD BURNING HELP-LINE 588-6280.

Respectfully,

T. Wheel

7-30-94

Fire Department Representative Date

~~NO BURN DATA 7-8-94~~

THIS REPORT MUST BE COMPLETED BY THE COMPANY OFFICER:

- Whenever dispatched to a burning complaint whether or not anything is found.
- If dispatched to a different type of incident, eg. house fire, but upon arrival it is determined to be an unauthorized or authorized burn.
- When a Company happens upon a burn it should be construed as an unauthorized burn reported to Dispatch and clear code

22

Original - To Responsible Pa
Copy - Information Serv

UNAUTHORIZED BURNING (DEQ Referral Report Required)

- No Valid Salem Fire Department burn permit available on site or in close proximity. (City of Salem Only);
- Burn occurred outside of days or hours when burning was authorized;
- The smoke emitted was offensive to citizens reporting the burn. (Dense, drifting smoke crosses the property of others, streets or highways creating a public health/safety hazard);
- The burn was not properly supervised (responsible adult in constant view and close proximity of fire) and/or proper fire extinguishment (at least one garden hose) devices were not available;
- The material being burned was illegal (only branches, twigs, and leaves from plants, trees and shrubs domestic to the property can be legally burned);
- The material in the burn pile was of a size exceeding four feet in diameter by two feet high;
- The location of the residential burn pile, in relationship to other combustibles, was not safe relative to preventing a friendly fire from becoming a "hostile" fire (see note below);
- The burn is not authorized as Residential Open Burning. Only residential properties of a 4-plex, tri-plex, duplex, or single family dwelling are authorized for "domestic burning";
- The material being burned was moved from another parcel of property. (This constitutes commercial Burning).

** AUTHORIZED BURNING

- Burn site meets all conditions, rules, regulations or requirements of SFD/DEQ.
- Unable to Locate
- Smoke in the area
- BBQ/Recreation Fire
- OTHER: Stack burn out of control

* If this box is checked, return both copies to Information Services (Attn: Fire Marshal)

NOTE: The Uniform Fire Code (UFC) recognizes fifty feet (50') as the minimum distance between the fire perimeter and other combustibles (buildings, fences, trees, shrubs, etc.) This distance may be reduced if control measures ensure safe burning. Control measures include reducing size of burn pile, slow rate of burn, very favorable climatic conditions, heat shielding, and other special control measures applied by the responsible person supervising the burn.

**OREGON
STATE
Integrated
Resource &
Solid Waste
Management
P l a n**

1995-2005

**Information
U p d a t e**

1 9 9 6



Oregon State Integrated Resource & Solid Waste Management Plan 1995-2005

1996 Information Update

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ACKNOWLEDGMENTS

The Integrated Resource and Solid Waste Management Plan, 1995 - 2005, was written with the assistance of community members representing residents, solid waste service providers, disposal facility operators, recyclers, environmental groups, local government and state agency representatives. This 1996 information update to the plan was prepared by Department of Environmental Quality staff with the input and assistance of people throughout the state.

The Department of Environmental Quality continues to depend on and utilize the expertise of Oregon citizens. DEQ would like to express its sincere appreciation to the citizens who have contributed to designing programs, framing policy issues and resolving difficult problems through their participation in workgroups and advisory committees. Their contribution is reflected in the information contained in the Plan Update. It is through their enthusiasm and dedicated contribution of their time, energy and goodwill that results in a process of good government.

Advisory Committee

Resource Efficiency and Waste Prevention Model City Project

- | | |
|---|---|
| Dr. Connie Ozawa, Chair - Portland State University | Jerry Fisher - Hewlett-Packard |
| John McAllister - Legacy Portland Hospitals | Debbie Gorham - Metro |
| Keith White - Portland General Electric | Kathy Kiwala - Washington County |
| Dick Wanderscheid - City of Ashland | John Graham - Pacific Power and Light |
| Kathryn Houston - Frito-Lay, Inc. | John Nelson - City of Corvallis |
| Sandy Hart - Northwest Natural Gas | Tom Grigsby - Evanite Fiber Corporation |
| Jim Kelly - Rejuvenation, Inc. | Mike McLaren - Albany Chamber of Commerce |
| Jeff Andrews - Corvallis Disposal | |

State Solid Waste Advisory Committee

- | | |
|---|--|
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| Richard L. Barrett & Jon Lund - Willamette Industries | Max Brittingham - ORRA |
| Sue Densmore - Rogue Waste Systems | Doug Coenen - WMX |
| Susan Keil - City of Portland | Meg Lynch - AOR |
| Susan McHenry - Pendleton Sanitary Service | Betty Patton - Environmental Practices |
| Craig Starr - Lane County Public Works | Ray Steinfeld - Steinfeld's Products |
| Chris Taylor - OSPIRG | |

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INTRODUCTION

This 1996 information update to Oregon's Integrated Resource and Solid Waste Management Plan, 1995 - 2005 is prepared in accordance with ORS 459A.020. The state Solid Waste Management Plan was adopted by the Environmental Quality Commission in January, 1994. The Department of Environmental Quality is required to review the plan, provide updated information to the public and local governments every two years and update and make policy changes to the plan as needed.

This plan update contains information and status updates only. The plan as adopted in January, 1994 is still current and sets appropriate policy direction for the state's solid waste management programs. No changes are recommended to the plan as a part of this update.

This 1996 Plan Update contains updated data and status information related to solid waste generation, waste prevention, recovery, disposal, waste composition, and household hazardous waste. The information in this publication is a companion volume to the other solid waste plan publications. They are:

- Oregon State Integrated Resource & Solid Waste Management Plan 1995 - 2005, The Plan. By the Department of Environmental Quality. January, 1994. 36p.
- Oregon State Integrated Resource & Solid Waste Management Plan 1995 - 2005, Background Document. By the Department of Environmental Quality. January, 1994. 349p.

These documents along with the 1996 Plan Update are available from the Oregon Department of Environmental Quality, 811 SW Sixth Avenue, Portland, Oregon 97204 or by calling 503 229-5913 to request a copy.



Solid Waste Management in Oregon Summary of Statewide Information

Current Status - 1994

General Trends

Based on 1994 information, Oregon continues to show a trend of increasing the amount of material recovery and recycled solid waste. Even though the state has made major strides to decrease the amount of waste disposed and increase the amount of material recovered to 32.5% of the municipal solid waste stream, overall generation of waste continues to rise each year. The 1994 per capita waste generation rate in Oregon is 6.1 pounds per day.

More stringent federal municipal landfill requirements have resulted in the closure of about 30% of the landfills that were operating in 1991. This has resulted in wastes being transported longer distances for ultimate disposal. However, with 65 disposal facilities (landfills and incinerators) continuing to operate, Oregon has adequate disposal capacity overall.

The amount of waste received from other states for disposal in Oregon continues to increase. The tonnage has doubled since 1991.

Waste Generation

Oregon's population in 1994 was 3,082,000, an increase of 103,000 people from 1992. The total amount of municipal solid waste generated in Oregon rose for the third year in a row, from 3,102,778 tons in 1992 to 3,437,255 tons in 1994 (figure 1). While population increase has increased the overall amount of municipal solid waste, the per capita waste generation rate has also increased, from 5.7 pounds per person per day in 1992 to 6.1 pounds per person per day in 1994 (figure 2).

Figure 2 below shows that, per person, Oregonians continue to consume more materials and resources with each passing year. Using resources efficiently is important for a sustainable society and to preserve our quality of life. It is also important to the state's economic competitiveness in a world market. The trend of increasing waste generation shows that we could improve in using our resources as efficiently as possible.

Annual Waste Generation

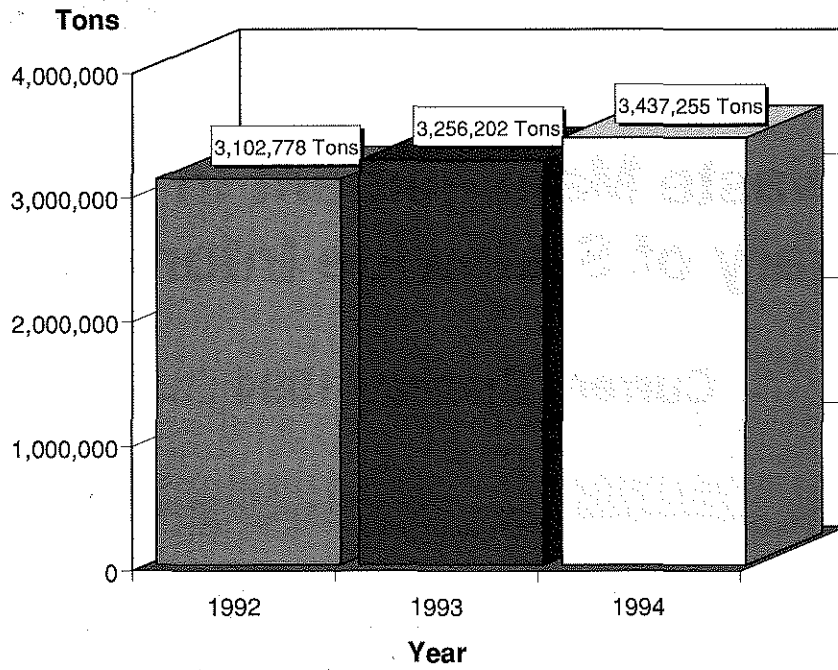


Figure 1

Oregon Per Capita Waste Generation

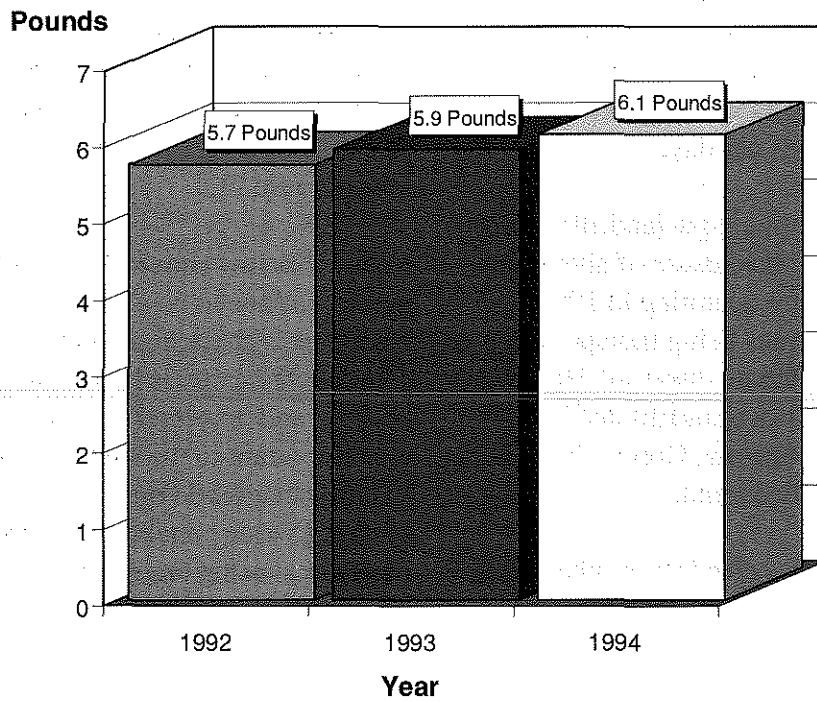


Figure 2

Waste Characterization

The Department of Environmental Quality conducted a waste characterization study in 1994 that was an update to the 1992-93 study. Statistical sampling of municipal solid waste destined for municipal disposal facilities, and measured by weight, revealed that the three largest waste streams continue to be paper, food waste, and yard waste. These materials are recoverable. Figure 3 shows the composition of the municipal waste stream in Oregon in general categories. For details on the study, see Section 5 of this report.

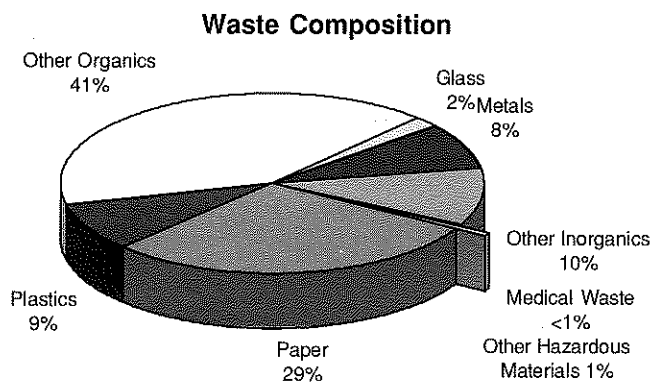


Figure 3

Waste Recovery Statewide

Oregon has established in state law a 50% statewide recovery goal for the year 2000. Interim watershed recovery rates as established for 1995 range from 7% in rural counties to 40% in the Portland metropolitan area. In 1994 the statewide recovery rate was 32.5% (figure 4).

Oregon Total Waste Recovered & Disposed

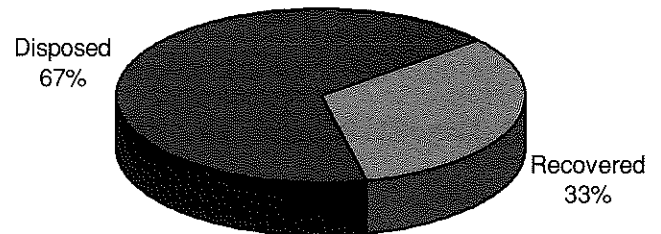


Figure 4

Since the state first started measuring the recovery rate for municipal solid waste in 1992 there has been a steady increase from 27%. Figure 5 shows the trend in statewide recovery rates over the last few years.

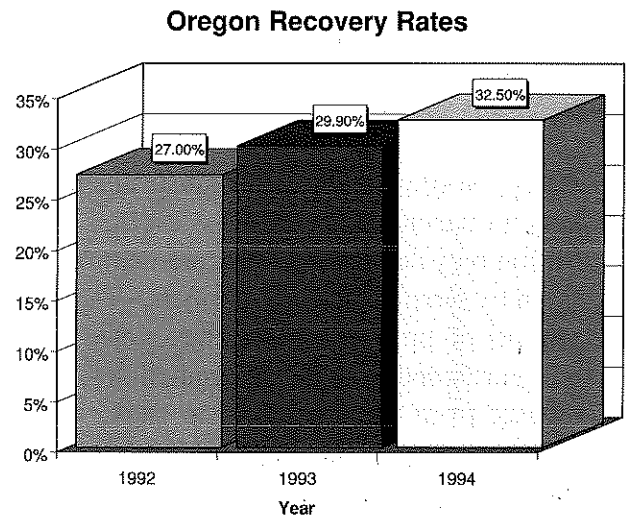


Figure 5

All waste materials, with the exception of metals, showed an increased recovery in 1994. Yard debris showed the largest increase (27%, or a 56,133 ton increase), followed by plastic (26%, or a 3,896 ton increase). Overall tonnage recovered in 1994 was 1,118,914 tons.

Figure 6 shows a breakdown of materials recovered from the municipal waste stream in 1994.

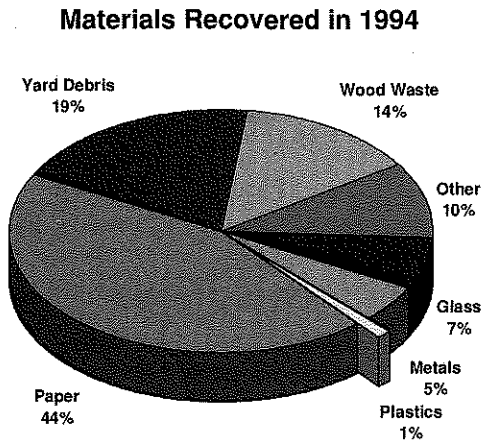


Figure 6

Several factors have contributed to the increased success of Oregon recycling and material recovery programs since 1991.

- Larger Northwest capacity and stronger markets for paper;
- Strong recycled product procurement program by Oregon state government. The number of product types with recycled content purchased by state government has increased from 4 in 1990 to 17 in 1994. The dollars vested in “buy recycled” programs has increased almost ten fold, from \$4.9 million in 1991 to \$42.3 million in 1994;
- An increase in disposal costs in some areas of the state, creating an incentive for people to recycle;
- More comprehensive local collection programs for recyclable materials - from better education to increased numbers and types of materials collected;

- Expanded local focus on collection of materials from the commercial sector;
- New movement toward material recovery facilities (MRF’s) that can sort clean mixed source separated materials, allowing for more types of materials to be economically collected through residential curbside collection programs;
- More than 95% of the communities in Oregon with population over 4,000 have residential curbside collection programs for source separated recyclables;
- Increased recovery programs for construction and demolition debris, particularly wood waste.

More detailed information and data on material recovery for each watershed is contained in Section 4 of this report.

Disposal

In Oregon, solid waste is disposed by landfilling, incineration, and incineration for energy recovery. The primary method of disposal is landfilling. Figure 7 shows the percentages of waste disposed in Oregon by each method. The total tonnage disposed at permitted municipal solid waste disposal facilities in Oregon in 1994 was 3,418,222 tons. This data includes all waste disposed at municipal solid waste disposal facilities, including some industrial solid waste and out of state waste as well as all municipal solid waste.

**Waste Disposed in Oregon
1994**

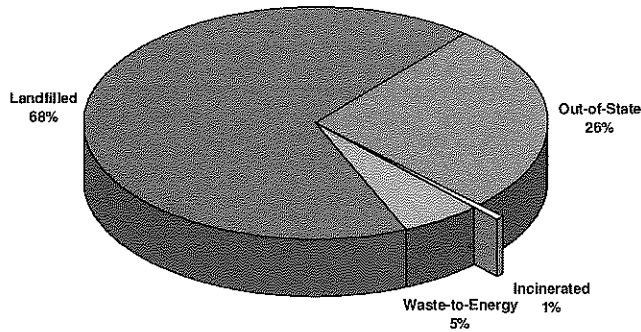


Figure 7

Out-of-State Waste Disposed in Oregon

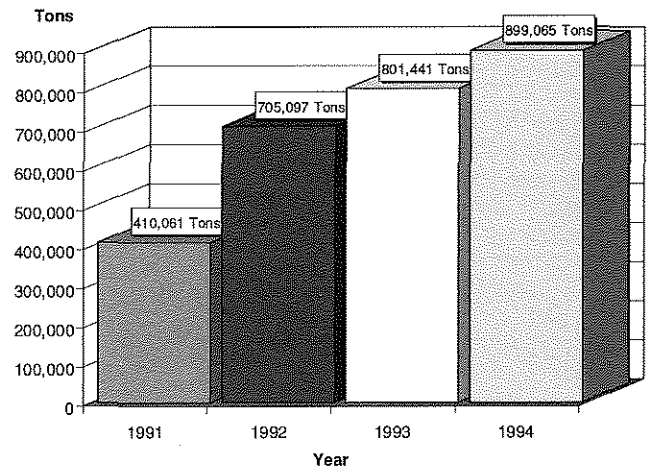


Figure 8

Out of State Waste

Oregon imports solid waste from other states for disposal. The amount of waste imported for disposal at Oregon permitted facilities continues to rise. Figure 8 shows the trend from 1991 to 1994, where the amount of waste imported into Oregon for disposal has more than doubled. In 1991 410,061 tons of out of state waste was disposed and in 1994 the amount was 899,065 tons.

Disposal Capacity

Between 1991 and 1994 28 landfills in Oregon have closed or notified their intent to close. Even so, looking at the rate of fill and the number of permitted landfills, Oregon continues to enjoy adequate disposal capacity on a statewide basis for the foreseeable future. The trend is toward fewer local landfills and more regional landfills that have greater long-term capacity. Waste is being hauled increasingly greater distances for ultimate disposition in many parts of the state.

More detailed information on the status of disposal facilities is in Section 2 of this report.

1994 Disposal Status

Summary

The 1991 Oregon Recycling Act (SB 66), passed unanimously by the Oregon Legislature requires the Department of Environmental Quality (DEQ) to develop a state solid waste management plan and periodic update that will guide future solid waste management in Oregon. As part of this effort this 1996 update on solid waste disposal provides data and information on the status of solid waste disposal in the state of Oregon based on 1994 data.

This report addresses information on municipal solid waste disposal facilities and does not include information about industrial solid waste disposal facilities.

The information in this report is based on information supplied to the DEQ by disposal site operators, counties, and records maintained by the DEQ.

Key findings are:

- At the beginning of 1994 there were 78 active municipal solid waste (MSW) disposal sites operating in the state of Oregon. The 78 operating disposal sites included; 76 MSW land-

fills, 1 Waste to Energy facility, and 1 solid waste incinerator. By the end of 1994, 13 MSW landfills had closed or had been converted to transfer stations leaving the state with 63 municipal solid waste (MSW) landfills, 1 waste to energy (WTE) facility, and 1 incinerator operating for a total of 65 MSW disposal facilities. Of the 63 MSW landfills, (WTE and Incinerator facilities excluded) 7 landfills received construction and demolition and inert material only. By contrast at the end of 1992, there were 86 municipal solid waste facilities (excluding transfer stations) operating in the state of Oregon. During this two-year period 21 facilities have closed or have been converted to transfer stations.

- In 1994 the annual per capita disposal is .86 tons for municipal solid waste generated only in Oregon. During 1991 the annual per capita disposal for waste generated only in Oregon was .94 tons. This reflects a .08 ton per capita decrease. In 1994, 25% of the municipal solid waste disposed in Oregon was imported from outside the state, as compared to 1991 when only 13% of the total waste disposed in Oregon was imported from out of state.

Study Methodology

The methodology employed for this section of the plan update on the current MSW disposal status for the state of Oregon involved the following components:

- A thorough review was performed using the DEQ Solid Waste Disposal Report/Fee Calculation forms submitted by each permitted solid waste disposal facility (excluding transfer stations) during 1994 to determine the tonnage's disposed at these facilities.
- DEQ permit status records were also used to determine the closure status of the permitted landfills in Oregon.
- Telephone interviews were conducted with county officials, city officials, private hauling companies, and disposal site operators in order to collect and confirm information regarding the current operation or closure of disposal facilities in the state of Oregon.
- The Metro Solid Waste Information System report for 1994 was used for collection of data pertaining to solid waste disposal in the Portland metropolitan area.

Disposal Methods

At the beginning of 1994, there were 78 disposal sites (excluding transfer stations) located throughout the three regions of the state that were accepting municipal solid waste (MSW).

The 78 disposal sites all operated with DEQ permits and included:

- 71 Municipal Solid Waste Landfills.
- Five Construction and Demolition Landfills.
- One Energy Recovery Facility.
- One Incinerator.

Five construction and demolition landfills continue to operate with DEQ permits and for the purpose of this report are included in the total number of general purpose landfills.

Approximately 95% of all waste disposed in 1994 was disposed of at the 76 MSW landfills. Of the remaining waste 4.2% was disposed of at the Energy Recovery Facility, while .8% was disposed at the Beaver Hill Incinerator.

Facilities Receiving 75,000 Tons or More of Waste

In 1994 there were nine facilities that received 75,000 tons or more of MSW. Four of these facilities are "regional" landfills by statutory definition. ORS 459.005(22) defines a "Regional disposal site" as a disposal site that receives or is designed to receive more than 75,000 tons of solid waste a year from outside the immediate service area in which the disposal site is located. For clarification, "immediate service area" is defined as: "the county boundary of all counties except a county that is within the Metropolitan Service District" (ORS 459.005(22)). These regional facilities include;

- The Coffin Butte Landfill, located in Benton county.
- The Finley Buttes Landfill located in Morrow county.
- The Columbia Ridge Landfill located in Gilliam county.

- The Riverbend Landfill located in Yamhill county.

Five facilities that received more than 75,000 tons of solid waste in 1994, but are not classified as regional disposal sites by definition are:

- The Short Mountain Landfill located in Lane county.
- The Hillsboro Demolition Landfill located in Washington county.
- The Energy Recovery Facility at Brooks located in Marion county.
- The Roseburg Landfill located in Douglas county.
- The Southstage Landfill located in Jackson county.

Ownership of Sites

Counties and cities combined owned 71% (55 facilities) of all the municipal solid waste (MSW) landfills and disposal facilities (excluding transfer stations) that were operating in 1994. The remaining 29% of the facilities were privately owned. The facilities owned and operated by cities and counties handled 19% of all the wastes disposed in the state during 1994. Although private companies owned only 29% of the facilities in the state, these facilities handled 81% of the total waste disposed in the state of Oregon during 1994 (See table 3).

Regional Disposal and Amounts Disposed

This report divides solid waste disposal activities in accordance with the State of Oregon's De-

partment of Environmental Quality three geographical regions. The three DEQ regions include: the Eastern region, the Western region, and the Northwest region.

- **Eastern Region:** The following counties are located in the Eastern region: Hood River, Wasco, Jefferson, Deschutes, Klamath, Lake, Crook, Wheeler, Sherman, Gilliam, Harney, Grant, Morrow, Umatilla, Union, Wallowa, Baker, and Malheur.
- **Western Region:** There are twelve counties located in the Western region, they include: Jackson, Josephine, Curry, Coos, Douglas, Lane, Linn, Benton, Lincoln, Polk, Marion, and Yamhill.
- **Northwest Region:** The Northwest region has six counties, they include: Clatsop, Tillamook, Columbia, Washington, Multnomah, and Clackamas.

Although it is the most populated region in the state, very little waste that is generated in the Northwest region is disposed of within the Northwest region. Instead much of the waste generated in the Northwest region is transferred to the Eastern region for disposal.

At the beginning of 1994 there were 78 operating solid waste disposal facilities in the state of Oregon; however, by the end of 1994 this number had been reduced to 65 facilities that were operating within the state of Oregon. During 1994 the regional distribution of these facilities were:

- Eastern Region: 55
- Western Region: 21
- Northwest Region: 2

(See Table 5)

In late 1994, twelve of the 78 general purpose MSW landfills closed. Therefore the 65 operating sites are distributed throughout the state in the following manner:

- Eastern Region: 47
- Western Region: 16
- Northwest Region: 2

Of the 3,626,589 tons of MSW that was disposed in the state of Oregon during 1994, 58% was disposed in the Eastern region, 6% was disposed in the Northwest region, and 36% was disposed in the Western region. (See Table2)

METRO Disposal Amounts

According to the Metro Solid Waste Information System Report, 802,806 tons of the Municipal Solid Waste that was in the Metro region was transferred to the Columbia Ridge Landfill lo-

cated in the Eastern Region. This amount represents approximately 54% of the total municipal solid waste that was disposed of at this facility, and 22% of the total MSW disposed of statewide in 1994. This is an increase of 135,795 tons over the amount disposed in this landfill that came out of the Metro region in 1992.

County Disposal And Amounts Disposed

Of the 55 Eastern region facilities that received MSW in 1994, 42 (76%), were located in seven counties (Baker, Grant, Harney, Klamath, Lake, Malheur, and Umatilla). Although these counties are host to 76% of the landfills in Oregon, combined they take in less than 3.5 % of the total wastes disposed in Oregon. (There are 18 counties in the Eastern region of Oregon.) At the end of 1994, 72% of the landfills in Oregon were lo-

	Tonnage Received	Percent Total**
Columbia Ridge Landfill	1,479,333	41%
Short Mountain Landfill	248,691	7%
Riverbend Landfill	190,195	5%
Hillsboro Landfill (Demo)	160,014	4%
Coffin Butte Landfill	268,052	8%
Energy Recovery Facility at Brooks	146,437	4%
Finley Buttes Landfill	258,088	7%
Roseburg Landfill	94,922	3%
Southstage Landfill	87,807	2%
Total	2,933,539 Tons	81%

**percentages may not equal 100%

Table 1
NUMBER OF SITES AND AMOUNT DISPOSED OF BY REGION - 1994

REGION	DISPOSAL SITES	AMOUNT DISPOSED FROM OUT OF STATE	AMOUNT DISPOSED FROM IN STATE (TONS)
Eastern	55	891,151 (99%)	1,205,008 (44%)
Northwest	2	6,667(>.05%)	220,921 (8%)
Western	21	1,247(>.05%)	1,301,595 (48%)
TOTAL	78	899,065	2,727,524

Source: DEQ

* Percents may not add up to 100%

Table 2
TOTAL WASTE AMOUNTS DISPOSED BY REGION - 1994

REGION	DISPOSAL SITES	TOTAL DISPOSED	PERCENTAGE AMOUNT
Eastern	55	2,096,159	58%
Northwest	2	227,588	6%
Western	21	1,302,842	36%
TOTAL	78	3,626,589	100%

Source: DEQ

* Percents may not add up to 100%

**Table 3
FACILITY OWNERSHIP & TONNAGE - 1994**

Site Ownership	Sites	Amount of Waste Disposed (Tons)
County	44 (57%)	247,249 (7%)
City	11 (14%)	424,481 (12%)
Private	23 (29%)	2,936,892 (81%)
TOTAL	78(100%)	3,626,589(100%)

* Regional (Metro); State (ODOT); Federal (US Army, USFS, BLM)

Source:DEQ

**Table 4
FACILITY OWNERSHIP AND TONNAGE - 1991**

Site Ownership	Sites	Amount of Waste Disposed (Tons)
County	51 (54%)	687,800 (22%)
City	17 (18%)	58,149 (2%)
Private	23 (24%)	2,293,037 (75%)
Other*	3 (4%)	36,674 (1%)
TOTAL	94 (100%)	3,075,660 (100%)

* Regional (Metro); State (ODOT); Federal (US Army, USFS, BLM)

Source:DEQ

**Table 5
SITES THAT RECEIVED WASTE - 1994**

Region	County Sites	City Sites	Private Sites	Total
EASTERN	34	9	12	55
NORTHWEST	0	0	2	2
WESTERN	10	2	9	21
TOTAL	44 (56%)	11 (14%)	23 (29%)	78(100%)

Source:DEQ

OREGON SOLID WASTE DISPOSAL SITES AMOUNTS OF WASTES RECEIVED--1994

DEQ	REGION	COUNTY	DISPOSAL SITE (LANDFILLS, WTE, INCINERATORS)	PERMIT (OWNER)	AMOUNT IN STATE	DISPOSED OUTOF STATE	1994 TOTAL	% OF TOTAL Disposed
Eastern	Baker	Baker	Halfway Disposal Site	City	0	0	0	0.000%
Eastern	Baker	Baker	Haines Disposal Site	City	200	0	200	0.006%
Eastern	Baker	Baker	Huntington Disposal Site	City	351	0	351	0.010%
Eastern	Baker	Baker	Richland Disposal Site	City	0	0	0	0.000%
Eastern	Baker	Baker	Unity Disposal Site	City	95	0	95	0.003%
Eastern	Baker	Baker	Baker Sanitary Landfill	Private	8075	0	8075	0.223%
Western	Benton	Benton	Coffin Butte Regional Landfill	Private	268052	0	268052	7.391%
Western	Coos	Coos	Joe Ney Disposal Site (Ash)	County	10536	0	10536	0.291%
Western	Coos	Coos	Bandon Landfill (Demo)	County	203	0	203	0.006%
Western	Coos	Coos	Powers Disposal Site	City	0	0	0	0.000%
Western	Coos	Coos	Beaver Hill Incinerator	County	26671	0	26671	0.735%
Eastern	Crook	Crook	Crook County Landfill	Private	9620	0	9620	0.265%
Eastern	Deschutes	Deschutes	Brothers Disposal Site	OSHD	0	0	0	0.000%
Eastern	Deschutes	Deschutes	Knott Pit Landfill	County	68460	0	68460	1.888%
Eastern	Deschutes	Deschutes	Bend Demolition Landfill	County	60473	0	60473	1.667%
Eastern	Deschutes	Deschutes	Negus Landfill	County	0	0	0	0.000%
Western	Douglas	Douglas	Roseburg Landfill	County	94922	0	94922	2.617%
Western	Douglas	Douglas	Reedsport Landfill	County	11080	0	11080	0.306%
Eastern	Gilliam	Gilliam	Columbia Ridge Regional Landfill	Private	799192	680141	1479333	40.791%
Eastern	Grant	Grant	Hendrix Landfill	County	2689	0	2689	0.074%
Eastern	Grant	Grant	Dayville Disposal Site	County	500	0	500	0.014%
Eastern	Grant	Grant	Long Creek Disposal Site	City	249	0	249	0.007%
Eastern	Grant	Grant	Prairie City Landfill	City	840	0	840	0.023%
Eastern	Grant	Grant	Seneca Disposal Site	City	190	0	190	0.005%
Eastern	Grant	Grant	Monument Disposal Site	City	161	0	161	0.004%
Eastern	Harney	Harney	Burns-Hines Landfill	Private	1815	0	1815	0.050%
Eastern	Harney	Harney	Sod House Disposal Site	County	23	0	23	0.001%
Eastern	Harney	Harney	Riley Disposal Site	County	16	0	16	0.000%
Eastern	Harney	Harney	Crane Disposal Site	County	125	0	125	0.003%
Eastern	Harney	Harney	Diamond Disposal Site	County	37	0	37	0.001%
Eastern	Harney	Harney	Frenchglen Disposal Site	County	17	0	17	0.000%
Eastern	Harney	Harney	Andrews Disposal Site	County	19	0	19	0.001%
Eastern	Harney	Harney	Fields Disposal Site	County	25	0	25	0.001%
Eastern	Harney	Harney	Drewsey Disposal Site	County	118	0	118	0.003%
Western	Jackson	Jackson	Ashland (Valley View) Sanitary Landfill	Private	19946	0	19946	0.550%
Western	Jackson	Jackson	Dry Creek Sanitary Landfill	Private	10173	0	10173	0.281%
Western	Jackson	Jackson	South Stage Landfill	Private	87807	0	87807	2.421%
Western	Jackson	Jackson	Prospect Sanitary Landfill	County	617	0	617	0.017%
Eastern	Jefferson	Jefferson	Box Canyon Disposal Site	County	8380	0	8380	0.231%
Western	Josephine	Josephine	Kerby Landfill	County	1936	0	1936	0.053%
Western	Josephine	Josephine	Grants Pass (Merlin) Landfill	City	32416	0	32416	0.894%
Eastern	Klamath	Klamath	Malin Landfill	County	0	0	0	0.000%
Eastern	Klamath	Klamath	Klamath Falls Landfill	County	61329	0	61329	1.691%
Eastern	Klamath	Klamath	Sprague River Disposal Site	County	382	0	382	0.011%
Eastern	Klamath	Klamath	Beatty Disposal Site	County	259	0	259	0.007%
Eastern	Klamath	Klamath	Bly Disposal Site	County	285	0	285	0.008%
Eastern	Klamath	Klamath	Chemult Disposal Site	County	1671	0	1671	0.046%

All Amounts Shown Measured In Tons

OREGON SOLID WASTE DISPOSAL SITES AMOUNTS OF WASTES RECEIVED--1994

DEQ	REGION	COUNTY	DISPOSAL SITE (LANDFILLS, WTE, INCINERATORS)	PERMIT (OWNER)	AMOUNT IN STATE	DISPOSED OUT OF STATE	1994 TOTAL	% OF TOTAL Disposed
	Eastern	Klamath	Crescent Disposal Site	County	1064	0	1064	0.029%
	Eastern	Lake	Lake County (View) Landfill	County	3858	0	3858	0.106%
	Eastern	Lake	Adel Disposal Site	County	163	0	163	0.004%
	Eastern	Lake	Plush Disposal Site	County	178	0	178	0.005%
	Eastern	Lake	Paisley Disposal Site	City	422	0	422	0.012%
	Eastern	Lake	Summer Lake Disposal Site	County	200	0	200	0.006%
	Eastern	Lake	Silver Lake Disposal Site	County	300	0	300	0.008%
	Eastern	Lake	Christmas Valley Disposal Site	County	416	0	416	0.011%
	Eastern	Lake	Fort Rock Disposal Site	County	359	0	359	0.010%
	Western	Lane	Delta Sand & Gravel Demo Landfill	Private	67956	0	67956	1.874%
	Western	Lane	Short Mountain Landfill	County	248691	0	248691	6.857%
	Western	Lincoln	Agate Beach Balefill	Private	0	0	0	0.000%
	Western	Lincoln	South Lincoln County Landfill	Private	11027	0	11027	0.304%
	Western	Lincoln	North Lincoln Disposal Site	Private	676	0	676	0.019%
	Eastern	Malheur	Foothill Sanitary Landfill	Private	2640	0	2640	0.073%
	Eastern	Malheur	Lytle Boulevard Landfill	County	4734	981	5715	0.158%
	Eastern	Malheur	Juntura Disposal Site	County	11	0	11	0.000%
	Eastern	Malheur	McDermitt Disposal Site	County	50	200	250	0.007%
	Eastern	Malheur	Jordon Valley Landfill	County	200	20	220	0.006%
	Western	Marion	Brown's Island Demolition Landfill	County	25722	0	25722	0.709%
	Western	Marion	North Marion County Disposal Fac.	County	1476	0	1476	0.041%
	Western	Marion	Salem Airport Disposal Site	City	7314	0	7314	0.202%
	Western	Marion	Brooks Energy Recovery Facility	Private	185388	45	185433	5.113%
	Eastern	Morrow	Finley Buttes Regional Landfill	Private	53369	204719	258088	7.117%
	Eastern	Sherman	Sherman County Landfill	County	200	0	200	0.006%
	Eastern	Umatilla	Pendleton Regional Landfill	Private	10501	0	10501	0.290%
	Eastern	Umatilla	Pilot Rock Landfill	Private	0	0	0	0.000%
	Eastern	Umatilla	Milton-Freewater Landfill	Private	5070	79	5149	0.142%
	Eastern	Umatilla	Umatilla Butte Landfill	Private	7311	234	7545	0.208%
	Eastern	Umatilla	Athena (Rahn's) Landfill	Private	3501	0	3501	0.097%
	Eastern	Union	Fox Hill Landfill	Private	21158	0	21158	0.583%
	Eastern	Wasco	Shaniko Disposal Site	City	0	0	0	0.000%
	Eastern	Wasco	Antelope Disposal Site	City	0	0	0	0.000%
	Eastern	Wasco	Northern Wasco County Landfill	Private	55844	4777	60621	1.672%
	Eastern	Wallowa	Troy Disposal Site	County	0	0	0	0.000%
	Eastern	Wallowa	Imnaha Disposal Site	County	0	0	0	0.000%
	Eastern	Wallowa	Ant Flat Landfill	County	7100	0	7100	0.196%
	Northwest	Washington	Lakeside Reclamation (Demo)	Private	62147	2613	64760	1.786%
	Norhtwest	Washington	Hillsboro Landfill (Demo)	Private	158774	4054	162828	4.490%
	Eastern	Wheeler	Fossil Disposal Site	County	416	0	416	0.011%
	Eastern	Wheeler	Spray Disposal Site	County	137	0	137	0.004%
	Eastern	Wheeler	Mitchell Disposal Site	City	210	0	210	0.006%
	Western	Yamhill	Riverbend Regional Landfill	Private	188986	1202	190188	5.244%
				TOTALS	2,727,524	899,065	3,626,589	100%
				Out of State Waste %		25%		

All Amounts Shown Measured In Tons

cated in the Eastern region. During 1994 these landfills received 99% of the out of state waste that was disposed in Oregon, and 45% of the waste that was generated in the state. At the end of 1994 72% of the remaining landfills are still located in the Eastern region of the state. These landfills continue to receive 99% of the waste imported from out of state, and 45% of the waste that is generated in the state.

Oregon as a Host State

In 1994, the state of Oregon imported approximately 899,065 tons of waste from other states. This amount equaled 25% of the total amount of waste that was disposed of in the state of Oregon in 1994. In 1992, the amount of waste imported to the state of Oregon for disposal made up 21% of entire waste disposed within the state. In 1993, this number rose to 23% of total waste. Between 1992 and 1994, the state of Oregon imported nearly 2,413,101 tons of waste from other states, making up 23% of the total municipal solid waste disposed of in the state during that time period. (See rate of fill table 1994)

Of the 899,065 tons of waste received from out of state, 98% of this waste was disposed of in the Eastern region. The remaining two percent was disposed in the Northwest and Western regions. This amount represents 25% of the total solid waste disposed of in Oregon.

In 1994 the state of Oregon exported approximately 8,316.5 tons of municipal solid waste to the Clay Peaks Landfill in Payette, Idaho.

Columbia Ridge Landfill

Located in the Eastern region, Gilliam county is home to the Columbia Ridge Landfill, which currently is the largest landfill in the state. Approximately 1,479,333 tons or 45% of the total waste disposed of in the state of Oregon is disposed of at this landfill. During 1994 approximately 53% of the waste disposed in Gilliam county was generated in-state; however, 680,741 tons of MSW imported from out of state was also disposed in Gilliam county. This imported waste reflects 19% of the total MSW that is disposed of in the state of Oregon.

Site Closures

Between 1992 and the end of 1994, 25 facilities closed in the state of Oregon. These closures were the result of wastesheds complying with the Environmental Protection Agency's Subtitle D requirements. At the time of publication it is estimated that at least nine more sites will close before June 1996, leaving the total number of active facilities in the state at 56; however, some sites that have applied for closure permits may fall under Subtitle D exemptions for smaller landfills, and may in fact choose the option of not closing. The majority of these sites are located in the Eastern region of the state.

Transfer Stations

At the end of 1994, there were approximately 95 transfer stations spread throughout Oregon. Many of these transfer stations are located on the sites of landfills that have been closed. As more wastesheds comply with EPA Subtitle D

measures, there is a possibility of Oregon becoming host to more than 100 transfer stations by 1997. Of these 95 transfer stations, 46 are located in the Western region, 37 in the Eastern region, and 12 in the Northwest region. The waste received at the transfer stations around the state is transferred to landfills within the waste-shed, or to regional landfills that operate in the vicinity. The Metro region's waste is transferred 156 miles to the Columbia Ridge facility.

1995 Summary of Collection and Disposal Rates

City	Collection Franchise		Curbside Recycling		Disposal In-County		Tip Fee	Can Rates - 1995			Can Rates - 1993			Tip Fee	Landfill
	Yes	No	Yes	No	Yes	No		1995	Mini	32 Gallon	Extra	Mini	32 Gallon		
Albany	x						\$26.75	**	\$10.35	\$9.00	**	\$10.35	\$9.00	\$26.75	Coffin Butte
Ashland	x				x		Unreported	**	\$13.20	\$13.20	**	\$12.00	\$12.00	Unreported	Valley View
Astoria	x				x		\$68.8	\$9.10	\$10.90	\$10.90	\$8.50	\$10.20	\$10.20	\$27.	Riverbend
Baker City	x				x		\$35.	**	\$9.20	\$4.60	**	\$9.20	\$4.60	\$40.	Baker Sanitary
Beaverton	x		x		x		\$75.	\$14.50	\$16.50			\$12.23	\$11.08	\$75.	Columbia Ridge
Bend	x				x		\$30.	\$9.95	\$11.25	\$5.90	\$9.95	\$11.25	\$5.90	\$30.	Knott Pit
Brookings	x				x		Tax	\$13.32	\$15.54	\$4.08	\$12.64	\$14.70	**	\$40.	Roseburg
Canby	x		x		x		\$25.83	**	\$14.40	\$11.25	**	\$13.45	\$11.25	\$75.	Riverbend
Central Point	x						\$7.00 cyd	**	\$10.75	\$7.25	**	\$10.75	\$7.25	\$46.8	Southstage
Coos Bay	x				x		\$66.	\$13.00	\$14.70	\$3.40	\$10.00	\$11.00	\$10.00	\$42.	Beaver Hill Incinerator
Coquille	x				x		\$66.	**	\$15.35	\$14.35		\$9.25	\$8.25	\$42.	Beaver Hill Incinerator
Cornelius	x				x		\$75.	\$12.05	\$12.05	\$1.35	**	\$12.44	\$11.17	\$75.	Columbia Ridge
Corvallis	x				x		\$26.75	**	\$10.35	\$9.00	**	\$10.35	\$9.00	\$26.75	Coffin Butte
Cottage Grove	x				x		\$45.	**	\$6.22	\$2.58	**	\$7.80	\$5.15	\$40.	Short Mountain
Dallas	x						\$26.75	**	\$9.30	\$3.00	**	\$8.60	\$5.75	\$26.55	Coffin Butte
Eugene		x			x		\$45.	\$7.10	\$8.50	\$8.50	\$10.35	\$11.75	**	\$40.	Short Mountain
Fairview	x						\$75.	\$15.95	\$18.05	\$10.60	\$14.85	\$17.85	\$10.50	\$75.	Columbia Ridge
Florence		x			x		\$45.	**	\$7.00	\$1.05	**	\$8.75	\$11.75	\$40.	Short Mountain
Forest Grove	x				x		\$75.	\$10.90	\$13.00	\$6.47	**	\$10.19	\$9.33	\$75.	Columbia Ridge
Gladstone	x		x		x		\$75.	\$13.45	\$14.45	\$14.45	**	\$14.05	\$14.05	\$75.	Columbia Ridge
Grants Pass	x				x		\$26.25 cyd	**	\$14.45	\$10.75	**	\$14.45	\$10.35	\$75.	Merlin
Gresham	x		x		x		\$75.	\$15.95	\$18.05	\$10.60	\$15.20	\$17.20	\$10.25	\$75.	Columbia Ridge
Hermiston	x						**	\$8.50	\$1.25		**	\$5.75	\$3.10	\$16.	Finley Butte
Hillsboro	x		x		x		\$75.	\$15.30	\$17.45	\$2.85	**	\$12.25	\$11.40	\$75.	Columbia Ridge
Hood River	x				x		\$7.00 cyd	**	\$7.50	\$1.30	**	\$7.60	\$5.10	\$35.22	North Wasco
Independence	x						\$26.75	**	\$9.50	\$2.00	**	\$8.50	\$4.40	\$26.75	Coffin Butte
Keizer	x						\$67.45	**	\$9.75	Varies	**	\$9.75	\$5.50	\$67.45	Energy Recovery Brooks
Klamath Falls	x				x		\$5.50 cyd	\$7.05	\$7.05	\$3.70	**	\$6.45	\$3.35	\$9.34	Klamath Falls Landfill
La Grande	x				x		\$3.25 cyd	\$4.50	\$8.75 *60 gallon		**	\$6.50	\$3.60	\$21.68	Foxhill Landfill
Lake Oswego	x		x		x		\$75.	\$17.00	\$19.55		**	\$13.22	\$14.07	\$75.	Columbia Ridge
Lebanon	x				x		\$26.75	**	\$10.35	\$9.00	**	\$10.35	\$9.00	\$26.75	Coffin Butte
Lincoln City	x				x		\$26.75	\$8.02	\$9.58	\$8.68	**	\$8.88	\$2.64	\$25.6	Coffin Butte
Madras							\$15.	**	\$7.23	\$5.31	N/A	N/A	N/A	N/A	Box Canyon
McMinnville	x				x		\$26.75	**	\$10.74	\$2.45	**	\$9.36	\$6.55	\$27.	Riverbend
Medford	x				x		\$7.00 cyd	**	\$10.75	\$7.25	**	\$10.75	\$7.20	\$46.8	Southstage
Milton-Freewater		x			x		\$7.00 cyd	**	\$9.05	\$3.00	**	\$9.05	\$9.05	\$38.	Milton-Freewater Landfill
Milwaukie	x		x		x		\$75.	\$13.70	\$17.25	\$14.70	\$13.70	\$17.25	\$14.70	\$75.	Columbia Ridge
Monmouth	x						\$26.75	**	\$8.75	\$2.00	**	\$8.75	\$5.30	\$26.75	Coffin Butte
Newberg	x				x		\$22.63	**	\$12.50	\$8.65	**	\$12.50	\$8.65	\$27.	Riverbend
Newport		x			x		\$26.75	\$11.50	\$14.50	**	\$11.50	\$14.50	**	\$25.6	Coffin Butte
North Bend	x						\$66.	\$13.00	\$15.00	\$3.25	\$10.25	\$11.25	\$10.25	\$42.	Beaver Hill Incinerator

Information sources include: Oregon Department of Environmental Quality, County Solid Waste Departments, City Administrators, Various Hauling Companies, and Landfill Operators

City	Collection Franchise		Curbside Recycling		Disposal In-County		Tip Fee 1995	Can Rates - 1995			Can Rates - 1993			Tip Fee 1993	Landfill
	Yes	No	Yes	No	Yes	No		Mini	32 Gallon	Extra	Mini	32 Gallon	Extra		
Ontario	x				x		\$19.	**	\$12.15	\$4.53	**	\$7.00	**	\$11.34	Clay Peaks
Oregon City	x		x		x		\$75.	\$14.25	\$17.95	\$17.95	\$14.25	\$17.95	\$17.95	\$75.	Columbia Ridge
Pendleton	x				x		**	\$12.35	\$3.80	**	\$7.60	\$3.85	\$31.35	Finley Buttes	
Portland	x		x		x		\$75.	\$20.60	\$23.60	\$6.40	\$14.60	\$17.60	\$4.50	\$75.	Columbia Ridge
Prineville	x				x		**	\$6.00	\$3.00	**	\$6.00	\$4.50	\$16.68	Prineville	
Redmond	x				x		\$30.	**	\$9.20	**	**	\$3.75	\$3.60	\$26.68	Knott Pit
Reedsport	x				x		Tax	\$5.00	\$5.90	\$5.90	\$5.00	\$5.90	\$5.90	Tax	Reedsport
Roseburg		x			x		Tax	**	\$7.25	\$5.00	**	\$7.25	\$5.00	Tax	Roseburg
Salem	x				x		\$67.45	\$8.25	\$9.90	\$2.55	\$8.25	\$9.90	**	\$67.45	Energy Recovery at Brooks
Sandy	x		x		x		\$75.	\$12.90	\$16.80	\$16.10	\$11.55	\$15.35	\$14.65	\$75.	Columbia Ridge
Seaside	x				x		\$60.41	**	\$9.17	\$3.67	**	\$7.50	\$7.50	\$26.25	Riverbend
Sheridan	x						\$26.45	**	\$8.16	\$1.93	**	\$7.50	\$5.75	\$26.25	Riverbend
Sherwood							\$75.	\$19.60	\$21.38	\$4.77	N/A	N/A	N/A	N/A	Columbia Ridge
Silverton	x						\$67.45	\$11.35	\$12.70	\$3.25	\$11.35	\$12.70	**	\$67.45	Energy Recovery at Brooks
Springfield	x				x		\$45.	\$5.30	\$7.45	\$7.45	\$5.30	\$7.45	\$7.45	\$40.	Short Mountain
St. Helens	x				x		\$61.36	**	\$13.73	\$3.14	**	\$13.73	\$10.43	\$26.25	Riverbend
Stayton	x						\$67.45	\$10.00	\$11.50	\$3.00	\$10.00	\$11.50	\$8.80	\$67.45	Energy Recovery at Brooks
Sutherlin	x						Tax	\$5.00	\$6.00	\$2.00	\$5.00	\$5.50	\$5.50	Tax	Roseburg
Sweet Home	x				x		\$26.75	**	\$12.60	\$9.00	**	\$12.60	\$9.00	\$26.75	Coffin Butte
Talent							Unreported	**	\$13.20	\$10.20	**	N/A	N/A	N/A	Valley View
The Dalles	x				x		\$21.5	**	\$9.75	\$7.75	**	\$8.75	\$6.75	3.25/cyd	North Wasco
Tigard	x				x		\$75.	\$14.25	\$16.50	**	**	\$13.10	\$13.10	\$75.	Columbia Ridge
Tillamook	x				x		\$65.	**	\$12.80	\$4.00	**	\$5.50	\$3.45	\$26.75	Coffin Butte
Troutdale	x		x		x		\$75.	\$11.75	\$14.05	\$2.90	\$14.85	\$17.85	**	\$75.	Columbia Ridge
Tualatin	x		x		x		\$75.	\$15.60	**	**	\$13.93	\$17.05	**	\$75.	Columbia Ridge
West Linn	x		x		x		\$75.	\$18.00	\$20.90	\$17.90	\$13.25	\$15.80	\$15.80	\$75.	Columbia Ridge
Wilsonville	x		x		x		\$75.	\$16.60	\$18.60	**	**	\$13.71	\$11.25	\$75.	Columbia Ridge
Woodburn	x						\$67.45	\$9.50	\$11.15	\$2.80	\$9.50	\$11.15	\$7.85	\$67.45	Energy Recovery at Brooks

All Tipping Fees Reported by Ton Unless Otherwise Noted.

Status of Oregon 1994 Recovery Rates & Recycling Programs

Part 1: Recovery Rates

Introduction and Purpose

The 1991 Legislature set a 50% material recovery goal for the state for the year 2000. To measure progress toward the statewide goal, Oregon Revised Statute 459A.010 established 1995 goals for wastesheds ranging from 7% in rural areas to 40% in the Portland metropolitan area. Wastesheds are comparable to counties except for the Metro wasteshed, which includes Clackamas, Multnomah, and Washington counties, and the city of Milton-Freewater, which is its own wasteshed.

To calculate the recovery rate for the state and individual wastesheds, DEQ's Solid Waste Policy and Programs Section has surveyed Oregon's waste haulers and private recycling companies (including drop-off centers, buy-back centers, and end users of recycled materials) in 1992, 1993, and 1994. The survey replaces the old method of calculating the recovery rate using curbside collection data and informal "best-guess" marketing analysis.

Requirement to Report

Oregon law requires that all companies surveyed respond to the Material Recovery Survey or be subject to enforcement action. However, because of the difficulty of separating post-consumer from commercial and industrial scrap metal, scrap metal dealers were exempted from mandatory reporting.

Confidentiality

Oregon law requires DEQ to keep the recovery rate survey information confidential, including any information that relates to customer lists or specific amounts and types of material collected or marketed. Because of the sensitivity of this issue, survey staff built extra precautionary measures into data collection and storage. All data collected is stored in an information system accessed only by project staff. Hard copies of surveys are stored in locked files by identification numbers rather than company names.

Background

To develop the Material Recovery Survey, DEQ established an informal work group of nine members of the state's solid waste community. The group dealt with issues such as confidentiality, whom to survey, how to handle double counting of materials, what materials should and should not count toward recovery and disposal, and what questions and format to use in the survey.

Metro, the regional government for the Portland Metropolitan area, has conducted surveys of recycling levels since 1986. In order to avoid duplicate requests from Metro and DEQ, the two agencies entered into an intergovernmental agreement. In 1992 and 1993 Metro collected information for the tri-county area and passed it on to DEQ. Metro was bound by the same requirements as DEQ to keep the information confidential. In 1994 DEQ surveyed Metro-area recyclers directly and shared the information with Metro.

Materials Included in the Survey

By statute, Oregon's recovery rate includes only post-consumer materials collected for recycling. Waste from manufacturing and industrial processes (pre-consumer), reconditioned and reused materials, and out-of-state waste disposed in Oregon are excluded. Commercial scrap metal, including demolition debris, discarded vehicles or parts of vehicles, major equipment, and appliances handled by scrap metal dealers, is excluded. Scrap metal collected at disposal sites, by haulers, at community recycling depots, or through municipal-sponsored collection events counts as recovered material.

The recovery rate includes materials composted

or burned for energy recovery if there is no viable market for recycling the material. A viable market is "a place within a watershed that will pay for the material or accept the material free of charge or a place outside a watershed that will pay a price for the material that, at minimum, covers the cost of transportation of the material" (ORS 459A.010(4)(b)).

The 1992 Material Recovery Survey included 24 types of materials. In 1993 and 1994, 17 more materials were added, including fluorescent tubes, animal waste, car batteries, and aerosol cans.

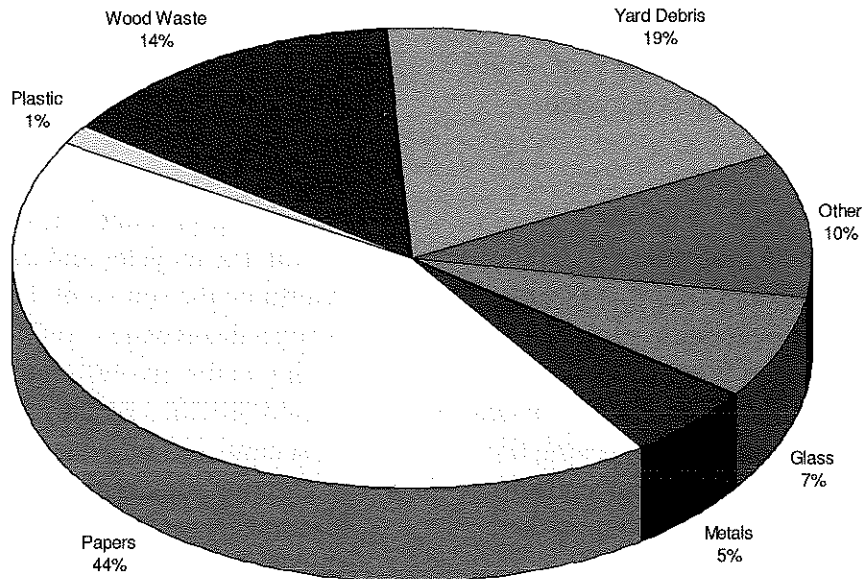
The major materials included in 1994 were:

- **Paper** — Newspaper, corrugated cardboard/kraft paper, high-grade paper, magazines, phone books, and mixed waste paper.
- **Plastic** — #1 PET beverage containers, #1 PET other, #2 HDPE milk jugs, #2 HDPE other, #3 PVC, #4 LDPE, #5 polypropylene, #6 polystyrene, and mixed plastic.
- **Glass** — Container glass, such as refillable bottles and all other container glass or cullet, and other glass.
- **Metals** — Tinned cans, aluminum, and other scrap metals.
- **Organics** — Wood waste, yard debris, food waste, animal waste.
- **Other** — Tires, used motor oil, and lead acid batteries.

Data Requirements

In order to collect, analyze, and perform quality checks on the large amount of data generated by the survey, DEQ developed a computer system. The Solid Waste Information Management System (SWIMS) is an Information Engineering Facility (IEF)-based Oracle database that:

Types of Materials Recovered in Oregon, 1994



Total 1994 Oregon State Tonnage = 1,118,913.5 tons

- Stores information about recyclers that must be surveyed by law.
- Tracks receipt of survey forms and follow-up actions taken by DEQ staff.
- Stores information about the collection (by collection method), storage, transfer, and disposition of recovered materials by county.
- Performs data validation functions and calculates recovery rates.
- Generates reports to assist DEQ in analyzing the data and responding to legislative reporting requirements, such as annual county and statewide per capita weights, amounts disposed and recovered, annual recovery rate, and types and amount of materials recovered and recycled.

Methodology

Data Sources

In 1994 DEQ collected recycling and disposal data from:

- 255 private recycling companies, including buy-back centers, intermediate processors, yard debris composting facilities, beer and soft drink distributors, and end users (9 companies did not respond to the survey; see Appendix 1 for a list of responding and non-responding companies).
- 214 waste haulers (See Appendix 1).
- 23 scrap metal dealers (30 scrap metal dealers did not respond to the survey; see Appendix 1 for a list of responding and non-responding companies).

- 79 disposal sites handling municipal and construction and demolition wastes.

Another 175 surveys were mailed to companies that went out of business during the year, could not be located, or did not collect recycled materials in Oregon.

Data Collection and Management

For most materials, the recyclers that directly collect the bulk of the material in each county are surveyed. However, it is not practical to identify and survey all persons directly collecting material in each county. By surveying the recyclers and end-users to whom the collectors sold their material, some information on their collections could be obtained.

Private recycling survey recipients were asked to return the completed surveys by Feb. 15, 1995. Most did not do so, which necessitated sending a series of follow-up letters. In addition, hundreds of telephone calls were made to provide technical assistance and to round up the surveys.

With these efforts, by July 31, 1995, all but 9 of the original survey population had responded. "Responded" means the survey recipient provided the requested information or DEQ staff, after discussing the business practices with the company or based on personal knowledge, determined their response was not needed to calculate watershed or statewide recovery rates.

As surveys were returned, staff checked the data for completeness and, in many instances, verified information by calling the survey respondent. Once approved, the data was entered into the SWIMS database, and a number of quality

control checks were performed. The two most important checks were:

- Comparing information from different sources. For example, often collectors reported sending more material to a recycler (or end user) than the recycler reported receiving. This issue was usually resolved by directly calling either the receiving recycler or both the recycler and the collectors to determine the source of the discrepancy. When a discrepancy could not be resolved by talking to the involved recyclers, the information provided by the end user was used in most cases.
- Examining per-capita recycling calculations for unlikely results. For example, occasionally more material was reported as recovered than would be expected in a county, based on estimates using population. This issue was resolved by determining which survey respondents reported collecting or handling the material for the county in question, looking for unlikely results in their reports, and calling the involved recyclers. This type of issue commonly results from problems in the units of measurement used for reporting.

How Recovery Rates Are Calculated

The formula for determining recovery rates is:

$$\frac{\text{Amount Disposed}^1 + \text{Amount Recovered}}{\text{Total Generated}} = \text{Recovery Rate}$$

¹ The Amount Disposed includes municipal solid waste and excludes industrial process waste, asbestos, sludge, petroleum contaminated soil, and full loads of inert material, such as rock, if a record is kept at the disposal site.

For each county, information about the quantities of material collected from privately-operated recycling and material recovery facilities was combined with information from hauler and disposal site collections. This determined the total weight of material recovered.

Next, the total weight of material recovered was added to the total weight of material disposed. This determined the total weight of material generated. Finally, the total weight of material recovered was divided by the total weight of the material generated.

For the 1992 surveys, direct collectors of materials were the primary and best source of information for the collected materials' county of origin. This information was used whenever it was available. However, when information from direct collectors was not available, or when a survey respondent did not know the county of origin for the collected materials, allocation to all counties in Oregon by population was used to allocate materials back to the counties.

For the 1993 and 1994 surveys, direct collectors of materials were still the primary and best source of information for the collected materials' county of origin, and this information was used whenever it was available. When information from direct collectors was not available, or when a survey respondent did not know the county of origin for the collected materials, the markets' and end users' estimates for county of origin was used to allocate material back to counties. Material was allocated back to the counties based on population only when survey respondents could not accurately estimate county of origin.

Double Counting of Materials

In order to determine recovery rates for individual counties as well as the state as a whole, DEQ surveys multiple companies handling the same material. This means that double counting of materials is a major issue. For example, haulers collecting materials are surveyed. Processors who purchase materials from the haulers, generally small- to medium-sized recycling companies, and markets or end users of materials, also are surveyed.

Having information on where each collector or recycler sells their material allows DEQ to eliminate the double-counting of that material. SWIMS was designed to track materials transferred from one collector to a second recycler, subtracting material which a reporting company sold to another, while at the same time keeping track of the county of origin for the material.

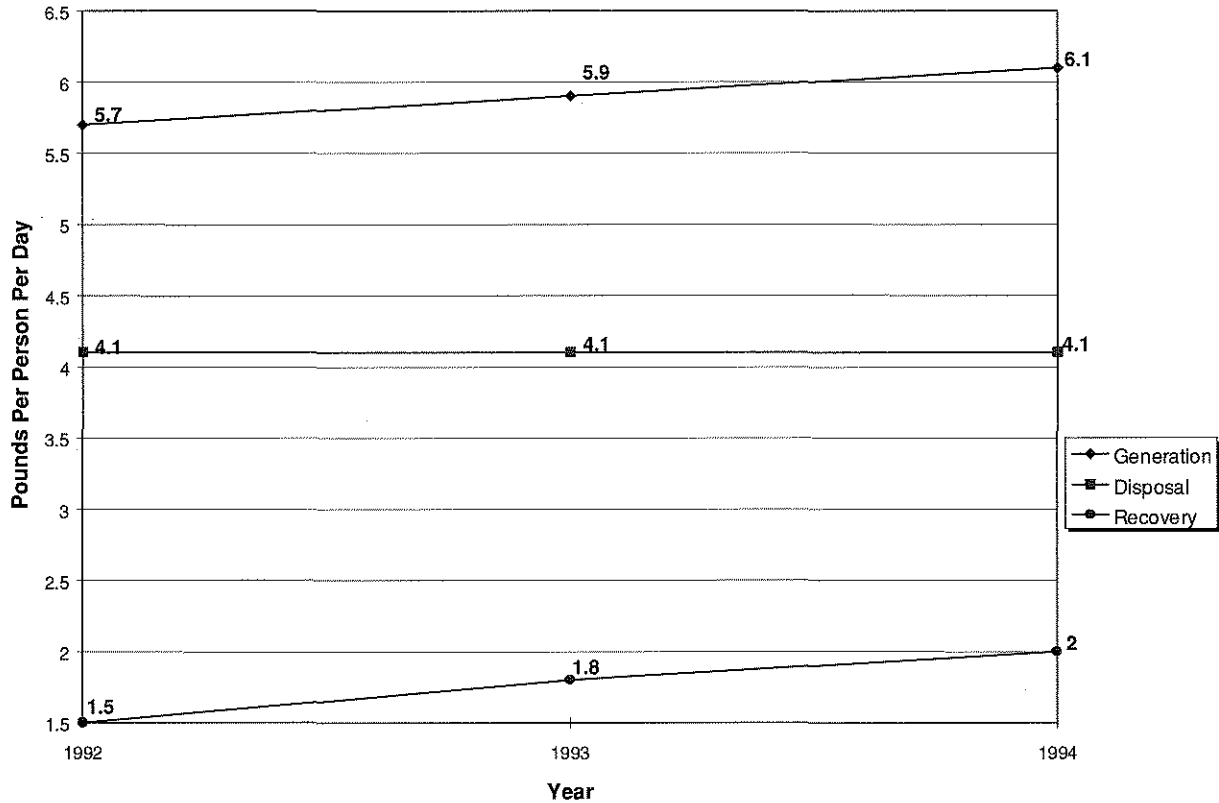
1994 Results

1994 Statewide Recovery Rate

The state of Oregon recovered 1,118,913 tons, or 32.5% of the total "counting" (municipal) waste stream in 1994. This is a 15% increase from 1993, when 974,687 tons (29.9% of the total waste stream) was recovered. The 1994 tonnage recovered translates to 726 pounds per person per year recovered, or 2 pounds of material recovered per person per day.

The 1994 pounds per person per day for the amount disposed, recovered, and generated are shown below:

**Oregon Per Capita Recovery, Disposal and Generation Rates
1992 - 1994**



Oregon's recovery rate has increased each survey year — 27% in 1992, 29.9% in 1993, and 32.5% in 1994 — and the total amount of materials recovered has increased each year — 839,679 tons in 1992, 974,687 tons in 1993, and 1,118,913 tons in 1994. However, the total amount of municipal solid waste generated (waste disposed plus materials recovered) also increased each year:

	MSW Generated (tons)	MSW Per Capita/Year (lbs.)	MSW Per Capita/Day (lbs.)
1992	3,102,778	2,083	5.71
1993	3,255,202	2,143	5.87
1994	3,437,255	2,230	6.11

Oregon's statewide recovery rate increased in 1994 because the total amount of recycled materials collected in 1994 increased at a greater rate than the amount of material disposed in municipal landfills. Some of the increase in recovery is due to the addition of new material types.

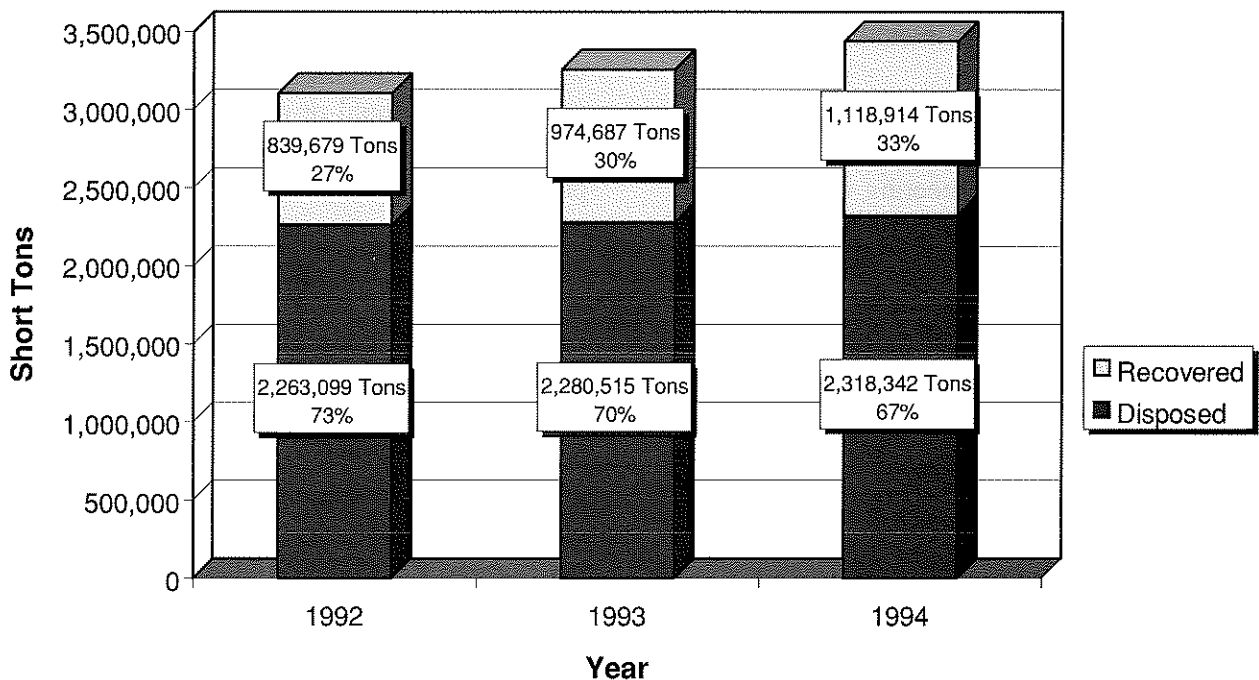
Wasteshed (County) Recovery Rates

Oregon's 1991 Recycling Act assigned recovery goals for calendar year 1995 as a way of measuring the state's progress in meeting a

50% recovery rate by the year 2000. Table 1 gives a breakdown of 1994 recovery rates by wasteshed, and Table 2 gives the amount of materials recovered by wasteshed. Examination of Table 1 reveals that, in 1994, about 70% of the wastesheds (25) met or exceeded the 1995 goal. Of the 25 wastesheds that met the goal, 18 (72%) were from the groups assigned 1995 recovery goals of 7-15%.

Table 3 shows the amount of materials disposed in 1994 by wasteshed. Tables 4, 5, and

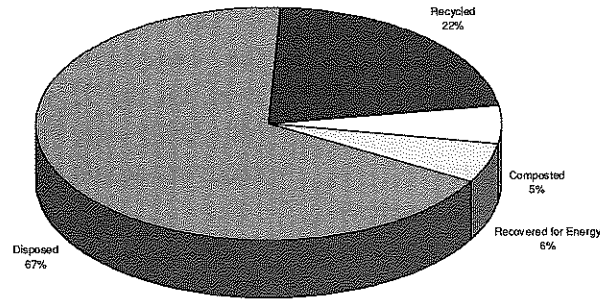
Oregon Solid Waste Disposal and Recovery Totals, 1992-1994



6 give the recovery rates, recovered material amounts, and disposal tonnages, respectively, by wasteshed, for 1992, 1993, and 1994. Table 7 shows the total municipal solid waste generated by wasteshed (1992-1994). Table 8 shows the amounts of materials recovered during these years, and Table 9 compares the amounts disposed and recovered in 1993 and 1994.

Using the 1994 generation rate of 3,437,255 tons of solid waste, 1,718,627 tons would need to be recovered in order for the state to reach a 50% recovery rate. Recovery would have to increase an

1994 Waste Generation and Disposition in Oregon



- Recycled tonnage includes materials such as paper, plastic, glass, metals, paint, wood used in new products.
 - Composted tonnage includes yard debris and wood waste.
 - Recovered for energy tonnage includes wood waste and yard debris used for hogged fuel, and tires and used oil.
 - Disposed tonnage includes municipal solid waste, and excludes industrial process waste, asbestos, sludge, and petroleum contaminated soil, and full loads of inert material, such as rock, if a record is kept at the disposal site.
 - Total waste generated in 1994 is 3,437,255 tons.

additional 599,714 tons over the 1994 amount recovered.

Even though almost three-fourths of smaller counties are currently meeting their assigned 1995 recovery goals, the actual amount recovered in these counties, in absolute terms, is small. Assuming that recovery will be measured in the same manner in 2000 as it currently is, recovery will have to significantly increase in the larger counties if the state is to recover 50% of its waste.

Disposal

The amount of municipal solid waste disposed in Oregon in 1994 was 2,318,342 tons, or 1,504 pounds per person per year, based on a statewide population of 3,082,000. This translates to 4.1 pounds of municipal solid waste disposed per person per day. Table 3 shows

the amount of waste disposed in 1994 by each watershed. Information on disposal tonnages comes from annual or quarterly reports filed with DEQ by disposal sites for fee collection purposes. Disposal sites report the amount of municipal solid waste they receive by county of origin.

In some cases, disposal sites reported waste for 1994 which state law allows to be excluded from the amount disposed (“non-counting waste”).² In 1993 DEQ took the position that mixed loads (non-counting industrial process waste mixed with commercial or residential waste) could not be excluded. The Department believes the exclusion applies to full loads only because of the impossibility of accurately calculating the mix in mixed loads, leaving the amount to exclude open to interpretation and possible abuse.

²The two types of non-counting waste that may be excluded from the amount disposed for the purposes of the recovery rate are:

- 1) **Industrial waste from manufacturing processes.** The Standard Industrial Classification (SIC) Manual’s definitions and categories were used. Industrial waste is defined as solid waste generated by establishments engaged in the mechanical or chemical transformation of materials or substances into new products. The new product may be finished in that it is ready for utilization or consumption. An example would be a manufactured mobile home. Industrial waste may also be semi-finished to become a raw material for an establishment engaged in further manufacturing. An example would be a container manufactured at one plant and sent to another to be filled with a product.
- 2) **Inert waste** such as rock and gravel, brick, dirt, concrete, asphalt paving. This does not include waste such as furniture, carpeting, linoleum, and gypsum.

Per Capita Data

County recovery rates alone do not always provide the type of detailed information needed to determine how waste is managed in a county. Per capita disposal and recovery rates are useful for providing this information.

DEQ staff use per capita data for evaluating the effectiveness of recycling programs in counties relative to their 1995 recovery goals, for providing feedback to recycling coordinators and policy makers on the strengths and weaknesses of their recycling programs, and for checking the reported data (by county and statewide) for inconsistencies and unlikely results.

Harney and Clatsop counties, for example, are two counties with essentially the same recovery rates (20% and 20.3%, respectively). The per capita amount recovered and disposed for both counties, however, are quite dissimilar. Harney county residents recovered 188 pounds per person in 1994, whereas Clatsop county residents recovered 420 pounds per person in 1994. In other words, Clatsop county residents recovered substantially more pounds of waste than did Harney county residents.

At the same time, Harney county residents disposed 747 pounds per person in 1994, whereas Clatsop county residents disposed 1,648 pounds per person in 1994. Thus, Harney county's low disposal, rather than its high recovery, was the main factor in its relatively high recovery rate.³

Materials Recovered

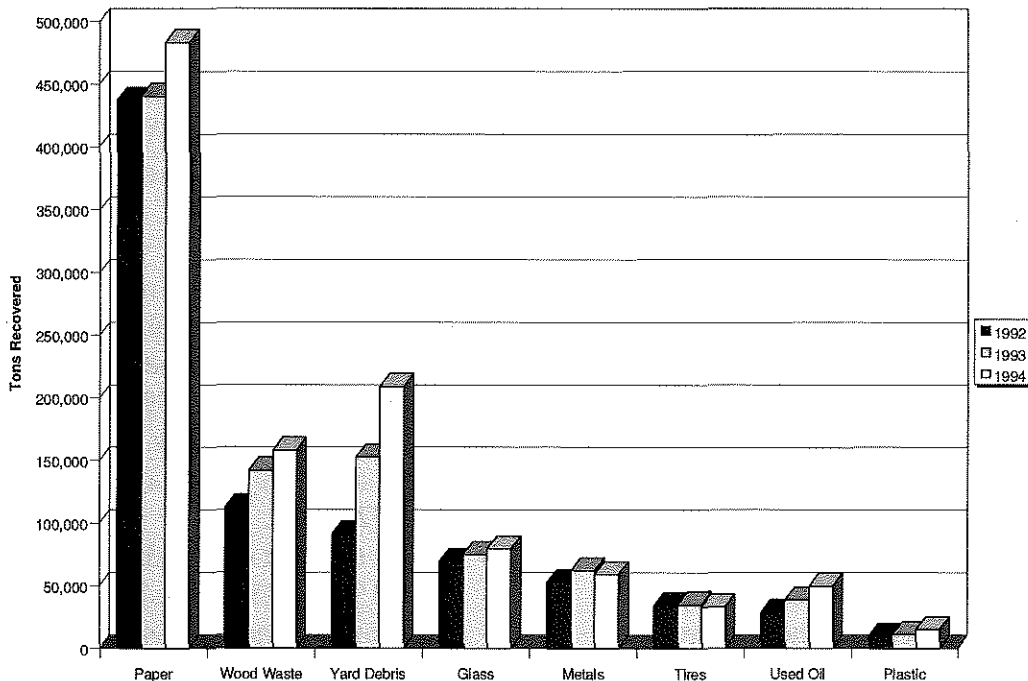
Recovered tons of all the major commodity types increased significantly in 1994, except for metals, which decreased by 5% from 1993 tonnages. The largest increases were in yard debris (37% increase from 1993) and plastics (26% increase from 1993). The following are highlights of results by commodity type:

- The amount of paper recovered, which includes newspaper, high-grade and mixed waste paper, magazines, and corrugated/kraft, increased by 10% from 1993 to 1994, to 483,351 tons.
- Yard debris recovery increased by 37%, to 208,722 tons.
- Total tonnage of wood recovery increased by 11% (157,881 tons), up from 141,922 tons in 1993 and 112,425 tons in 1992.
- Glass recycling increased by 6% (79,542 tons in 1994, compared to 74,981 tons in 1993).
- Other materials, such as batteries, gypsum (from drywall), tires, and used oil, increased by 26%.
- Metal recycling decreased by 5%.⁴
- Plastics recycling continued to increase in 1994. The amount of plastics recovered annually has increased by 58% since 1992.⁵

The 1994 recovery rate includes materials burned for energy recovery (tires, used oil, wood waste and some yard debris) and materials composted (yard debris and some wood waste).

³ Low disposal may reflect a low generation rate, or it may reflect a difference in waste disposal methods. For example, residents in rural areas may be more likely to dispose of their waste by burning it in burn barrels, or by "putting it on the back forty," than residents in urban areas. Waste disposed outside of the solid waste system (permitted disposal sites) is not measured, and thus not counted as waste disposed for the purposes of this study.

Materials Recovered in Oregon by Material Type, 1992-1994



Conclusion

The statewide recovery rate for 1994 was 32.5%, up from 29.9% in 1993 and 27% in 1992. Twenty-five of the 35 wastesheds met their assigned 1995 recovery goal; 68% of these were from the groups assigned recovery goals of 7-15%. In order for the state to meet its 50% recovery goal, at 1994 levels of recovery an additional 599,714 tons of waste would need to be recovered.

The information needed to determine recovery rates accurately requires a level of record keeping that stretches the resources of some recyclers who are required to report. They need to track the geographic source, amount, type, and disposition of all materials they handle. This is a difficult task for small recyclers who may not have the resources to hire office help to assist with the task.

Despite these limitations, the majority of reporting businesses are making good faith efforts to track the materials they handle during the year and to report as accurately as they can. The result is that this study reflects a good estimate of the recovery and disposal of solid waste in Oregon in 1994.

⁴ By statute, vehicles and vehicle parts, commercial scrap metal, and home appliances such as refrigerators count toward the recovery rate only when collected by haulers, at community recycling depots or disposal sites, or through municipal sponsored collection events. The exclusion of these materials makes Oregon's recovery rate significantly lower than states that include scrap metal. For example, in 1993 metals made up 41.7% of Washington State's total recycled tonnages, compared to 5% of Oregon's total recovered tonnages.

⁵ The plastics recovery tonnages include all plastics recovered in Oregon in 1994, both rigid plastic containers and non-rigid plastics. In addition to other information not contained in this report, these tonnages were used to calculate the recycling rate for compliance purposes for rigid plastic containers.

Trends in Recovery Rates 1992-1994

Summary of Recovery Rates

DEQ hired a statistician to examine statewide and wasteshed recovery rates for 1992, 1993, and 1994 to look for trends in the results. Statistical tests were performed to determine:

- Are statewide and wasteshed recovery rates increasing over time, and if so, by how much (rate of increase)? An important related question is whether Oregon will meet its 50% goal for the year 2000.
- Are the amounts of materials recovered and disposed by wasteshed increasing over time, and if so, by how much?
- What are the rates of increase and decrease for material types?
- Where would the almost 600,000 tons of additional recovered materials needed (based on 1994 recovery) for Oregon to meet its 50% goal most likely come from?

Real Increase or Chance Alone?

Sample data almost always have some variance. With the Oregon recovery data there is bound to be some year-to-year variance, which could come from reporting and measurement error as well as from other unknown factors. Some of the variance may reflect a real and systematic increase in recovery rates over time. This appears to be the case.

Results of Linear Regression Analysis

For the state as a whole, the slope of the regression line for recovery rates is 2.7%. (The slope

measures the rate of increase in the recovery rate over time.) The regression p-value (probability level) for the slope is 0.018, meaning the chance of this slope resulting from chance alone is less than 2%. Typically, when the p-value is less than 5%, the change is not considered to be due to chance alone. So, in this case, the regression line reflects a real underlying increase in the recovery rate (at least for the years 1992 through 1994), although the exact reason for the increase is not known.

Wasteshed Variability

The picture is not as clear for each of the state's 35 wastesheds, where there is a great deal of variability on the estimates of annual change in recovery rates, as it is for the state as a whole. The regression analysis slopes range from a low of -6.0% (implying an annual decrease of 6%) to +9.9% (implying an annual increase of almost 10%).

Nine wastesheds, about one-fourth of the total, actually have negative slopes. Only 10 wastesheds have slopes between +1.7% and +3.7% (within 1% of the state's slope of 2.7%).

Looking at p-values, slopes for only four of the wastesheds have $p < 0.05$. By chance alone we would expect that one, or two, or three p-values would be less than 5% ($35 \times .05 = 1.75$.) So, which of the low p-values reflect real slopes different from zero and which reflect chance? There is no way of knowing, and we cannot be sure enough with the little data available to us to

feel comfortable drawing the conclusion that rates have increased (or decreased, depending on the wasteshed).

Mean Rates for Wastesheds

One important implication of not making conclusions about rates of increase for the wastesheds is that we cannot say that 1994 rates are more representative of current recovery than are 1992 or 1993 rates. In fact, we can only compute the mean rate from the three years' worth of data and say this is our best guess for the underlying real recovery rate for the three-year period, or for any year in the three-year period, especially since some wastesheds show a great deal of variability among the three sample rates.

The charts that follow this page show, for each wasteshed (grouped by 1995 goal), the computed mean recovery rate and the 90% confidence interval for the underlying rate. The 90% confidence interval is the range within which we can be 90% certain that the real rate falls. The wider the confidence interval the more the year-to-year variability (that is, fluctuation) in recovery rates. And the more the variability, the less sure we can be that the three-year mean is a precise estimate of the wasteshed's true recovery rate. Table 10 gives the mean recovery rate, standard error, and 90% confidence interval by wasteshed for 1992-1994.

Summary

For each of the wastesheds the best estimate of current recovery rates is the mean of the reported rates for the three years 1992 through 1994.

For the state as a whole, however, the best estimate is determined by the regression analysis. For the last reporting year (1994), the regression analysis predicts a state recovery rate of 32.6%. Our best guess is that the state recovery rate is increasing by about 2.7% each year. If that rate of increase continues, a recovery rate of 50% falls within the 90% confidence interval for the year 2000.

Amounts Recovered and Disposed, 1992-1994

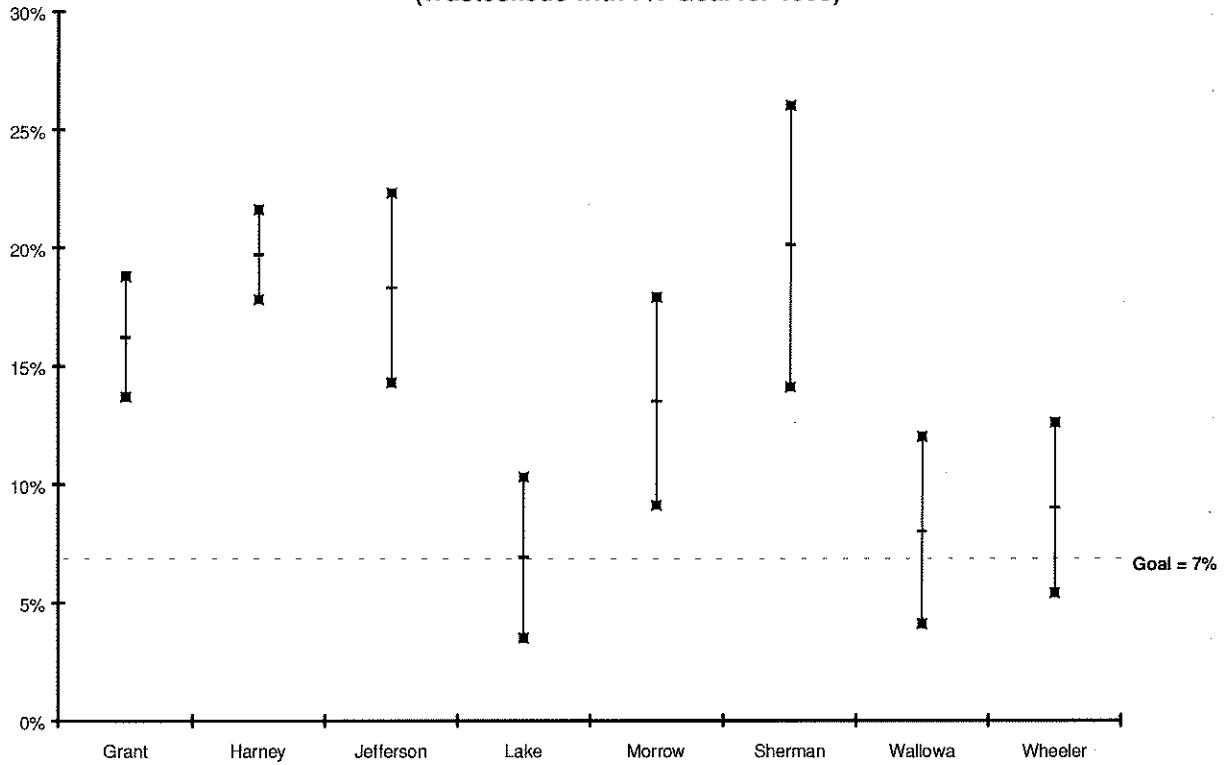
Amounts by Wasteshed

Tables 11-14 display recovery and disposal data for each wasteshed by year, with wastesheds grouped by size, according to amount of waste generated. Wastesheds should not have changed much from 1992 through 1994 unless successful recovery efforts were started or stopped during that period. In fact, there were many different patterns of change among the wastesheds. Some, like Wasco, reported very similar totals for each of the three years. Others, like Union, reported steady increases in amounts recovered and amounts disposed. Still others, like Columbia, reported inconsistent changes over time.

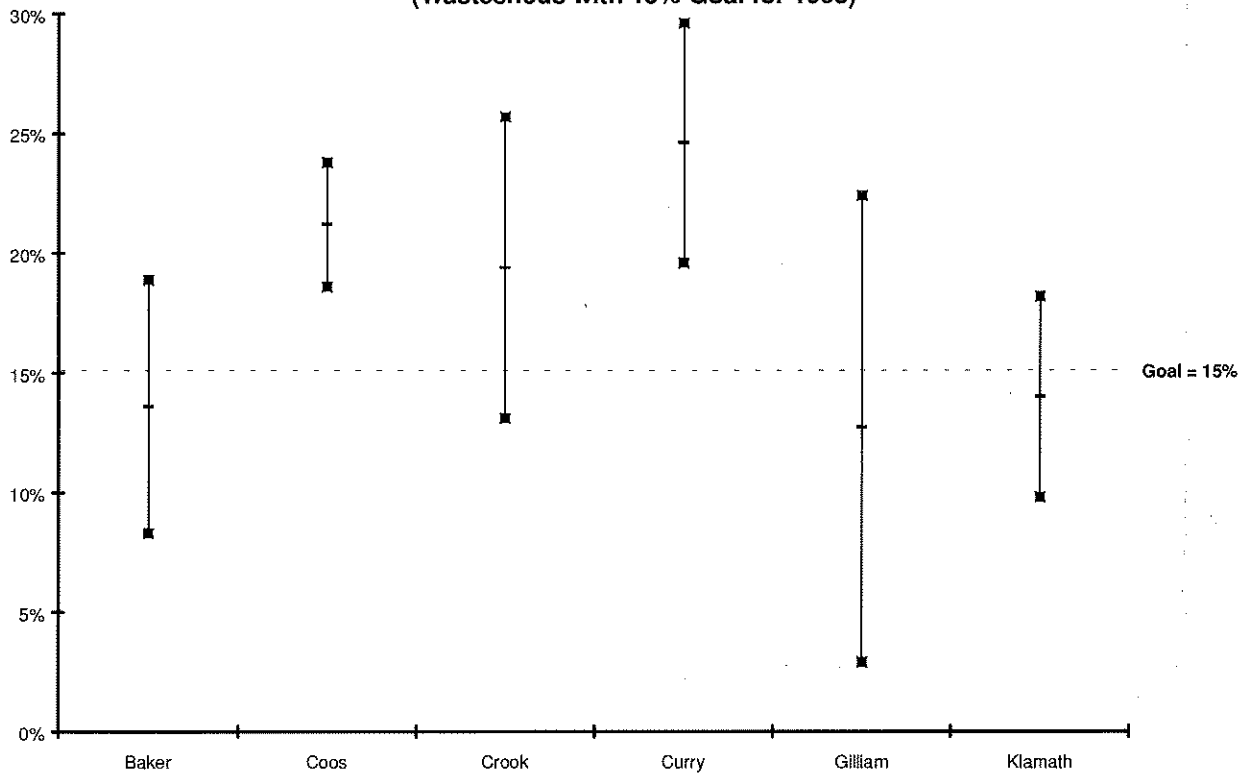
Coefficient of Variation

Because amounts generated vary so much from one wasteshed to another, it is difficult to compare variability across all wastesheds. The statistics which are usually used to measure variability, the variance and standard deviation, are inadequate for comparing cases of greatly different size, so the *coefficient of variation* (CV) was used. The CV is computed by dividing the *standard deviation* (which is approximately the average difference of each measure

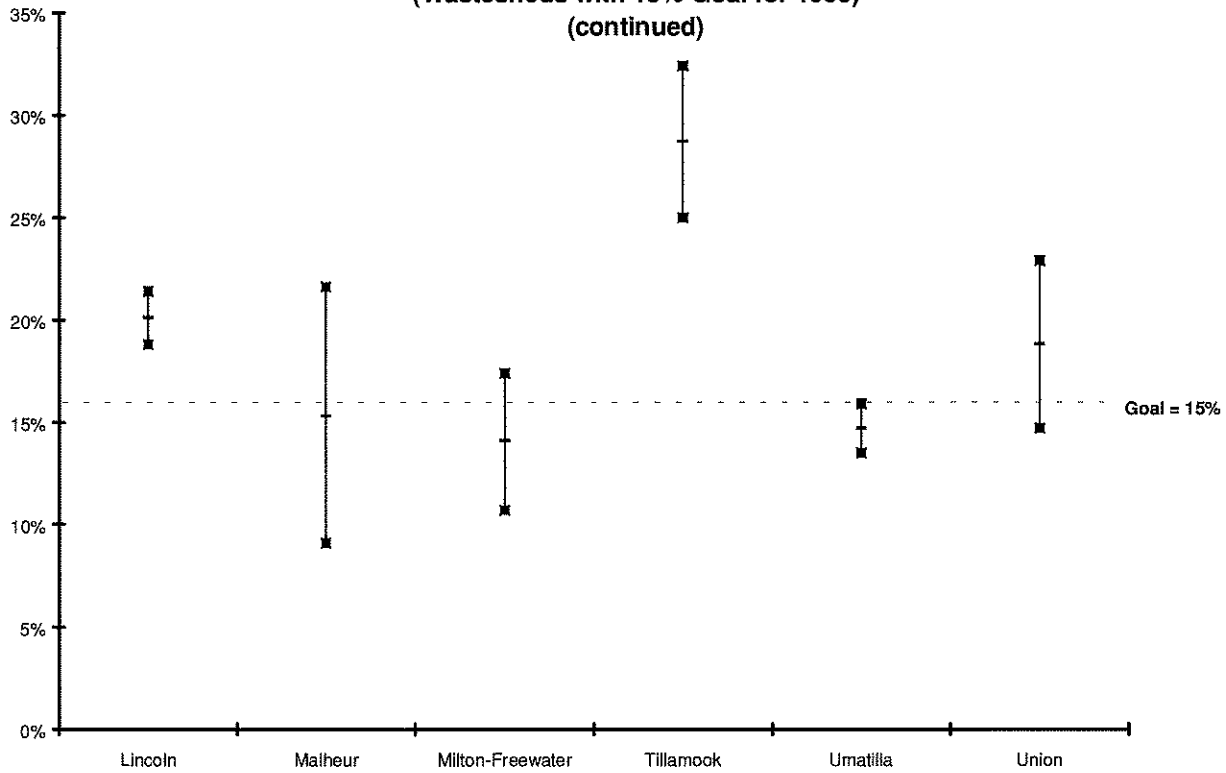
Mean Recovery Rate and 90% Confidence Interval
(Wastesheds with 7% Goal for 1995)



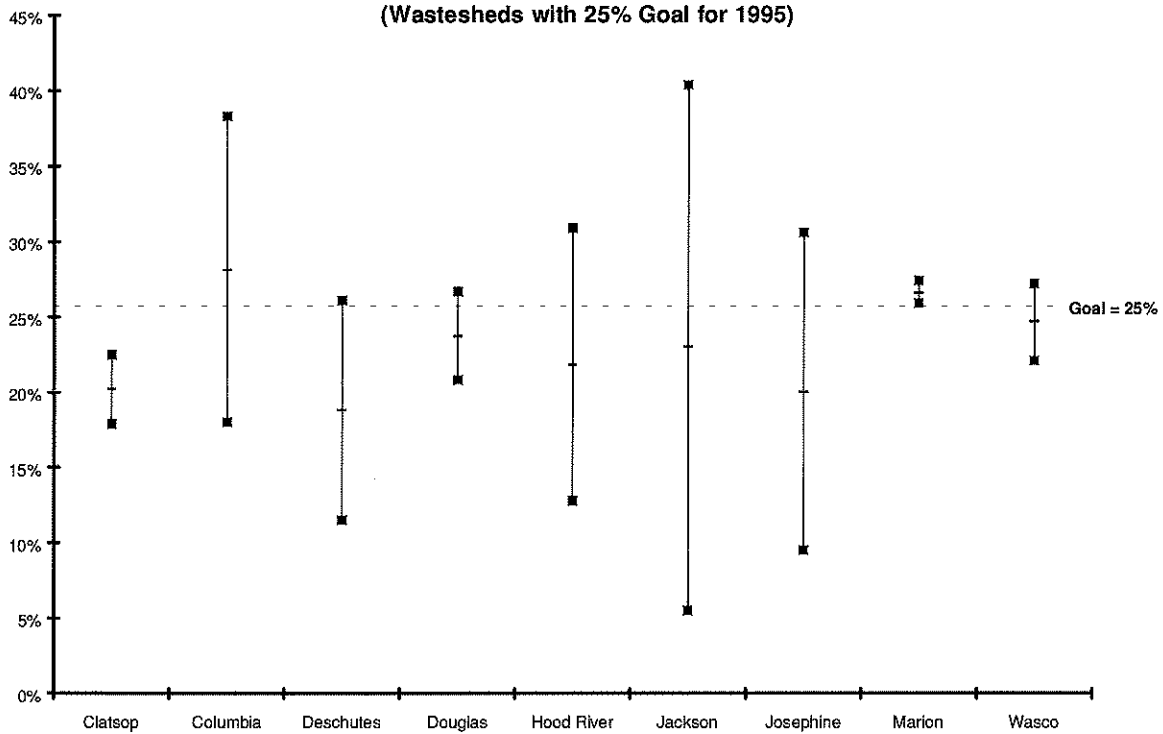
Mean Recovery Rate and 90% Confidence Interval
(Wastesheds with 15% Goal for 1995)



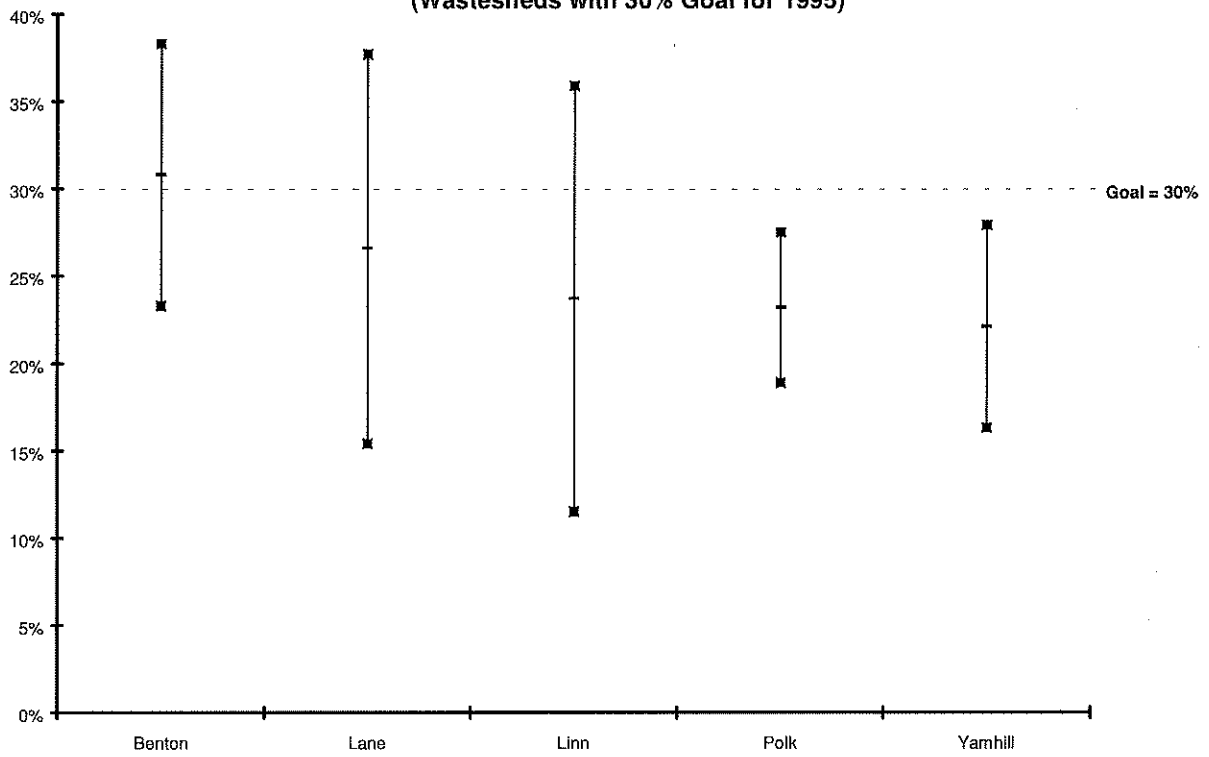
**Mean Recovery Rate and 90% Confidence Interval
(Watersheds with 15% Goal for 1995)
(continued)**



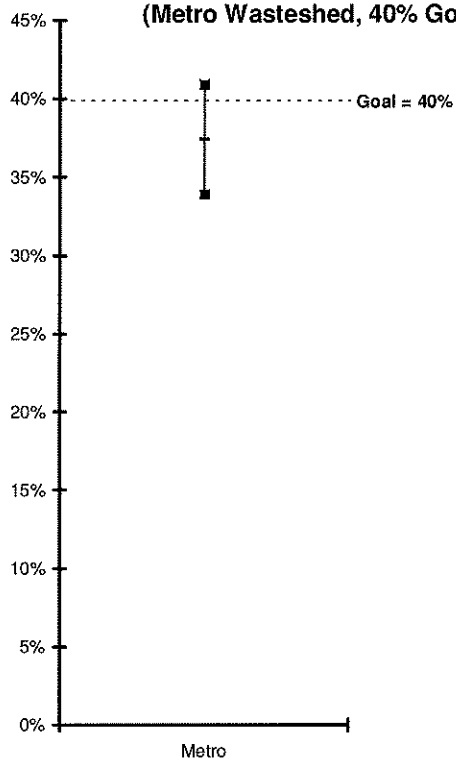
**Mean Recovery Rate and 90% Confidence Interval
(Watersheds with 25% Goal for 1995)**



Mean Recovery Rate and 90% Confidence Interval
(Wastesheds with 30% Goal for 1995)



Mean Recovery Rate and 90% Confidence Interval
(Metro Wasteshed, 40% Goal for 1995)



from the mean of all measures in a sample) by the *mean* (and then multiplying by 100 so that the CV becomes a percent).

For example, a watershed with recovery totals of 8, 10, and 12 thousand tons has the same CV (20%) as a watershed with totals of 80, 100, and 120 thousand tons recovered. The CV's are the same, which reflects the fact that the variances are relatively the same, even though the means and standard deviations are quite different. A CV of 10% for a watershed indicates that each year's reported amount varies from the mean reported amount by 10% of the mean. Most watersheds had CV's around 10%, with one extreme case with 49%. Unusually large coefficients of variation signal either a major change in the watershed's recovery or a significant reporting problem.

Toward the 50% Goal

For 1994, in order to have reached the ultimate goal of 50% recovery, the state would have had to have recovered an additional 600,000 tons of disposed waste. Where might that have occurred?

Watersheds Grouped by Waste Generated

If the 35 watersheds in the state are grouped by amount of waste material generated, four groupings emerge. Eleven very small watersheds each generated less than 10,000 tons of waste material in 1994. Twelve small watersheds each generated 10,000-50,000 tons, six medium watersheds each generated 50,000-100,000 tons, and six large watersheds each generated more than 100,000 tons. The 29 very small, small, and medium watersheds disposed a total of about 585,000 tons of waste in 1994, slightly less than the 600,000 tons the state was short of the 50%

recovery rate goal. So, even if these 29 watersheds had recovered all of their generated waste, the state still would have been short of its goal.

On the other hand, 600,000 tons is just over 1/3 of the material disposed by the six large watersheds. So, if these six watersheds had been able to recover an additional 1/3 of their materials disposed, the state would be close to meeting its recovery rate goal.

Clearly, if the state is going to make significant improvements in its overall recovery rate, most of the improvement is going to have to come in the few largest watersheds in the state.

Material Types

One might ask not only where increases in recovery need to occur, but also what materials can be recovered in greater amounts. Information on the amounts of materials recovered comes from the annual Material Recovery Survey, while information about materials disposed comes from sampling, rather than a census. The sampling is not representative and is conducted every few years, rather than every year. So, disposal data is much more sketchy than recovery data. Still, keeping in mind the limitations of the data, it is possible to make potentially useful estimates of recovery rates by material type.

Table 15 uses recovery data from the 1994 Recovery Survey and disposal estimates from the 1992 Recovery Survey. The table lists amounts recovered and projected estimates of amounts generated and, where possible, estimated recovery rates, by major material types recovered. Materials for which the 1992 Recovery Survey does not provide disposal estimates

are grouped together in a combined category. The estimated amount generated for this combined group comes from a process of elimination. Disposal estimates for all materials which have disposal estimates were subtracted from the state's total amount disposed.

The table shows that recovery rates for some of the materials with the greatest recovery totals (cardboard, yard debris, newspaper, and container glass) all have estimated recovery rates over 50%. On the other hand, materials in the combined group have an estimated recovery rate of less than 20%.

Table 16 includes more materials than Table 15. It uses results of the 1992 sample of disposed material,* as presented in the Integrated Resource and Solid Waste Management Plan. Some of the disposed materials sampled are

effectively not recovered at all. The table shows this most clearly for food waste, less than 1% of which is recovered. The sample from which this estimate was calculated does not include the Metro wasteshed, which may have relatively less food waste disposed than the other wastesheds. But even if the estimate of food waste presented in the table were twice as high as it should be, there would still be a great amount of disposed waste represented by this material.

Of course, one question to ask is whether it would be easier to improve recovery of materials which already have high recovery rates, and therefore have proven success, or of materials which have almost zero recovery rates, and perhaps the greatest room for improvement. Either way, the table may clarify the potential for increased recovery.

* A 1994 waste composition study will be released in 1996.

Table 1: Annual Wastashed Recovery Rates, 1994

1994 <u>Wastashed</u>	1994 <u>Tons Disposed</u>	1994 <u>Tons Recovered</u>	1994 <u>Tons Generated</u>	Recovery <u>Rate*</u>	1995 <u>Goal</u>
Baker	8,253	1,658	9,911	16.7%	15%
Benton	43,586	24,053	67,640	35.5%	30%
Clatsop	27,939	7,125	35,063	20.3%	25%
Columbia	18,314	5,233	23,547	22.2%	25%
Coos	39,014	11,522	50,536	22.8%	15%
Crook	6,621	1,553	8,175	19.0%	15%
Curry	11,278	4,212	15,490	27.1%	15%
Deschutes	98,801	30,410	129,210	23.5%	25%
Douglas	93,566	27,418	120,984	22.6%	25%
Gilliam	1,128	199	1,328	15.0%	15%
Grant	4,629	872	5,501	15.8%	7%
Harney	2,579	648	3,227	20.0%	7%
Hood River	9,509	3,308	12,817	25.8%	25%
Jackson	108,813	57,704	166,517	34.6%	25%
Jefferson	8,380	1,838	10,218	17.9%	7%
Josephine	34,399	12,462	46,861	26.5%	25%
Klamath	59,498	11,950	71,448	16.7%	15%
Lake	5,859	597	6,456	9.2%	7%
Lane	251,328	118,788	370,116	32.0%	30%
Lincoln	32,766	8,665	41,432	20.9%	15%
Linn	63,079	25,213	88,292	28.5%	30%
Maiheur	15,948	2,142	18,091	11.8%	15%
Marion	195,990	72,009	267,999	26.8%	25%
Metro	977,730	635,869	1,613,599	39.4%	40%
Milton-Freewater	5,070	744	5,814	12.8%	15%
Morrow	5,685	822	6,507	12.6%	7%
Polk	24,190	7,604	31,794	23.9%	30%
Sherman	804	202	1,006	20.0%	7%
Tillamook	13,488	5,157	18,645	27.6%	15%
Umatilla	47,273	8,537	55,811	15.3%	15%
Union	16,010	4,329	20,339	21.2%	15%
Wallowa	7,104	841	7,945	10.5%	7%
Wasco	16,145	5,751	21,897	26.2%	25%
Wheeler	763	98	861	11.3%	7%
Yamhill	57,130	19,374	76,504	25.3%	30%
Unspecified	5,673				
OREGON TOTALS	2,318,342	1,118,913	3,437,255	32.5%	

Note: Detail may not add to indicated totals due to rounding.

*The recovery rate is calculated using the following formula:

- 1) $Tons\ Disposed + Tons\ Recovered = Total\ Generated$
- 2) $\frac{Tons\ Recovered}{Total\ Generated} = Recovery\ Rate$

Table 2: Amount Recovered in 1994 by Wasteshed

<u>Wasteshed</u>	<u>1994 Tons Recovered</u>	<u>1994 Pounds Per Capita</u>	<u>1994 Population</u>
Baker	1,659	203.5	16,300
Benton	24,054	672.7	71,510
Clatsop	7,125	420.3	33,900
Columbia	5,233	265.7	39,400
Coos	11,522	366.9	62,800
Crook	1,554	198.0	15,700
Curry	4,212	383.0	22,000
Deschutes	30,411	679.6	89,500
Douglas	27,418	564.8	97,100
Gilliam	200	228.0	1,750
Grant	872	220.8	7,900
Harney	648	187.9	6,900
Hood River	3,308	359.6	18,400
Jackson	57,705	721.3	160,000
Jefferson	1,838	238.8	15,400
Josephine	12,462	366.0	68,100
Klamath	11,950	395.0	60,500
Lake	597	161.3	7,400
Lane	118,788	792.0	300,000
Lincoln	8,665	422.8	41,000
Linn	25,213	502.5	100,350
Malheur	2,142	152.5	28,100
Marion	72,009	570.1	252,640
Metro	635,869	989.7	1,285,000
Milton-Freewater	744	253.8	5,865
Morrow	822	191.1	8,600
Polk	7,604	282.4	53,845
Sherman	202	212.7	1,900
Tillamook	5,157	450.4	22,900
Umatilla	8,537	293.8	58,135
Union	4,329	353.4	24,500
Wallowa	841	233.4	7,200
Wasco	5,751	511.2	22,500
Wheeler	98	126.1	1,550
Yamhill	19,374	528	73,355
OREGON TOTALS	1,118,913	726.1	3,082,000

Note: Detail may not add to indicated totals due to rounding.

Source for population data is the Center for Population Research and Census, Portland State University July 1, 1995 estimates.

Table 3: Solid Waste Disposed in 1994 by Wasteshed

<u>Wasteshed</u>	<u>1994 Disposed Tons</u>	<u>1994 Pounds Per Capita</u>
Baker	8,253	1,012.7
Benton	43,586	1,219.3
Clatsop	27,939	1,648.0
Columbia	18,314	929.7
Coos	39,014	1,242.5
Crook	6,621	843.5
Curry	11,278	1,025.3
Deschutes	98,801	2,207.9
Douglas	93,566	1,927.2
Gilliam	1,128	1,289.3
Grant	4,629	1,172.0
Harney	2,579	747.6
Hood River	9,509	1,033.6
Jackson	108,813	1,360.2
Jefferson	8,380	1,088.3
Josephine	34,399	1,010.2
Klamath	59,498	1,966.9
Lake	5,859	1,583.5
Lane	251,328	1,675.6
Lincoln	32,766	1,598.4
Linn	63,079	1,257.2
Malheur	15,948	1,135.1
Marion	195,990	1,551.6
Metro	977,730	1,521.8
Milton-Freewater	5,070	1,729.0
Morrow	5,685	1,322.2
Polk	24,190	898.5
Sherman	804	846.2
Tillamook	13,488	1,178.0
Umatilla	47,273	1,626.3
Union	16,010	1,307.0
Wallowa	7,104	1,973.4
Wasco	16,145	1,435.1
Wheeler	763	984.6
Yamhill	57,130	1,557.7
Unspecified	5,673	
OREGON TOTALS	2,318,342	1,504.4

Note: Detail may not add to indicated totals due to rounding.

Table 4: Oregon Recovery Rates by Wasteshed, 1992-1994

Wasteshed	1992 Rate	1993 Rate	1994 Rate	1995 Goal
Baker	10.45%	13.60%	16.73%	15%
Benton	26.77%	30.13%	35.56%	30%
Clatsop	18.78%	21.50%	20.32%	25%
Columbia	34.28%	27.90%	22.23%	25%
Coos	21.07%	19.75%	22.80%	15%
Crook	15.88%	23.29%	19.00%	15%
Curry	21.34%	25.20%	27.19%	15%
Deschutes	15.06%	17.85%	23.54%	25%
Douglas	25.73%	22.75%	22.66%	25%
Gilliam	16.88%	6.06%	15.02%	7%
Grant	17.90%	14.44%	15.85%	7%
Harney	18.44%	20.64%	20.08%	7%
Hood River	15.70%	23.90%	25.81%	25%
Jackson	14.88%	19.33%	34.65%	25%
Jefferson	20.86%	16.14%	17.99%	7%
Josephine	14.10%	19.42%	26.59%	25%
Klamath	13.36%	11.90%	16.73%	15%
Lake	5.81%	5.72%	9.25%	7%
Lane	19.23%	28.34%	32.09%	30%
Lincoln	19.97%	19.43%	20.91%	15%
Linn	15.40%	27.12%	28.56%	30%
Malheur	19.20%	15.00%	11.84%	15%
Marion	26.10%	26.88%	26.87%	25%
Metro	35.25%	37.48%	39.41%	40%
Milton-Freewater	16.36%	13.03%	12.80%	15%
Morrow	11.41%	16.42%	12.63%	7%
Polk	20.38%	25.34%	23.92%	30%
Sherman	23.56%	16.54%	20.08%	7%
Tillamook	31.25%	27.25%	27.66%	15%
Umatilla	13.92%	14.98%	15.30%	15%
Union	16.41%	18.81%	21.29%	15%
Wallowa	5.99%	7.50%	10.58%	7%
Wasco	24.51%	23.24%	26.27%	25%
Wheeler	7.22%	8.37%	11.35%	7%
Yamhill	18.50%	22.44%	25.32%	30%
OR. TOTALS	27.06%	29.94%	32.61%	

Note: Detail may not add to indicated totals due to rounding.

Table 5: Oregon Amount Recovered by Wasteshed, 1992-1994

Wasteshed	1992		1993		1994	
	Recovered (tons)	Per Capita (lbs.)	Recovered (tons)	Per Capita (lbs.)	Recovered (tons)	Per Capita (lbs.)
Baker	982	124	1,228	152.6	1,659	203.5
Benton	21,480	622	22,218	640.1	24,054	672.7
Clatsop	5,148	311	6,987	414.7	7,125	420.3
Columbia	7,894	407	5,907	304.5	5,233	265.7
Coos	10,035	323	8,819	282.2	11,522	366.9
Crook	1,581	211	1,901	248.4	1,554	197.9
Curry	2,863	268	3,600	338.0	4,212	382.9
Deschutes	12,858	311	22,741	524.0	30,411	679.6
Douglas	29,467	612	26,712	554.2	27,418	564.7
Gilliam	177	203	155	176.7	199	227.9
Grant	911	228	725	183.6	872	220.8
Harney	600	173	684	198.3	648	187.9
Hood River	1,855	211	3,069	342.9	3,308	359.5
Jackson	17,134	224	23,975	305.4	57,705	721.3
Jefferson	1,269	174	1,288	172.9	1,838	238.7
Josephine	7,826	239	9,321	279.9	12,462	366.0
Klamath	8,827	297	9,237	306.4	11,950	395.0
Lake	269	73	394	107.3	597	161.4
Lane	72,072	491	104,604	702.0	118,788	791.9
Lincoln	6,886	348	7,283	364.1	8,665	422.7
Linn	17,232	348	25,823	515.7	25,213	502.5
Malheur	3,283	245	2,675	194.6	2,142	152.5
Marion	55,834	463	62,542	505.9	72,009	570.1
Metro	514,747	831	575,819	908.2	635,869	989.7
Milton-Freewater	908	323	755	262.0	744	253.7
Morrow	930	230	973	230.4	822	191.2
Polk	4,873	184	8,218	309.9	7,604	282.5
Sherman	270	300	169	182.3	202	212.6
Tillamook	4,518	402	4,348	379.7	5,157	450.4
Umatilla	6,641	239	7,350	256.8	8,537	293.7
Union	2,525	210	3,341	275.0	4,329	353.4
Wallowa	433	121	572	159.0	841	233.5
Wasco	5,443	482	5,071	450.7	5,751	511.2
Wheeler	59	79	70	93.5	98	126.1
Yamhill	11,850	342	16,112	451.0	19,374	528.2
OR. TOTALS	839,679	564	974,687	642	1,118,913	726.1

Table 6: Oregon Solid Waste Disposed by Wasteshed, 1992-1994

Wasteshed	1992		1993		1994	
	Disposed (tons)	Per Capita (lbs.)	Disposed (tons)	Per Capita (lbs.)	Disposed (tons)	Per Capita (lbs.)
Baker	8,419	1,066	7,800	968.9	8,253	1,012.6
Benton	58,761	1,703	51,511	1,484.2	43,586	1,219.0
Clatsop	22,263	1,345	25,516	1,514.3	27,939	1,648.3
Columbia	15,131	780	15,260	786.6	18,314	929.6
Coos	37,596	1,211	35,844	1,147.0	39,014	1,242.5
Crook	8,378	1,117	6,260	818.3	6,621	843.5
Curry	10,555	986	10,687	1,003.5	11,278	1,025.3
Deschutes	72,529	1,756	104,666	2,411.7	98,801	2,207.8
Douglas	85,040	1,766	90,733	1,882.4	93,566	1,927.2
Gilliam	872	996	2,396	2,738.1	1,128	1,289.4
Grant	4,178	1,045	4,118	1,042.5	4,629	1,171.9
Harney	2,650	763	2,569	744.6	2,579	747.5
Hood River	9,959	1,132	9,772	1,091.9	9,509	1,033.6
Jackson	98,002	1,282	100,059	1,274.6	108,813	1,360.2
Jefferson	4,813	659	6,691	898.1	8,380	1,088.3
Josephine	47,687	1,458	38,677	1,161.5	34,399	1,010.2
Klamath	57,247	1,928	68,370	2,267.7	59,498	1,966.9
Lake	4,364	1,187	6,495	1,767.3	5,859	1,583.5
Lane	302,695	2,061	264,509	1,775.2	251,328	1,675.5
Lincoln	27,601	1,394	30,200	1,510.0	32,766	1,598.4
Linn	94,644	1,911	69,382	1,385.7	63,079	1,257.2
Malheur	13,815	1,031	15,163	1,102.8	15,948	1,135.1
Marion	158,109	1,310	170,131	1,376.2	195,990	1,551.5
Metro	945,634	1,526	960,691	1,515.3	977,730	1,521.8
Milton-Freewater	4,643	1,649	5,041	1,748.8	5,070	1,729.0
Morrow	7,221	1,783	4,955	1,172.9	5,685	1,322.2
Polk	19,036	718	24,220	913.2	24,190	898.5
Sherman	876	973	851	919.9	804	846.2
Tillamook	9,940	884	11,609	1,013.9	13,488	1,178.0
Umatilla	41,059	1,480	41,662	1,455.8	47,273	1,626.3
Union	12,866	1,072	14,417	1,186.6	16,010	1,306.9
Wallowa	6,801	1,902	7,059	1,960.8	7,104	1,973.4
Wasco	16,760	1,483	16,746	1,488.5	16,145	1,435.1
Wheeler	758	1,011	767	1,022.7	763	984.5
Yamhill	52,199	1,509	55,685	1,558.6	57,130	1,557.6
Unspec.		0	2	0.1	5,673	163.5
Roundg adi	-1					
OR. TOTALS	2,263,099	1,519	2,280,515	1,501.3	2,318,342	1,504.4

Table 7: Oregon Solid Waste Generated by Wasteshed, 1992-1994

Wasteshed	1992			1993			1994		
	Generated (tons)	Population	Per Capita (lbs.)	Generated (tons)	Population	Per Capita (lbs.)	Generated (tons)	Population	Per Capita (lbs.)
Baker	9,401	15,800	1,190	9,028	16,100	1,121.5	9,911	16,300	1,216.1
Benton	80,241	69,015	2,325	73,729	69,415	2,124.3	67,640	71,510	1,891.8
Clatsop	27,411	33,100	1,656	32,503	33,700	1,929.0	35,063	33,900	2,068.6
Columbia	23,025	38,800	1,187	21,167	38,800	1,091.1	23,547	39,400	1,195.3
Coos	47,631	62,100	1,534	44,663	62,500	1,429.2	50,536	62,800	1,609.4
Crook	9,959	15,000	1,328	8,160	15,300	1,066.7	8,175	15,700	1,041.4
Curry	13,418	21,400	1,254	14,287	21,300	1,341.5	15,490	22,000	1,408.2
Deschutes	85,387	82,600	2,067	127,407	86,800	2,935.6	129,210	89,500	2,887.4
Douglas	114,507	96,300	2,378	117,445	96,400	2,436.6	120,984	97,100	2,491.9
Gilliam	1,049	1,750	1,199	2,550	1,750	2,914.3	1,328	1,750	1,517.7
Grant	5,089	8,000	1,272	4,843	7,900	1,226.1	5,501	7,900	1,392.7
Harney	3,249	6,950	935	3,253	6,900	942.9	3,227	6,900	935.4
Hood River	11,814	17,600	1,343	12,841	17,900	1,434.7	12,817	18,400	1,393.2
Jackson	115,135	152,900	1,506	124,034	157,000	1,580.1	166,517	160,000	2,081.5
Jefferson	6,082	14,600	833	7,979	14,900	1,071.0	10,218	15,400	1,327.0
Josephine	55,513	65,400	1,698	47,998	66,600	1,441.4	46,861	68,100	1,376.2
Klamath	66,074	59,400	2,225	77,607	60,300	2,574.0	71,448	60,500	2,361.9
Lake	4,633	7,350	1,261	6,889	7,350	1,874.6	6,456	7,400	1,744.9
Lane	374,767	293,700	2,552	369,113	298,000	2,477.3	370,116	300,000	2,467.4
Lincoln	34,487	39,600	1,742	37,483	40,000	1,874.2	41,432	41,000	2,021.1
Linn	111,875	99,039	2,259	95,205	100,142	1,901.4	88,292	100,350	1,759.7
Malheur	17,098	26,800	1,276	17,838	27,500	1,297.3	18,091	28,100	1,287.6
Marion	213,943	241,346	1,773	232,672	247,243	1,882.1	267,999	252,640	2,121.6
Metro	1,460,380	1,239,500	2,356	1,536,510	1,268,000	2,423.5	1,613,599	1,285,000	2,511.4
Milton-Freewater	5,551	5,630	1,972	5,796	5,765	2,010.8	5,814	5,865	1,982.6
Morrow	8,151	8,100	2,013	5,929	8,450	1,403.3	6,507	8,600	1,513.3
Polk	23,909	53,000	902	32,438	53,046	1,223.0	31,794	53,845	1,180.9
Sherman	1,146	1,800	1,273	1,020	1,850	1,102.7	1,006	1,900	1,058.9
Tillamook	14,458	22,500	1,285	15,957	22,900	1,393.6	18,645	22,900	1,628.4
Umatilla	47,700	55,470	1,720	49,012	57,235	1,712.7	55,811	58,135	1,920.0
Union	15,391	24,000	1,283	17,758	24,300	1,461.6	20,339	24,500	1,660.3
Wallowa	7,234	7,150	2,023	7,631	7,200	2,119.7	7,945	7,200	2,206.9
Wasco	22,202	22,600	1,965	21,817	22,500	1,939.3	21,897	22,500	1,946.4
Wheeler	817	1,500	1,089	837	1,500	1,116.0	861	1,550	1,111.0
Yamhill	64,049	69,200	1,851	71,797	71,454	2,009.6	76,504	73,355	2,085.9
Unspec.	2			6			5,673		163.5
OREGON TOTALS	3,102,778	2,979,000	2,083	3,255,202	3,038,000	2,143.0	3,437,254	3,082,000	2,230.5

Table 8: Materials Recovered, 1992-1994

Material Type	1992 Weight (tons)	1993 Weight (tons)	1994 Weight (tons)
Container glass	69,284	74,541	73,512
Other glass	41	439	6,030
Total glass	69,325	74,980	79,542
Aluminum	18,245	16,030	16,805
Scrap metal	26,927	36,325	33,699
Tinned cans	7,400	9,755	8,557
Aerosol cans	0	2	0
Total metals	52,572	62,112	59,061
Cardboard/kraft paper	204,729	226,147	251,559
High-grade paper	67,077	44,497	35,401
Magazines	11,246	14,020	11,911
Phone books*	0	0	1,799
Mixed waste paper	24,012	28,087	38,770
Newspaper	130,181	127,990	143,911
Total papers	437,245	440,741	483,352
#1 PET beverage	3,329	4,404	4,392
#1 other	58	0	0
#2 milk jugs	1,940	2,610	4,289
#2 other	1,841	1,807	976
#3 PVC	25	12	5
#4 LDPE	1,196	1,564	3,843
#5	360	182	157
#6	471	399	292
Mixed plastic	300	168	584
Other plastic	0	0	13
Composite plastic	0	0	497
Total plastic	9,520	11,146	15,049
Gypsum wallboard	3,695	17,004	6,726
Paint	120	178	153
Solvents	16	6	5
Antifreeze	5	5	11
Lead acid batteries**	176	460	417
Scrap film	42	55	58
Tires	34,392	34,853	30,454
Rubber tire buffings	0	0	2,698
Oil	28,796	38,636	49,769
Flourescent lamps	0	0	15
Crayons	0	0	1
Porcelain	0	0	13
Total other	67,243	91,197	90,320
Animal waste	0	0	22,986
Food waste	0	0	2,000
Wood waste	112,425	141,922	157,881
Yard debris	91,348	152,589	208,722
Total organics	203,773	294,511	391,589
OR. TOTALS	839,679	974,687	1,118,913

* Phone books included in mixed waste paper in 1992 and 1993.

** Includes only batteries collected at household hazardous waste collection events.

Table 9: Disposed & Recovered Comparisons, 1993-1994

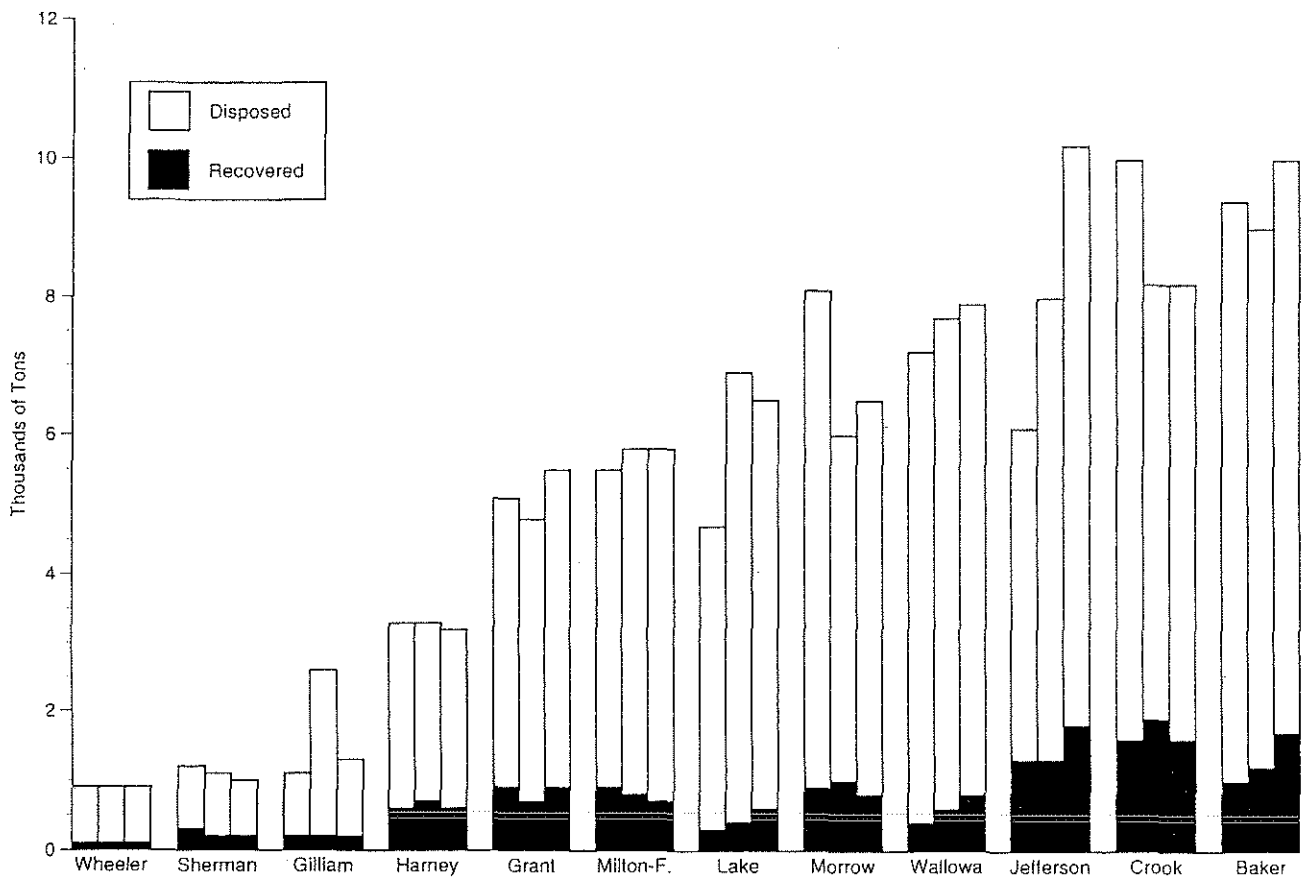
Wasteshed	1993 Disposed	1993 Recovered	1993 Rate	1994 Disposed	1994 Recovered	1994 Rate	1995 Goal	Diff. Disposal	Diff. Recovery
Baker	7,800	1,228	13.60%	8,253	1,659	16.73%	15%	453	431
Benton	51,511	22,218	30.13%	43,586	24,054	35.56%	30%	-7,925	1,836
Clatsop	25,516	6,987	21.50%	27,939	7,125	20.32%	25%	2,423	138
Columbia	15,260	5,907	27.91%	18,314	5,233	22.23%	25%	3,054	-674
Coos	35,844	8,819	19.75%	39,014	11,522	22.80%	15%	3,170	2,703
Crook	6,260	1,901	23.29%	6,621	1,554	19.00%	15%	361	-348
Curry	10,687	3,600	25.20%	11,278	4,212	27.19%	15%	591	612
Deschutes	104,666	22,741	17.85%	98,801	30,411	23.54%	25%	-5,865	7,670
Douglas	90,733	26,712	22.74%	93,566	27,418	22.66%	25%	2,833	706
Gilliam	2,396	155	6.08%	1,128	199	15.02%	7%	-1,268	44
Grant	4,118	725	14.97%	4,629	872	15.85%	7%	511	147
Harney	2,569	684	21.03%	2,579	648	20.08%	7%	10	-36
Hood River	9,772	3,069	23.90%	9,509	3,308	25.81%	25%	-263	239
Jackson	100,059	23,975	19.33%	108,813	57,705	34.65%	25%	8,754	33,730
Jefferson	6,691	1,288	16.14%	8,380	1,838	17.99%	7%	1,689	550
Josephine	38,677	9,321	19.42%	34,399	12,462	26.59%	25%	-4,278	3,141
Klamath	68,370	9,237	11.90%	59,498	11,950	16.73%	15%	-8,872	2,713
Lake	6,495	394	5.72%	5,859	597	9.25%	7%	-636	203
Lane	264,509	104,604	28.34%	251,328	118,788	32.09%	30%	-13,181	14,184
Lincoln	30,200	7,283	19.43%	32,766	8,665	20.91%	15%	2,566	1,382
Linn	69,382	25,823	27.12%	63,079	25,213	28.56%	30%	-6,303	-610
Malheur	15,163	2,675	15.00%	15,948	2,142	11.84%	15%	785	-533
Marion	170,131	62,542	26.88%	195,990	72,009	26.87%	25%	25,859	9,467
Metro	960,691	575,819	37.48%	977,730	635,869	39.41%	40%	17,039	60,050
Milton-Freew.	5,041	755	13.03%	5,070	744	12.80%	15%	29	-11
Morrow	4,955	973	16.41%	5,685	822	12.63%	7%	730	-151
Polk	24,220	8,218	25.33%	24,190	7,604	23.92%	30%	-30	-614
Sherman	851	169	16.57%	804	202	20.08%	7%	-47	33
Tillamook	11,609	4,348	27.25%	13,488	5,157	27.66%	15%	1,879	809
Umatilla	41,662	7,350	15.00%	47,273	8,537	15.30%	15%	5,611	1,187
Union	14,417	3,341	18.81%	16,010	4,329	21.29%	15%	1,593	988
Wallowa	7,059	572	7.50%	7,104	841	10.58%	7%	45	269
Wasco	16,746	5,071	23.24%	16,145	5,751	26.27%	25%	-601	680
Wheeler	767	70	8.36%	763	98	11.35%	7%	-4	28
Yamhill	55,685	16,112	22.44%	57,130	19,374	25.32%	30%	1,445	3,262
Unspec.	2	1		5,673	1				
OR. TOTALS	2,280,515	974,687	29.94%	2,318,342	1,118,913	32.55%			

Table 10

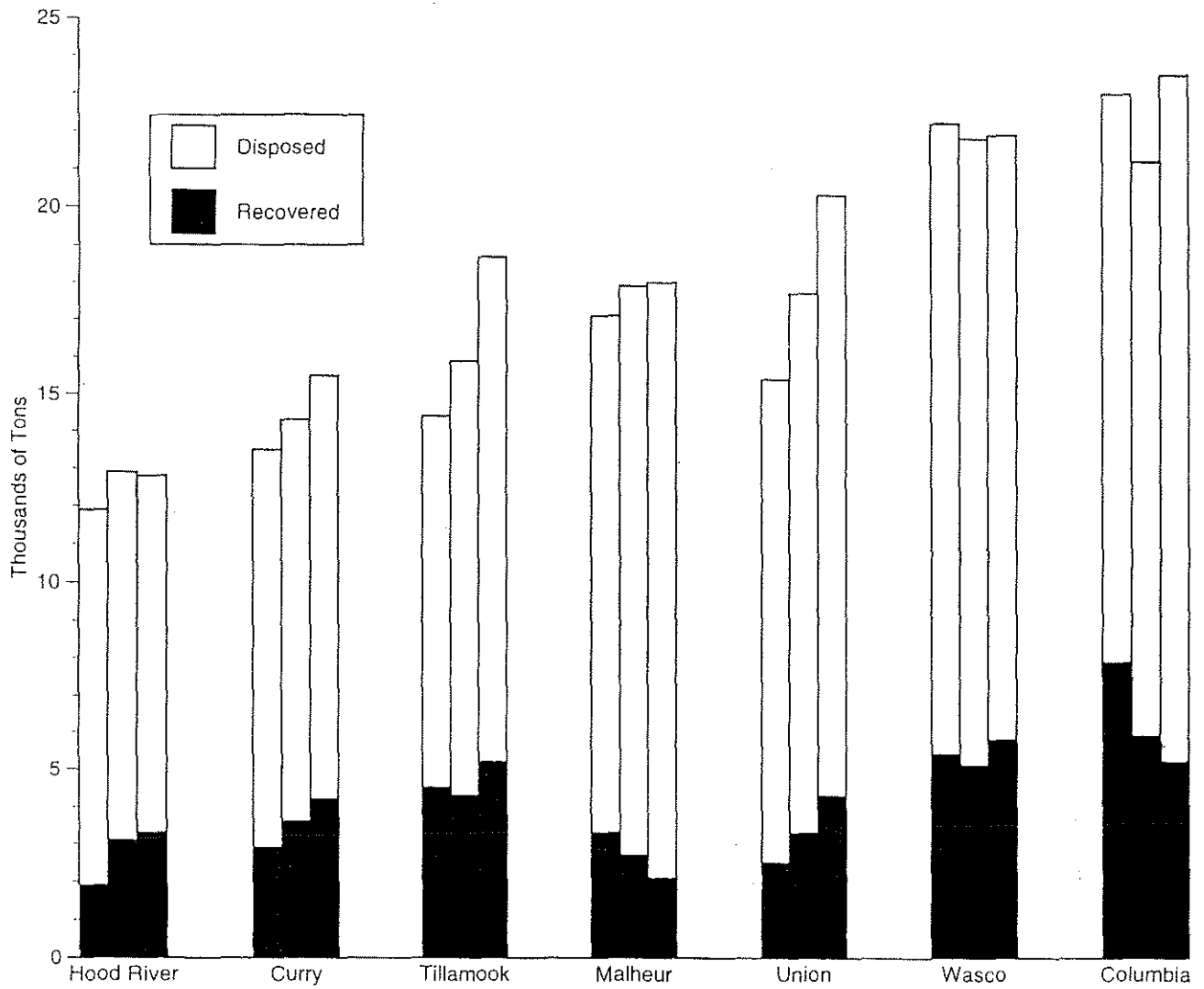
Mean Recovery Rate, Standard Error, and 90% Confidence Interval by Wasteshed, 1992-1994

Wasteshed	1995 Goal	Mean	St. Error	<90% Confidence Interval>
Wheeler	7%	9.0%	1.2%	<5.4-12.6%>
Sherman	7%	20.1%	2.0%	<14.1-26.0%>
Harney	7%	19.7%	0.7%	<17.8-21.6%>
Grant	7%	16.2%	0.9%	<13.7-18.8%>
Lake	7%	6.9%	1.2%	<3.5-10.3%>
Morrow	7%	13.5%	1.5%	<9.1-17.9%>
Wallowa	7%	8.0%	1.4%	<4.1-12.0%>
Jefferson	7%	18.3%	1.4%	<14.3-22.3%>
Gilliam	15%	12.7%	3.3%	<2.9-22.4%>
Milton-Freewater	15%	14.1%	1.1%	<10.7-17.4%>
Crook	15%	19.4%	2.1%	<13.1-25.7%>
Baker	15%	13.6%	1.8%	<8.3-18.9%>
Curry	15%	24.6%	1.7%	<19.6-29.6%>
Tillamook	15%	28.7%	1.3%	<25.0-32.4%>
Malheur	15%	15.3%	2.1%	<9.1-21.6%>
Union	15%	18.8%	1.4%	<14.7-22.9%>
Lincoln	15%	20.1%	0.4%	<18.8-21.4%>
Coos	15%	21.2%	0.9%	<18.6-23.8%>
Umatilla	15%	14.7%	0.4%	<13.5-15.9%>
Klamath	15%	14.0%	1.4%	<9.8-18.2%>
Hood River	25%	21.8%	3.1%	<12.8-30.9%>
Wasco	25%	24.7%	0.9%	<22.1-27.2%>
Columbia	25%	28.1%	3.5%	<18.0-38.3%>
Clatsop	25%	20.2%	0.8%	<17.9-22.5%>
Josephine	25%	20.0%	3.6%	<9.5-30.6%>
Deschutes	25%	18.8%	2.5%	<11.5-26.1%>
Douglas	25%	23.7%	1.0%	<20.8-26.7%>
Jackson	25%	23.0%	6.0%	<5.5-40.4%>
Marion	25%	26.6%	0.3%	<25.9-27.4%>
Polk	30%	23.2%	1.5%	<18.9-27.5%>
Yamhill	30%	22.1%	2.0%	<16.3-27.9%>
Benton	30%	30.8%	2.6%	<23.3-38.3%>
Linn	30%	23.7%	4.2%	<11.5-35.9%>
Lane	30%	26.6%	3.8%	<15.4-37.7%>
Metro	40%	37.4%	1.2%	<33.9-40.9%>

**Table 11: Wastesheds Generating <10,000 Tons
1992, 1993, 1994**



**Table 12: Wastesheds Generating 10,000-25,000 Tons
1992, 1993, 1994**



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**Table 13: Wastesheds Generating 25,000-100,000 Tons
1992, 1993, 1994**

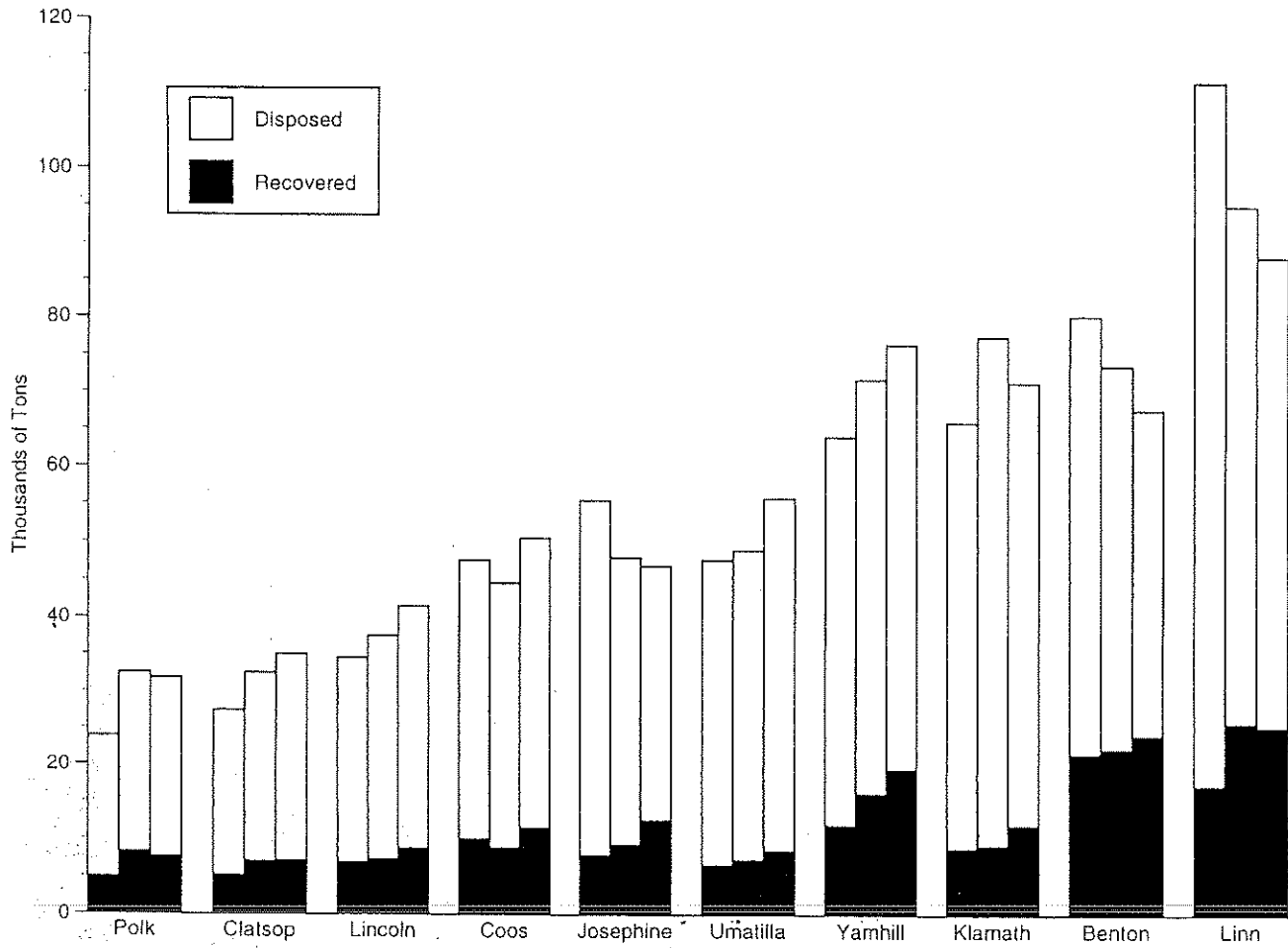
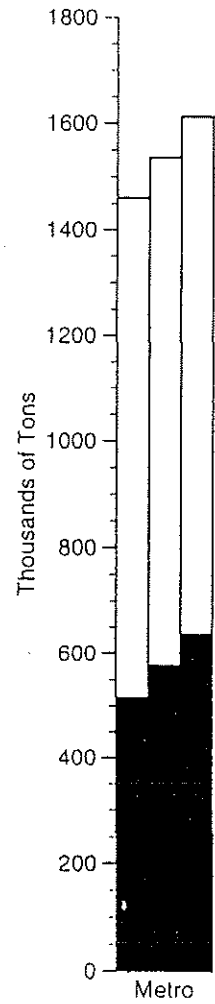
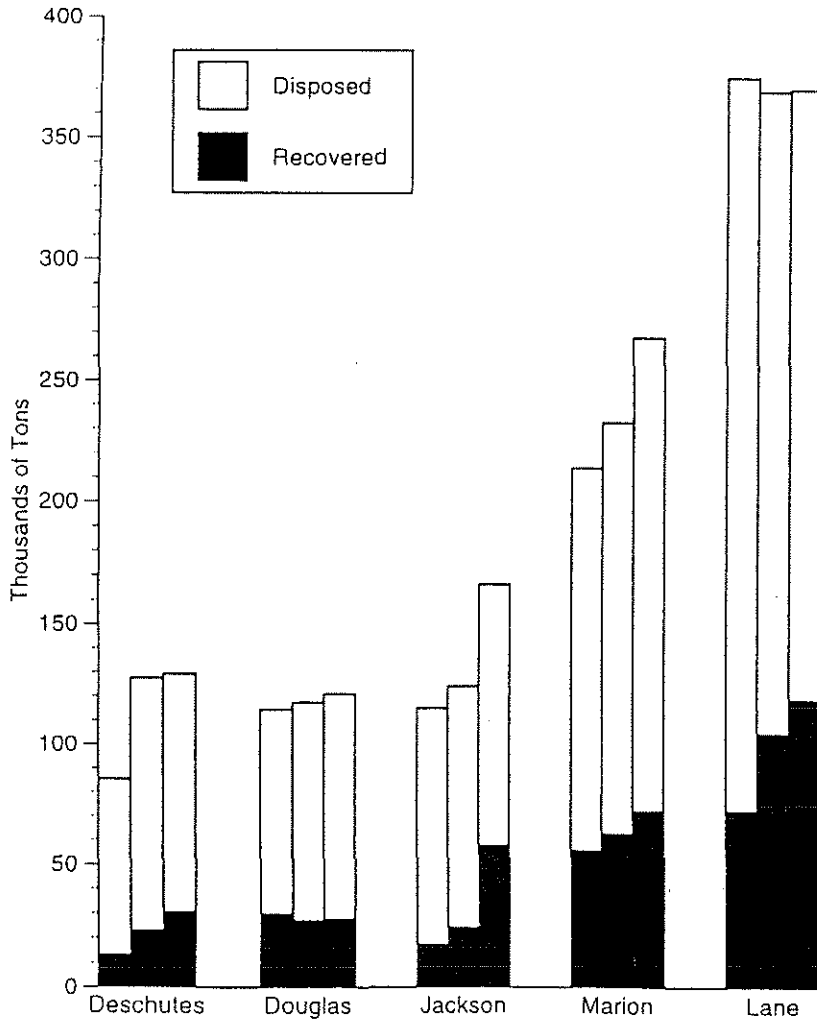


Table 14

Wastesheds Generating >100,000 Tons
1992, 1993, 1994

Metro Area Generating >1,500,000 Tons
1992, 1993, 1994



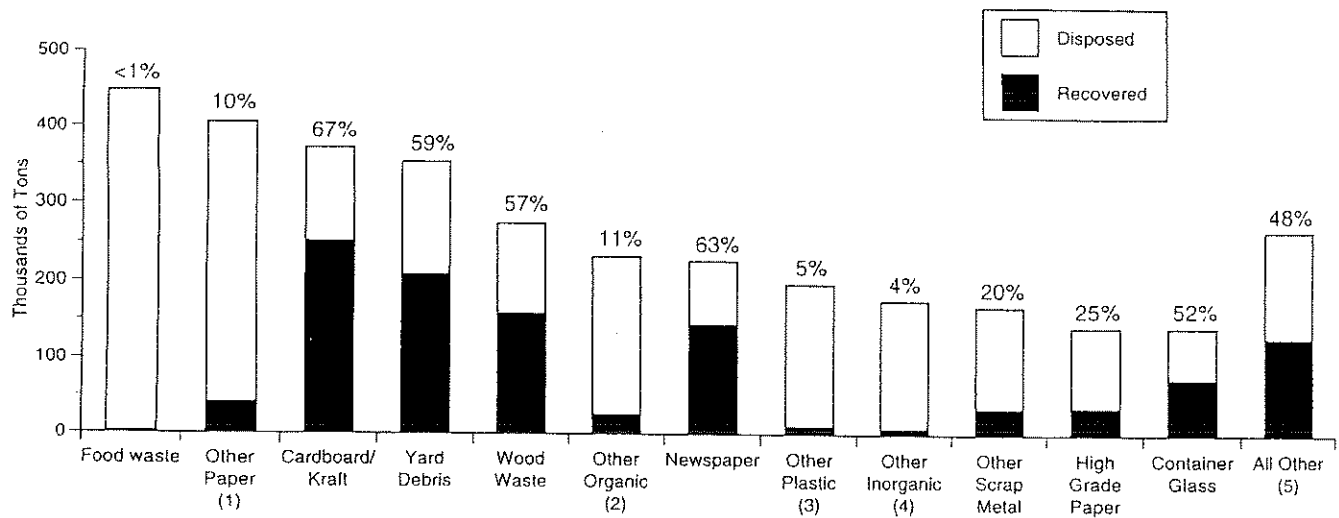
**Table 15: Estimated 1994 Recovery Rates by Material Type
(In Thousands of Tons)**

Material Type	Recovered	Generated (Estimate*)	Estimated Recovery Rate
Corrugated Cardboard/Kraft	251.6	372.8	67.5%
Yard Debris	208.7	354.2	58.9%
Wood Waste	157.9	NA	-
Newspaper	143.9	227.2	63.3%
Container Glass	73.5	136.2	54.0%
Motor Oil	49.8	NA	-
Mixed Waste Paper	38.8	NA	-
All Other Materials**	316.4	1,774.9	17.8%

* Based on 1992 estimates and assuming a 10% increase in each material type generated.

** Includes wood waste, motor oil, mixed waste paper, scrap metal, and other material.

Table 16
Estimates of Amounts Disposed & Recovered, and Estimated Recovery Rates, 1994
by Major Material Group



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Estimates of Disposal Amounts and Recovery Rates are based on figures in Table 2, Section 14, of the Oregon State Integrated Resource and Solid Waste Management Plan. The sample data in the Table do not include Metro.

- (1) "Other paper" includes paper packaging, low-grade recyclable and non-recyclable paper
- (2) "Other organic" includes disposable diapers, carpet and other textiles
- (3) "Other plastic" includes rigid plastic containers (except #1 PET), other plastic containers and other plastic products
- (4) "Other inorganic" includes rocks, concrete, soil, gypsum drywall, fiberglass and other inorganics
- (5) "All other" consists of magazines, aluminum, tin cans, tires, used motor oil, window glass, and #1 PET beverage containers

Part 2: Programs

Summary

Oregon Revised Statute (ORS) 459A requires that cities, counties or metropolitan service districts responsible for solid waste management provide citizens the “opportunity to recycle”; that is a system for collection of source separated recyclable materials. At a minimum, this system must include:

- 1) A place for collection of recyclable material located at each disposal site or at another location more convenient to the population being served; and
- 2) In cities with populations of 4,000 or more, a curbside recycling collection program for collection *at least once per month* of recyclable material from collection service customers within the urban growth boundary or where applicable, within the urban growth boundary established by a metropolitan service district.

Experience with existing recycling programs has shown that weekly curbside residential collection with recycling containers and com-

mitment to education significantly increases recycling participation and recovered material tonnage's.

To encourage even more recycling participation and increase the amount of material recovered from the waste stream, the 1991 Oregon Legislature enacted the following menu of recycling program options, with the stipulation that by July 1992, cities of 4,000 to 10,000 population were required to implement three of the options; cities over 10,000 population were required to implement four or five, depending on the options chosen. Oregon regulation (OAR 340-90-040) clarifies requirements for each of the following menu options.

- 1) Weekly, residential curbside collection of source separated recyclable materials, on the same day as garbage service. (If this menu option is not implemented, a minimum of monthly curbside collection is still required.);
- 2) Expanded recycling education and promotion program which includes among other things, quarterly recycling collection promotion directed at residential and commercial solid waste service customers and generators;

- 3) Provision of at least one durable recycling container directly to residential collection service customers;
- 4) Recycling collection service provided to multi-family dwelling complexes having five units or more;
- 5) Residential yard debris collection program for collection and composting of residential yard debris;
- 6) Regular, on-site collection of source separated principal recyclable materials from commercial generators;
- 7) Establishment of an expanded system of recycling depots which are conveniently located to the population served;
- 8) Garbage collection rates established as a waste reduction incentive, including a mini-can option;

In addition to the requirement for cities over 4,000 to select and implement a certain number of menu options, each Wasteshed (generally equivalent to counties) in Oregon was required by the 1991 Oregon Legislature to reach an established recycling rate by calendar year 1995. If the wasteshed does not achieve their recycling rate, each city over 4,000 population within that wasteshed is required to select and implement two additional items from the menu of program options by 1998.

Current administrative rules allow Department of Environmental Quality approved alternative programs. These programs must achieve established recycling rates, locally and statewide, and comply with other elements of OAR Chapter

340 Division 90. As of calendar year 1994 Baker City, Madras, and Hermiston have approved alternative programs.

The chart on the following pages was compiled based on information provided to the Department of Environmental Quality by the counties in their 1994 Wasteshed Recycling reports and from information gathered in 1995 through technical assistance site visits to each community over 4,000 population.

Of the 75 communities in Oregon with a population of 4,000 or more, 95% offer residential curbside collection programs for all principal recyclable materials in their respective wastesheds. 55% of the 75 communities have commercial collection programs. That is a 17% increase in commercial collection programs since 1992. 24 % of the 75 cities have yard debris programs. The yard debris programs reside within four wastesheds, all on the west side of the state.

Of the 72 cities with menu based recycling programs (non alternative) the four most frequently implemented menu options are:

- Expanded education and promotion
- Weekly residential curbside collection
- Provide recycling collection containers to residential customers
- Commercial recycling collection program

OREGON RECYCLING PROGRAMS

Cities of 4000 + Population and in Metro Region

(Name of City)+ = cities over 10,000 population.

(Name of City)- = cities 4,000 - 10,000 population.

UGB = Urban Growth Boundary

X = Recycling program has been established in full compliance with Oregon Administrative Rules (OAR) Division 90 - *Recycling and Waste Reduction*.

% = Recycling program is established in partial compliance of requirements in OAR Division 90 - *Recycling and Waste Reduction*.

MLTY CURB = Monthly, residential curbside collection of source separated recyclable materials.

WKLY CURB = Weekly, residential curbside collection of source separated recyclable materials, on the same day as garbage service, as specified in OAR 340-90-040(3)(b).

ED & PRMO = An expanded recycling education and promotion program, as specified in OAR 340-90-040(3)(c).

RCYCL BINS = Provision of at least one durable recycling container directly to collection service customers, as specified in OAR 340-90-040(3)(a).

MULT FMLY = Recycling collection service provide to multi-family dwelling complexes having five units or more, as specified in OAR 340-90-040(3)(d).

YARD DEBR = A residential yard debris collection program for collection and composting of residential yard debris as specified in OAR 340-90-040(3)(e).

COMM COLL = Regular, on-site collection of source separated principal recyclable materials from commercial entities, as specified in OAR 340-90-040(3)(f).

EXPD DPOT = Establishment of an expanded system of recycling drop-off depots, as specified in OAR 340-90-040(3)(g).

WR RATE = Garbage rates established to serve as a waste reduction incentive, as specified in OAR 340-90-040(3)(h).

ALT PRGM = An alternative recycling program, as specified in OAR 340-90-080.

1994 RECYCLING PROGRAM COMPONENTS

CITY OR COUNTY	MTLY CURB	WKLY CURB	ED & PRMO	RCYCL BINS	MULT FMLY	YARD DEBR	COMM COLL	EXPD DPOT	WR RATE
BAKER CO.									
Baker City-	Approved Alternative Program								
UGB	Approved Alternative Program								
BENTON CO.									
Corvallis+		X	X	X		X	X	X	
UGB		X	X	X		X	X	X	
CLACKAMAS CO.									
Canby-		X	X	X					
UGB		X	X	X	X	X			
Gladstone-		X	X	X		X			
UGB		X	X	X	X	X			
Johnson City-		X	X	X		X			
UGB		X	X	X	X	X			
Lake Oswego+		X	X	X		X			
UGB		X	X	X	X	X			
Milwaukie+		X	X	X		X			
UGB		X	X	X	X	X			
Oregon City+		X	X	X		X			
UGB		X	X	X	X	X			
Rivergrove-		X	X	X		X			
UGB		X	X	X	X	X			
Sandy-		X	X	X					
UGB		X	X	X					
West Linn+		X	X	X		X			
UGB		X	X	X	X	X			
Wilsonville-		X	X	X	X				
UGB		X	X	X	X	X			

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1994 RECYCLING PROGRAM COMPONENTS

CITY OR COUNTY	MTLY CURB	WKLY CURB	ED & PRMO	RCYCL BINS	MULT FMLY	YARD DEBR	COMM COLL	EXPD DPOT	WR RATE
CLATSOP CO.									
Astoria+ UGB		X	X	X					
Seaside- UGB	X		X	X					
COLUMBIA CO.									
St. Helens- UGB	X X		X X	X X				X X	
COOS CO.									
Coos Bay+ UGB		X X	X X	X X			X X	X X	
Coquille- UGB		X X	X X	X X					
North Bend- UGB		X X	X X	X X			X X		
CROOK CO.									
Prineville- UGB		X X	X X				X X		
CURRY CO.									
Brookings- UGB		X X	X X	X X			X X		
DESCHUTES CO.									
Bend+ UGB		X X	X X	X X			X X		
Redmond- UGB	X X		X X				X X	X X	

1994 RECYCLING PROGRAM COMPONENTS

CITY OR COUNTY	MTLY CURB	WKLY CURB	ED & PRMO	RCYCL BINS	MULT FMLY	YARD DEBR	COMM COLL	EXPD DPOT	WR RATE
DOUGLAS CO.									
Roseburg+		X	X	X	X		X		
UGB		X	X	X	X		X		
Sutherlin-		X	X				X		X
UGB		X	X				X		X
Reedsport-	X		X				X		X
UGB	X		X				X		X
GILLIAM CO.	No cities >4,000 population - curbside collection not required; recycling dropoff depots available.								
GRANT CO.	No cities >4,000 population - curbside collection not required; recycling dropoff depots available.								
HARNEY CO.	No cities >4,000 population - curbside collection not required; recycling dropoff depots available.								
HOOD RIVER CO									
Hood River-		X	X	X			X		
UGB		X	X	X			X		
JACKSON CO.									
Ashland+		X	X	X	X		X	X	X
UGB		X	X	X	X		X	X	X
Central Point-		X	X	X			X		
UGB		X	X	X			X		
Medford+		X	X	X			X		
UGB		X	X	X			X		
JEFFERSON CO.									
Madras+	Approved Alternative Program								
UGB	Approved Alternative Program								
JOSEPHINE CO.									
Grants Pass+		X	X	X			X	X	
UGB		X	X	X			X	X	

Section 4

1994 RECYCLING PROGRAM COMPONENTS

CITY OR COUNTY	MTLY CURB	WKLY CURB	ED & PRMO	RCYCL BINS	MULT FMLY	YARD DEBR	COMM COLL	EXPD DPOT	WR RATE
KLAMATH CO.									
Klamath Falls+		X	X	X	X		X	X	
UGB		X	X	X	X		X	X	
LAKE CO. No cities >4,000 population - curbside collection not required; recycling dropoff depots available.									
LANE CO.									
Cottage Grove-		X	X	X			X		
UGB		X	X	X			X		
Eugene+		X	X	X			X	X	X
UGB		X	X	X			X	X	X
Florence-		X	X	X			X		
UGB		X	X	X			X		
Springfield+		X	X	X			X		X
UGB		X	X	X			X		X
LINCOLN CO.									
Lincoln City-	X		X				X		X
UGB	X		X				X		X
Newport-		X	X	X			X		X
UGB		X	X	X			X		X
LINN CO.									
Albany+		X	X	X		X	X		
UGB		X	X	X		X	X		
Lebanon+		X	X	X		X	X		
UGB		X	X	X		X	X		
Sweet Home-		X	X	X			X		
UGB		X	X	X			X		
MALHEUR CO.									
Ontario-		X	X	X			X		
UGB		X	X	X			X		

1994 RECYCLING PROGRAM COMPONENTS

CITY OR COUNTY	MTLY CURB	WKLY CURB	ED & PRMO	RCYCL BINS	MULT FMLY	YARD DEBR	COMM COLL	EXPD DPOT	WR RATE
MARION CO.									
Keizer+		X	X	X			X	X	
UGB		X	X	X			X	X	
Salem+		X	X	X			X	X	
UGB		X	X	X			X	X	
Silverton-		X	X	X			X		
UGB		X	X	X			X		
Stayton-		X	X	X			X		
UGB		X	X	X			X		
Woodburn+		X	X	X			X	X	
UGB		X	X	X			X	X	
MILTON-FREEWATER-		X	X		X		X		
MORROW CO. No cities >4,000 population - curbside collection not required; recycling dropoff depots available.									
MULTNOMAH CO.									
Fairview-		X	X	X		X			
UGB		X	X	X					
Gresham+		X	X	X		X			
UGB		X	X	X		X			
Maywood Park		X	X	X		X			
UGB		X	X	X		X			
Portland+		X	X	X		X			
UGB		X	X	X		X			
Troutdale		X	X	X		X			
UGB		X	X	X					
Wood Village		X	X	X		X			
UGB		X	X	X		X			

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1994 RECYCLING PROGRAM COMPONENTS

CITY OR COUNTY	MTLY CURB	WKLY CURB	ED & PRMO	RCYCL BINS	MULT FMLY	YARD DEBR	COMM COLL	EXPD DPOT	WR RATE
POLK CO.									
Dallas		X	X	X			X		
UGB		X	X	X			X		
Independence-		X	X	X			X		
UGB		X	X	X			X		
Monmouth-		X	X	X			X		
UGB		X	X	X			X		
SHERMAN CO. No cities >4,000 population - curbside collection not required; recycling dropoff depots available.									
TILLAMOOK CO.									
Tillamook-			X				X		
UGB			X				X		
UMATILLA CO.									
Hermiston-	Approved Alternative Program								
UGB	Approved Alternative Program								
Pendleton+		X	X				X	X	
UGB		X	X					X	
UNION CO.									
LaGrande+			X				X	X	
UGB			X				X	X	
WALLOWA CO. No cities >4,000 population - curbside collection not required; recycling dropoff depots available.									
WASCO CO.									
The Dalles+		X	X	X			X	X	
UGB		X	X	X			X	X	
WASHINGTON CO.									
Beaverton+		X	X	X	X				
UGB		X	X	X	X				

1994 RECYCLING PROGRAM COMPONENTS

CITY OR COUNTY	MTLY CURB	WKLY CURB	ED & PRMO	RCYCL BINS	MULT FMLY	YARD DEBR	COMM COLL	EXPD DPOT	WR RATE
Cornelius-		X	X	X	X	X			
UGB		X	X	X	X	X			
Durham-		X	X	X	X	X			
UGB		X	X	X	X	X			
Forest Grove+		X	X	X	X	X			
UGB		X	X	X	X	X			
Hillsboro+		X	X	X	X	X			
UGB		X	X	X	X	X			
King City-		X	X	X	X	X			
UGB		X	X	X	X	X			
North Plains-		X	X	X	X	X			
UGB		X	X	X	X	X			
Sherwood-		X	X	X	X	X			
UGB		X	X	X	X	X			
Tigard+		X	X	X	X	X			
UGB		X	X	X	X	X			
Tualatin+		X	X	X	X	X			
UGB		X	X	X	X	X			
WHEELER CO. No cities >4,000 population - curbside collection not required; recycling dropoff depots available.									
YAMHILL CO.									
McMinnville+		X	X	X			X		
UGB		X	X	X			X		
Newberg+		X	X	X			X		
UGB		X	X	X			X		
Sheridan-		X	X	X					
UGB		X	X	X					

Section 4

Oregon Solid Waste Character & Composition 1994-1995

In 1994, about 2.3 million tons of Oregon municipal solid waste, 1.0 million tons of industrial and other solid waste from Oregon, and 0.9 million tons of solid waste from out-of-state were buried, spread on the ground or burned for disposal in Oregon. This report provides information on the types and amounts of solid waste generated in Oregon, concentrating particularly on municipal solid waste. Included in this report are the following:

- The total tons of solid waste disposed in Oregon, by source and by type of disposal facility.
- The composition of municipal waste disposed, based on a traditional field waste composition study conducted in 16 Oregon counties outside the Portland Metro tri-county area in 1994-95..
- Comparison of the 1994-95 statewide composition results to the 1993-94 Portland Metro study and the 1992-93 Oregon statewide study, each conducted using similar methodology to the 1994-95 study.
- Results of a detailed analysis of samples from the field composition study designed to remove the effects of absorption of wet wastes and external water into dry wastes, so as to better estimate the weight of waste as generated (dry weight) in Oregon.
- Comparisons of the composition of municipal waste disposed to the composition of materials recovered in Oregon, based on the 1994 Oregon Material Recovery Survey conducted by the Department of Environmental Quality (DEQ), in order to determine the recovery rate of different types of materials in Oregon.

Thomas/Wright, Inc. was the prime contractor for carrying out the waste composition study. The field work collecting and sorting disposal site samples was carried out by Sky Valley Associates as a subcontractor to Thomas/Wright, and Thomas/Wright directly carried out the detailed "lab-like" analysis of the sorted field samples. In addition, Elway Research and Cascadia Consulting provided assistance under subcontract to Thomas/Wright Inc. Disposal site operators and garbage haulers also provided considerable assistance including data on dis-

posal routes and facilities used by the waste sorting crew. DEQ was responsible for all analysis of the waste composition data gathered by the contractor and subcontractors, and also was responsible for producing this report.

Quantification

Oregon generated 2,335,394 tons of municipal solid waste that was disposed in 1994, equal to about three-quarters of a ton per person per year. In addition, nearly a million tons of industrial wastes, contaminated soil, and other waste from Oregon were disposed in 1994. Almost all of these wastes were disposed in Oregon, with only 15,064 tons of waste reported as shipped out of state that year. In contrast to the low quantities exported, imports of solid waste continued increasing in 1994, totaling more than 900,000 tons. Table 1 lists the total tonnage of disposed waste generated in or imported into Oregon for 1994.

Composition

To determine the composition of municipal waste, both Metro and DEQ have carried out studies that involved randomly choosing loads of waste being disposed, sorting the waste samples into different categories, and weighing each category. Metro has conducted this type of sampling study three times - in 1986-87, 1989-90, and 1993-94. This is DEQ's second sampling study for the areas outside of the Portland Metro area, with the first being conducted in 1992-93. Metro and DEQ have used virtually the same methodology in sorting and categorizing waste samples since 1992, making the results of the studies easily comparable.

A new component to the 1994-95 waste composition study is intended to improve the accuracy of estimates of the amount of each material disposed. Frequently samples of waste taken from garbage trucks cannot be accurately separated in the field, because the wastes have become thoroughly mixed and compressed together in the garbage truck. Wet wastes like drinks, fresh food, and spill clean-ups become smeared on and absorbed into the paper, plastic film, and other wastes. This results in transferring some of the "sorted weight" between categories due to absorption and adhesion. To evaluate this "cross-contamination" between categories, many of the sorted samples were taken back to "lab-like" conditions and examined in detail. This examination included further sorting, drying, and re-weighing each material as well as each of the contaminants found on that material. The results of this additional analysis have not yet been completed, and will be presented in a future edition of this study.

Methodology: Disposal Site Sampling/Sorting

Data on the composition of waste disposed at disposal sites were gathered in the following manner:

1. Disposal sites were selected for sampling throughout the state so as to include a spread of different demographic conditions, from rural Eastern Oregon counties to fairly urban counties in the Willamette Valley. To further increase the geographic diversity of sites while also obtaining samples from all seasons, counties with similar demographic and geographic conditions were paired for sam-

Table 1. Solid Waste Disposed in Oregon 1994 (in tons)

	Municipal Solid Waste Landfills	Municipal Burner/ Incinerators	Industrial Solid Waste Landfills	Thermal Treatment Plants	Sludge Lagoon/ Spreading Sites	Solid Waste Shipped Out-of-state	Total
OREGON WASTES							
Municipal Waste	2,120,012	206,161	0	0	0	9,221	2,335,394
Asbestos	5,748	0	1	0	0	0	5,749
Contaminated Soil	70,514	0	0	104,151	0	5,843	180,508
inerts/other soil	93,255	0	34,387	0	0	0	127,642
Septage Sludge	398	0	0	0	40,282	0	40,679
Industrial & Other Wastes	226,641	5,899	358,974	0	0	0	591,514
TOTAL OREGON WASTES	2,516,568	212,060	393,362	104,151	40,282	15,064	3,281,486
OUT-OF-STATE WASTES							
Municipal & Unspecified Waste	873,333	45	0	0	0	not applicable	873,378
Asbestos	5,093	0	0	0	0	not applicable	5,093
Contaminated Soil	20,594	0	0	16,482	0	not applicable	37,077
TOTAL OUT-OF-STATE WASTES	899,020	45	0	16,482	0	not applicable	915,548
TOTAL WASTE DISPOSED IN OREGON	3,415,588	212,105	393,362	120,634	40,282	not applicable	4,181,971

No attempt was made to determine the amount of waste that was disposed through illegal dumping, littering, or backyard burning. In certain rural parts of the state it is a common practice to burn household solid wastes in a "burn barrel". Ash and residue from burn barrels that is disposed in landfills is included in the tonnage reported in Table 1, but no estimate is made of the waste that was actually burned in the burn barrel.

- pling purposes. Sampling in one member of each pair was conducted in spring and fall months, while the other pair member was sampled in winter and summer. Table 2 shows the pairing of counties and the net number of samples sorted each month.
2. Approximately 15 samples were selected for sorting at each site each day, with roughly half the samples coming from garbage trucks, and the other half from vehicles used by households or businesses to "self-haul" waste for disposal.
 3. Seven to eight garbage trucks each day were randomly "preselected" for sampling based on information provided by garbage haulers about garbage routes and average truck disposal quantities. The likelihood of any truck being preselected for sampling was

Table 2. Net Number of Samples by County and by Month

County - SB 66 goal	Jul 94	Aug 94	Sep 94	Oct 94	Nov 94	Dec 94	Jan 95	Feb 95	Mar 95	Apr 95	May 95	Jun 95	Total
Grant - 7%	0	14	0	0	0	0	0	15	0	0	0	0	29
Harney - 7%	0	0	0	0	12	0	0	0	0	0	17	0	29
Baker - 15%	0	0	0	0	15	0	0	0	0	0	15	0	30
Union - 15%	0	14	0	0	0	0	0	16	0	0	0	0	30
Coos - 15%	0	0	0	27	0	0	0	0	0	30	0	0	57
Tillamook - 15%	31	0	0	0	0	0	32	0	0	0	0	0	63
Columbia - 25%	12	0	0	0	0	0	16	0	0	0	0	0	28
Douglas - 25%	0	0	0	12	0	0	0	0	0	16	0	0	28
Deschutes - 25%	0	0	0	0	15	0	0	0	0	0	15	0	30
Wasco - 25%	0	12	0	0	0	0	0	17	0	0	0	0	29
Jackson - 25%	0	0	15	0	0	0	0	0	15	0	0	0	30
Josephine - 25%	0	0	0	0	0	14	0	0	0	0	0	13	27
Benton/Linn - 30%	0	0	14	0	0	14	0	0	17	0	0	15	60
Lane - 30% *	0	0	13	0	0	0	0	0	18	0	0	0	31
Marion - 30% *	0	0	0	14	0	13	0	0	0	15	0	15	57
Yamhill - 30% *	16	0	0	0	0	0	15	0	0	0	0	0	31
Total	59	40	42	53	42	41	63	48	50	61	47	43	589

** For county pairings, Lane County was matched with Marion for December and June, and Yamhill County was matched with Marion for October and April. Benton and Linn Counties were matched, but since both use the same landfill, samples were taken from both counties each quarter.*

directly proportional to the quantity of waste reported as disposed by that truck, so that each pound of waste had equal likelihood of being selected for sampling regardless of the size of the garbage truck. However, in very small rural counties, the number of trucks visiting the site each day was limited, and so every garbage truck visiting the site was sampled. In some cases loads were held over for a day to allow extra independent samples. No single truckload was sampled more than once, thus providing a greater level of statistical independence between samples.

4. Garbage trucks were taken and sorted from four different substreams:

- Residential route garbage trucks - routes with > 90% of waste from residential customers
- Commercial route garbage trucks - routes with > 90% of waste from commercial customers
- Mixed route garbage trucks - routes with mixtures of residential and commercial customers, and

Table 3 Net Number of Samples by Waste Substream

County - SB 66 Goal	Residential Routes	Commercial Routes	Mixed Routes	Drop Boxes	Self Haul	Total
Grant - 7%	3	1	8	0	17	29
Harney - 7%	8	6	0	1	14	29
Baker - 15%	7	3	0	4	16	30
Union - 15%	5	4	1	4	16	30
Coos - 15%	16	4	6	4	27	57
Tillamook - 15%	6	4	13	4	36	63
Columbia - 25%	5	2	5	2	14	28
Douglas - 25%	4	1	5	3	15	28
Deschutes - 25%	5	3	3	5	14	30
Wasco - 25%	7	3	3	2	13	29
Jackson - 25%	6	0	7	3	14	30
Josephine - 25%	7	4	2	2	12	27
Benton/Linn - 30%	16	5	4	6	29	60
Lane - 30%	8	2	2	4	15	31
Marion - 30%	11	7	6	6	27	57
Yamhill - 30%	6	2	1	4	18	31
Total	120	51	66	54	297	589

- Drop boxes, both loose-fill and compacting.

The net number of samples for each substream, plus the net number of self-haul loads, is shown in Table 3.

5. The minimum weight for samples was designated as 175 pounds for garbage trucks and 150 pounds for self-haul vehicles. For most loads, a sample weighing about 200 pounds was extracted from a randomly-selected position in the load. For self-haul vehicles carrying less than 300 pounds, the entire load was sorted. If the self-haul vehicle was estimated as carrying less than 150 pounds, its waste was combined with waste from the

next-arriving small self-haul load to make a composite sample. In one case, as many as four loads had to be combined to reach the 150 pound minimum sample weight.

6. Self-haul samples were taken from the first large truckload (weighing 1 ton or more of waste) arriving at the site, and from the first three loads weighing 600 pounds to 1 ton in total estimated weight. Three or four loads from smaller vehicles were chosen by taking the first small vehicle to arrive at the site after a specific pre-set time. Based on data provided by one disposal site (Tillamook), the majority of self-haul loads arriving at the site are smaller loads of less than 600 pounds each. Although larger loads are fewer in

number, they are greater in weight, such that more than one-half of the total self-haul weight received comes in loads of greater than 600 pounds each. Roughly one-eighth of the self-haul weight received is from trucks carrying more than one ton, although these larger trucks are just a tiny fraction of the self-haul vehicles visiting the site each day.

7. More than 600 loads were selected for sorting. However, in some cases the sample selected for sorting turned out to weigh less than the designated minimum weights. In most of these cases, the data from the “light” loads were added to data from a similar loads (same waste substream, same county, and same week), and the combined totals were used in data analysis. The result was a net of 589 samples gathered and analyzed.

Each sample was sorted in the field into 76 separate categories (see Appendix B for a listing of the categories) and the weight of each cat-

egory was recorded. In addition, the category “rigid plastic containers” was further sorted into nine subcategories based on resin type as part of the detailed analysis to be discussed later. Frequently, some wet difficult-to-sort residue (supermix) and very small materials (fines) remained after the gross sorting was complete. These residues on average made up about three percent of the total sorted sample weight. For each sample, the total amount of “fines” and “supermix” were weighed separately, a visual estimate was made of their percent composition by category, and the component weights due to fines and supermix were calculated and added back to the appropriate categories.

Analysis Methodology: Disposal Site Composition Data.

For data analysis purposes, the counties were first grouped into four categories based on their

Table 4. Characteristics of County Groupings*

SB 66 Goal Level	County Characteristics
7%	Very Rural - no cities greater than 4000 population
15%	Fairly rural or distant from major population centers. Has at least one city with more than 4,000 population, but generally none with more than 20,000 population
25%	Urban/Rural Mixture. Either distant from major population centers (Portland and Willamette Valley) but with a city of greater than 20,000 population, or fairly near major population centers but with the largest city between 10,000 and 20,000 population
30%	Near Urban. Counties in the Willamette Valley area, on or near the Interstate 5 corridor between Portland and Eugene

* The three Metro counties have a 40% goal, but are covered in Metro’s composition study.

designated recovery goal under the 1991 Oregon Recycling Act (SB 66). This grouping corresponds generally to the degree of urban or rural nature of the county and to the distance from recycling markets and major population centers (See Table 4) The "SB 66" recovery goal for each county included in the disposal site sampling is shown in Tables 2 and 3.

Within each of the four groups of counties, the percent composition and sample variance of each of the five waste substreams were calculated separately. Results from the different waste substreams were then combined by weighting the composition figures for each substream by the percentage of waste in that substream.

Weighting by substream

In the 1992-93 waste composition study, DEQ estimated that about 27% of the municipal solid waste disposed in Oregon was self-hauled to disposal sites by the household or business generating the waste, with the remaining 73%

being transported by commercial garbage hauling companies. DEQ has not updated this estimate, and does not have separate estimates for self-haul waste based on the different county groupings, and so the same weighting factor (26.811% for self-haul) was used for all county groups in the current study as was done for the 1992-93 study.

For the four garbage hauler waste substreams, the weighing factor used was based on the same garbage route/tonnage information provided by the local garbage haulers for truck-selection purposes. Table 5 shows the percentage of waste in each waste stream for each county group, based on the local hauler information.

Table 5 also shows the percentage of disposed municipal solid waste that comes from counties in each county group, based on disposal site reports of waste received by county for all counties in Oregon excluding the three Portland metro-area counties. These percentages were used to combine waste composition results for the different county groups to calculate state-wide (non-Metro counties) waste composition.

Table 5. Weighting by Wastestream

	% Tons Disposed	Residential Routes	Commercial Routes	Mixed Routes	Drop Boxes	Self Haul
7% Counties	2.768%	18.060%	26.614%	21.726%	6.789%	26.811%
15% Counties	19.129%	19.691%	19.675%	14.651%	19.172%	26.811%
25% Counties	30.540%	17.662%	19.258%	12.572%	23.697%	26.811%
30% Counties	47.563%	29.689%	13.769%	10.637%	19.094%	26.811%
Weighted Average	100%	23.782%	16.931%	12.302%	20.174%	26.811%

The absolute tons of waste disposed are shown in Table 6. Metro waste composition results can be combined with results from the rest of the state by using the fact that in 1994, 42.29% of the total disposed municipal waste in Oregon came from the Metro tri-county area.

It should be noted that the garbage hauler route information used to construct Table 5 was not originally intended to be used to weight the hauler substreams, but instead was intended just to provide basic information on the collection routes used by each company for the purpose of selecting representative waste samples. In many cases, only crude estimates were available on the quantity of each waste substream disposed, particularly in the case of drop box loads of waste. Since the waste substreams differ significantly from each other in composition (see tables 7 and 8), changing or correcting the weighting of the substreams would affect the calculated overall waste stream composition. DEQ expects to conduct a more detailed analysis quantifying the waste in each substream, but for now is using the information provided by the haulers for load selection as the only available data for weighting the substreams.

Statewide waste composition was determined by separately analyzing individual components of the wastestream using samples taken from that component waste stream, and then combining the results of the components. Thirty-five separate component waste compositions were calculated based on

- county goal (7%, 15%, 25% and 30% counties),
- waste substream (self-haul, drop boxes, and residential, commercial, and mixed hauler routes), and
- High vs low disposal seasons (high disposal in April through September) for all county groups except the 7% counties¹

An individual component would be, for example, waste from 30% counties, from drop boxes, from the low disposal season (October through March). The first step was to calculate the composition of each separate component. In this case, all of the disposal site samples from drop boxes in 30% counties taken in the months of October to March were analyzed to determine

Table 6. Tons Disposed by County Group

	Tons Disposed	Percent For 7%-30% Counties	Percent For All County Groups
7% Counties	37,306	2.768%	1.597%
15% Counties	257,807	19.129%	11.039%
25% Counties	411,615	30.540%	17.625%
30% Counties	641,025	47.563%	27.448%
Metro Counties	987,640		42.290%
Total	2,335,394	100%	100%

the percentage and standard deviation of each material category in that component waste stream. The composition for the 35 separate components were then combined based on each component's percentage of the total statewide (non-Metro) disposed waste stream. In this example, the percentage used for weighting is 4.266%, and is based on multiplying the percentage of waste coming from 30% counties (47.563%) by the percentage of that waste estimated to come from drop boxes (19.094%) by the percentage of waste disposed (overall) in the low-disposal season (46.969%). The percentages used for weighting, by county goal and waste substream, are shown in Table 5.

Results - Statewide Waste Composition 1994-95

Preliminary waste composition results for selected materials and groupings of materials are shown in Table 7. Results are shown as percent composition for each waste substream, as well as the weighted average for all substreams. Results for all 76 individual materials measured in this study are shown in Table A1 in Appendix A of this report. Table 7 also shows the "90% confidence interval" for the percent composition of each material based on sampling error, and Table 8 shows the "90% confidence interval" for each separate waste substream. "90% Confidence Interval" means that based on just expected sampling error, there is a 90 percent chance that the true waste composition falls within that interval, and roughly a 5 percent chance each that the true composition is either above or below that interval. If, for a material, the "90% confidence intervals" do not overlap for two waste substreams, there is a statistically significant

difference (at $p < .05$) between the waste substreams for that material. However, the confidence intervals published throughout this report are based on just "sampling error" and do not include other factors such as errors in estimating the weighting of each waste substream or other potential biasing errors.

Comparison to recent Metro and Statewide Composition Studies

The methodology and categorization of wastes used by DEQ to conduct the 1994-95 waste composition study is almost identical to that used by Metro to conduct their 1993-94 composition study [PHS1]² and by DEQ for the 1992-93 composition study for Oregon³. Table 9 presents results from these studies, as well as combined statewide composition results based on the 1993-94 study for the Metro area and DEQ's 1994-95 study for the rest of the state.

Although the methods for sorting and categorizing waste were similar, there were some differences between studies. Discussed below are differences between the two DEQ statewide studies, followed by differences between DEQ's and Metro's studies.

Differences between DEQ's 1992-93 and 1994-95 studies.

Although both DEQ studies were conducted statewide, DEQ's 1994-95 study included waste samples from eight counties not included in the 1992-93 study, and two counties sampled in 1992-93 were not sampled in the 1994-95 study. Eight counties were sampled in both studies. There were also differences as to how the waste substreams were defined and weighted. In

Table 7: Waste Composition in Percent
Statewide excluding the Portland Tri-County Metro Area - 1994-95
Selected Material - Uncorrected for Detailed Sample Examination

Material	Total	Confidence Interval (90%)	Resid. Routes	Comm. Routes	Mixed Routes	Drop boxes	Self-haul
TOTAL PAPER	28.95	(27.58-30.32)	34.25	38.15	39.08	27.44	14.92
Paper Packaging	13.49	(12.57-14.41)	13.30	15.67	15.18	18.17	7.97
Other Paper	15.46	(14.48-16.44)	20.94	22.48	23.90	9.27	6.95
Cardboard	6.75	(6.09- 7.41)	5.61	7.00	6.80	10.86	4.48
Newspaper	2.94	(2.60- 3.28)	3.98	3.40	5.58	1.63	1.51
Magazines	1.28	(1.11- 1.45)	1.85	1.20	2.35	0.48	0.94
High-grade Office Paper	1.66	(1.37- 1.96)	1.31	3.19	2.79	1.66	0.50
Low-grade Recyc. Paper	8.56	(7.88- 9.24)	11.71	11.38	11.74	5.86	4.54
Nonrecyclable Paper	7.76	(7.18- 8.33)	9.79	11.99	9.82	6.94	2.95
TOTAL PLASTICS	8.57	(7.94- 9.20)	8.26	9.18	10.01	9.05	7.43
Plastic Packaging	4.35	(3.96- 4.74)	5.27	4.87	5.07	5.09	2.32
Rigid Plastic Containers	1.30	(1.23- 1.37)	2.06	1.39	1.81	0.57	0.89
Other Plastic Packaging	3.05	(2.68- 3.42)	3.21	3.48	3.26	4.52	1.43
Plastic Products	4.22	(3.74- 4.71)	3.00	4.31	4.94	3.96	5.11
OTHER ORGANICS	40.49	(38.87-42.11)	40.27	36.24	32.17	40.08	47.50
Yard Debris	5.80	(4.83- 6.78)	10.96	1.57	3.22	3.63	6.72
Wood	8.57	(7.41- 9.73)	1.56	3.79	1.52	16.46	15.10
Food Waste	14.65	(13.48-15.82)	18.20	23.69	17.87	12.07	6.26
Tires	0.04	(0.01- 0.07)	0.02	0.00	0.02	0.00	0.11
Other Rubber Products	0.46	(0.38- 0.55)	0.36	0.64	0.64	0.30	0.48
Disposable Diapers	1.87	(1.65- 2.09)	3.56	1.99	3.48	0.41	0.65
Carpet	1.15	(0.78- 1.52)	0.56	0.65	0.51	0.43	2.81
Textiles + mixed	3.05	(2.60- 3.49)	3.23	2.25	2.24	2.55	4.12
Misc. Organics	4.91	(4.05- 5.77)	1.83	1.66	2.67	4.23	11.25
GLASS	2.83	(2.55- 3.12)	3.06	2.57	5.03	1.22	3.00
Dep. Bev. Bottles	0.15	(0.11- 0.18)	0.13	0.11	0.28	0.09	0.17
Other Container Glass	1.93	(1.77- 2.09)	2.59	1.97	3.43	0.63	1.61
Window+Nonrecyc. Glass	0.76	(0.52- 0.99)	0.34	0.48	1.32	0.50	1.22
METALS	8.06	(7.44- 8.69)	5.86	6.74	7.12	6.33	12.60
Aluminum Beverage Cans	0.14	(0.10- 0.19)	0.12	0.13	0.19	0.13	0.17
Other Aluminum	0.24	(0.21- 0.27)	0.28	0.23	0.28	0.14	0.26
Tinned Cans	1.65	(1.53- 1.78)	2.52	2.00	2.50	0.28	1.32
Other Metal	6.03	(5.41- 6.65)	2.94	4.38	4.15	5.79	10.86
OTHER INORGANICS	10.29	(8.79-11.79)	7.86	6.59	6.00	14.93	13.26
Rock Soil Concrete	4.70	(3.47- 5.92)	2.12	3.28	3.88	10.89	3.59
Other Misc Inorganics	5.59	(4.63- 6.55)	5.74	3.31	2.12	4.04	9.67
"MEDICAL" WASTE	0.18	(-0.00- 0.40)	0.09	0.08	0.01	0.68	0.04
OTHER HAZARDOUS MATLS	0.62	(0.50- 0.75)	0.35	0.45	0.59	0.27	1.25
TOTAL PACKAGING	22.97	(21.72-24.22)	24.42	25.53	27.65	27.63	14.40
TOTAL PRODUCTS	48.40	(46.48-50.31)	38.80	43.11	44.70	44.64	64.77
TOTAL NON-MANUFACTURED	28.64	(26.82-30.46)	36.78	31.36	27.65	27.74	20.83

Table 8: 90% Confidence Interval
 Statewide excluding the Portland Tri-County Metro Area - 1994-95
 Selected Material - Uncorrected for Detailed Sample Examination

Material	Residential Routes	Commercial Routes	Mixed Routes	Drop boxes	Self-haul
TOTAL PAPER	(32.45-36.04)	(33.70-42.61)	(35.09-43.06)	(23.17-31.70)	(13.25-16.59)
Paper Packaging	(12.56-14.05)	(13.80-17.54)	(13.24-17.11)	(14.25-22.09)	(7.08- 8.86)
Other Paper	(19.57-22.32)	(18.73-26.24)	(20.54-27.25)	(6.98-11.55)	(5.77- 8.13)
Cardboard	(5.23- 5.99)	(5.97- 8.02)	(5.88- 7.72)	(7.82-13.90)	(3.94- 5.02)
Newspaper	(3.50- 4.46)	(2.59- 4.20)	(3.67- 7.49)	(0.86- 2.41)	(1.20- 1.82)
Magazines	(1.49- 2.20)	(0.82- 1.57)	(1.74- 2.95)	(0.14- 0.83)	(0.63- 1.25)
High-grade Office Paper	(1.00- 1.63)	(2.12- 4.26)	(2.01- 3.57)	(0.69- 2.62)	(0.31- 0.69)
Low-grade Recyc. Paper	(10.68-12.74)	(8.91-13.85)	(9.94-13.54)	(4.10- 7.63)	(3.59- 5.49)
Nonrecyclable Paper	(8.92-10.66)	(10.00-13.98)	(8.67-10.96)	(5.00- 8.87)	(2.47- 3.43)
TOTAL PLASTICS	(7.70- 8.82)	(8.15-10.21)	(7.62-12.40)	(6.70-11.40)	(6.59- 8.27)
Plastic Packaging	(4.95- 5.58)	(4.36- 5.38)	(4.67- 5.46)	(3.26- 6.91)	(2.03- 2.61)
Rigid Plastic Containers	(1.90- 2.21)	(1.22- 1.55)	(1.64- 1.97)	(0.38- 0.76)	(0.76- 1.02)
Other Plastic Packaging	(3.01- 3.40)	(3.04- 3.92)	(2.96- 3.57)	(2.73- 6.30)	(1.21- 1.65)
Plastic Products	(2.65- 3.34)	(3.52- 5.11)	(2.55- 7.33)	(2.52- 5.41)	(4.32- 5.91)
OTHER ORGANICS	(37.72-42.82)	(32.67-39.80)	(28.45-35.90)	(34.97-45.18)	(44.39-50.60)
Yard Debris	(8.52-13.41)	(0.62- 2.52)	(1.64- 4.81)	(0.76- 6.51)	(4.94- 8.49)
Wood	(1.22- 1.91)	(2.54- 5.03)	(0.76- 2.27)	(11.62-21.31)	(12.82-17.38)
Food Waste	(16.65-19.74)	(19.81-27.57)	(15.60-20.15)	(7.92-16.21)	(5.27- 7.25)
Tires	(-0.00- 0.05)	(0.00- 0.00)	(-0.00- 0.05)	(0.00- 0.00)	(0.00- 0.22)
Other Rubber Products	(0.24- 0.48)	(0.34- 0.94)	(0.33- 0.95)	(0.11- 0.49)	(0.36- 0.60)
Disposable Diapers	(3.04- 4.08)	(1.29- 2.68)	(2.65- 4.31)	(0.03- 0.78)	(0.40- 0.89)
Carpet	(0.27- 0.85)	(0.23- 1.08)	(0.15- 0.86)	(0.10- 0.75)	(1.51- 4.11)
Textiles & mixed	(2.46- 4.00)	(1.50- 3.01)	(1.69- 2.80)	(0.93- 4.17)	(3.39- 4.86)
Misc. Organics	(1.31- 2.34)	(0.88- 2.43)	(0.28- 5.06)	(2.16- 6.30)	(8.71-13.78)
GLASS	(2.73- 3.38)	(2.08- 3.05)	(3.51- 6.56)	(0.73- 1.72)	(2.42- 3.58)
Dep. Bev. Bottles	(0.08- 0.17)	(0.06- 0.17)	(0.16- 0.41)	(0.02- 0.16)	(0.07- 0.27)
Other Container Glass	(2.30- 2.87)	(1.61- 2.32)	(2.80- 4.06)	(0.38- 0.88)	(1.27- 1.95)
Window+Nonrecyc. Glass	(0.25- 0.43)	(0.17- 0.80)	(-0.21- 2.84)	(0.19- 0.81)	(0.80- 1.65)
METALS	(5.24- 6.47)	(5.59- 7.90)	(5.95- 8.28)	(4.53- 8.13)	(10.98-14.22)
Aluminum Beverage Cans	(0.09- 0.14)	(0.09- 0.16)	(0.15- 0.24)	(0.06- 0.20)	(0.00- 0.33)
Other Aluminum	(0.23- 0.32)	(0.15- 0.32)	(0.21- 0.34)	(0.05- 0.22)	(0.19- 0.32)
Tinned Cans	(2.29- 2.74)	(1.56- 2.44)	(2.13- 2.86)	(0.11- 0.44)	(1.07- 1.56)
Other Metal	(2.39- 3.50)	(3.23- 5.53)	(2.91- 5.39)	(3.98- 7.59)	(9.27-12.45)
OTHER INORGANICS	(5.62-10.09)	(4.19- 8.99)	(3.47- 8.52)	(9.16-20.69)	(10.86-15.66)
Rock Soil Concrete	(1.45- 2.79)	(1.20- 5.35)	(1.41- 6.36)	(5.42-16.36)	(2.47- 4.71)
Other Misc Inorganics	(3.82- 7.66)	(1.84- 4.77)	(1.34- 2.89)	(1.28- 6.80)	(7.48-11.87)
"MEDICAL" WASTE	(-0.00- 0.20)	(0.00- 0.16)	(0.00- 0.01)	(-0.00- 1.78)	(0.02- 0.07)
OTHER HAZARDOUS MATLS	(0.21- 0.49)	(0.18- 0.71)	(0.22- 0.95)	(0.13- 0.41)	(0.88- 1.62)
TOTAL PACKAGING	(23.24-25.60)	(23.38-27.67)	(25.08-30.22)	(22.29-32.97)	(12.99-15.81)
TOTAL PRODUCTS	(36.47-41.13)	(38.71-47.51)	(41.25-48.15)	(37.77-51.50)	(61.42-68.12)
TOTAL NON-MANUFACTURED	(34.02-39.55)	(27.09-35.64)	(24.28-31.01)	(20.98-34.50)	(18.44-23.21)

DEQ's 1992-93 study, drop box waste loads were generally considered part of the commercial waste stream and were not analyzed separately. Also, the weighting of the various substreams, based on information provided by the haulers, differed between study years. The 1994-95 study included much greater amounts of waste from drop boxes than was included in the 1992-93 study. Also, both residential waste and mixed loads from haulers were slightly lower in 1994-95 than they were reported by haulers in 1992-93. Some of the differences in weighting may be due to the fact that a number of haulers were surveyed in 1994-95 that were not surveyed in 1992-93. For companies surveyed in both studies, there may be differences in the estimates of waste stream quantities between years that represent more differences in how the estimates were derived rather than real changes in the waste stream. However, the 1992-93 surveying was conducted by a subcontractor to DEQ, and was conducted with the understanding that only compiled results would be made available to DEQ and published, and not data from individual companies.

To help determine how much of the difference between the DEQ studies is due to differences in how the waste substreams were weighted, and how much may be due to real differences in the results, DEQ has reanalyzed the 1992-93 data using the same weighting factors as were used in 1994-95. As can be seen in Table 9, for almost all material categories, reweighting the 1992-93 data based on 1994-95 weightings partially reduced the differences in results between studies. This means that at least some of the differences in results were due to the different weightings used, but that some significant differences remain between the different years of study.

There were also some minor adjustments made in definitions of material categories in the 1994-95 DEQ study as compared to the earlier DEQ and Metro studies. The definition used for "rigid plastic containers" was changed to match the definition adopted in DEQ rules in 1994, excluding some lids and some plastic tubes that had been counted as rigid plastic containers in the earlier study. These items then became "other rigid plastic packaging". A new category "Mixed textiles/materials" was added to include belts, shoes, and other items that combine textiles with other materials. Most of these items were included with "textiles" in 1992-93, but some were included with "other organics". Finally, "pet litter/feces" was measured separately in 1994-95 (and included under "miscellaneous organics" in Tables 7, 8, and 9. In the previous study the clay-type portion of litter was included "inorganic soil/fines". Definitions of material categories is included in Appendix B.

Differences in Results: DEQ 1992-93 vs 1994-95

Differences in results between the 1992-93 and 1994-95 studies are not necessarily due to changes in disposal of material. Some of the differences may be due to the difference in geographic area used for each study, or differences in the way the different sorting crews classified hard-to-categorize or mixed materials. Since results are reported as percentages of the entire waste stream, the percent composition of a material may also be affected by the change in disposal of unrelated material. For example, if the amount of yard debris declined due to implementation of composting or collection programs, the percent composition of all other materials would rise on average, since the total percent composition must always add to 100%.

The main differences in results between the DEQ 1992-93 study and the 1994-95 study are as follows:

- There was significantly less yard debris in the waste stream in 1994-95. Yard debris declined from about 9 to 10 percent of the waste stream to just under 6 percent.
- Almost all of the materials related to construction and demolition were higher in 1994-95 than in 1992-93. These include lumber, tarpaper/asphalt shingles, window glass, gypsum wallboard, fiberglass insulation, and “rock, concrete, and brick”. For a number of these materials, the differences were not quite statistically significant ($.05 < p < .10$), but the fact that all of the construction/demolition materials changed in the same direction seems in itself significant.
- Although food waste was still relatively high compared to studies in other areas, the results for 1994-95 were significantly lower than 1992-93 results.
- There was a highly significant decline in glass bottles disposed - from 1.76% of the waste stream in 1992-93 to 1.20% in 1994-95. DEQ believes this change is due mainly to a decline of the use of glass in favor of other materials for packaging beverages. Surprisingly, there was little change in the disposal of glass jars.
- Generally there were not large differences in other household recyclables. Tinned food cans showed a small but statistically significant increase in 1994-95, while newspaper showed an insignificant decrease.
- Both magazines and high-grade office paper showed highly significant decreases. However, this decline was mostly offset by an increase in low-grade printing and writing paper. These differences may in part be due to the manner in which the different sorters categorized paper in each study year, since the classification of paper into these categories is a judgment call. For example thick glossy advertisement supplements may be classified as magazines, whereas thinner advertisements mixed with other paper would be classified as low-grade paper. Different sorters may have made different judgment calls on how to classify these papers.

Differences between DEQ and Metro studies.

The definitions of categories used by Metro were in almost all cases the same as used by DEQ. Metro did use a few different “hazardous materials” categories, and also separately classified used oil filters as one of the hazardous materials. DEQ’s studies classified used oil filters in the “mixed metals/materials” category. In this report, Metro’s oil filter data is included with “mixed metals/materials” to match DEQ’s categorization.

The Metro area has a significant amount of recovery of materials such as cardboard, wood, and scrap metal from mixed solid waste at two special-purpose landfills, one transfer station, and at specific recovery facilities. Samples for waste composition were taken by Metro’s staff before any post-collection recovery of recyclables had occurred. The actual percentage of Metro-region waste “as disposed” that is wood, cardboard, and scrap metal is lower than the “as received” numbers reported here due to

Table 9: Comparison of Recent Oregon Composition Results
Selected Material - Uncorrected for Detailed Sample Examination

Material	Metro 1993-94 as received		Rest of Oregon 1994-95	Rest of Oregon 1992-93		Statewide Combined Metro 93-94 all facilities & rest 1994-95
	all facilities	transfer stations only		using 1994-95 weighting	as originally reported	
TOTAL PAPER	25.18	28.05	28.95	29.23	29.62	27.37
Paper Packaging	11.85	12.37	13.49	11.92	11.47	12.92
Other Paper	13.33	15.69	15.46	17.31	18.15	14.45
Cardboard	6.14	6.02	6.75	6.19	5.93	6.74
Newspaper	2.53	2.96	2.94	3.18	3.37	2.84
Magazines	1.91	2.27	1.28	2.16	2.34	1.51
High-grade Office Paper	2.19	2.55	1.66	2.75	2.74	1.84
Low-grade Recyc. Paper	6.29	7.28	8.56	6.64	6.64	7.50
Nonrecyclable Paper	6.12	6.96	7.76	8.31	8.59	6.93
TOTAL PLASTICS	9.21	9.86	8.57	8.16	7.75	8.64
Plastic Packaging	2.85	3.27	4.35	4.37	4.35	3.65
Rigid Plastic Containers	0.86	1.01	1.30	1.29	1.37	1.09
Other Plastic Packaging	1.99	2.26	3.05	3.07	2.99	2.56
Plastic Products	6.36	6.60	4.22	3.80	3.40	4.99
OTHER ORGANICS	47.00	45.17	40.49	43.21	43.61	43.77
Yard Debris	5.10	4.86	5.80	9.28	10.19	6.57
Wood	9.79	6.78	8.57	7.14	6.09	9.17
Food Waste	19.32	24.08	14.65	17.47	17.98	16.24
Tires	0.20	0.11	0.04	0.08	0.12	0.25
Other Rubber Products	0.89	0.99	0.46	0.48	0.46	0.62
Disposable Diapers	1.69	2.07	1.87	1.78**	1.97**	1.76
Carpet	1.34	1.19	1.15	1.24	1.08	1.19
Textiles	2.20	2.57	3.05	2.49	2.53	2.64
Misc. Organics	6.74	2.52	4.91**	3.25	3.20	5.35
GLASS	2.78	3.31	2.83	3.97	3.79	2.75
Dep. Bev. Bottles	0.14	0.17	0.15	0.15	0.13	0.14
Other Container Glass	1.92	2.36	1.93	2.46	2.50	1.89
Window+Nonrecyc. Glass	0.71	0.77	0.76	1.35	1.15	0.72
METALS	6.53	6.37	8.06	7.64	7.55	7.36
Aluminum Beverage Cans	0.12	0.15	0.14	0.11	0.11	0.13
Other Aluminum	0.29	0.26	0.24	0.26	0.26	0.25
Tinned Food Cans	0.75	0.91	1.44	1.26	1.36	1.15
Other Metal	5.37	5.05	6.24	5.82	5.83	5.88
OTHER INORGANICS	8.75	6.59	10.29	7.01	6.88	9.38
Rock Soil Concrete	1.92	1.64	4.70	4.16***	4.08***	3.49
Other Misc Inorganics	6.83	4.94	5.59***	2.86	2.80	5.88
"MEDICAL" WASTE	0.10	0.13	0.19	0.34	0.38	0.15
OTHER						
HAZARDOUS MATLS	0.45	0.51	0.62	0.43	0.43	0.58
TOTAL PACKAGING	18.57	20.06	22.97	21.42	20.81	21.14
TOTAL PRODUCTS	50.77	46.12	48.40	45.55	44.77	50.71
TOTAL						
NON-MANUFACTURED	30.65	33.82	28.64	33.03	34.42	28.16

** "Other disposable hygiene products", which measured 0.08% overall in the 1994-95 statewide study, were not separately measured in 1992-93, but were included in with disposable diapers.

*** "pet litter" was not separately measured in 1992-93, and the clay (inorganic) portion was included here in the subcategory "soil and other fines". "pet litter" comprised 1.49% of waste in the statewide 1994-95 study, and is included in this table under "other misc. inorganics".

the post-collection recovery. There is also some post-collection recovery in the rest of the state, but in at least some counties such as Marion and Benton, that recovery occurs away from the disposal site, and so some materials may be removed before the waste reaches the landfill face or the transfer station pit where the waste samples were gathered. Also, many of the non-metro disposal sites have well-developed recycling opportunities on-site, and persons bringing scrap metal, appliances, or other recyclables can usually drop those materials off for free before passing through the gatehouse and paying for the remaining waste to be disposed.

Table 9 shows Metro's 1993-94 disposal results both for overall waste from all facilities (as received), and waste received just at the two large transfer stations that Metro operates. Since the rest of the state does not have as many easily accessible specialized recovery facilities as are present in the Metro area, the results from DEQ's studies in the rest of the state are probably most comparable to being intermediate between the "transfer station only" results and the "all facility" results for the Metro area.

Differences Between Waste Substreams

As was true for the 1992-93 study, the waste substreams differed significantly from each other. As can be seen in Table 7, paper was about twice as high in commercially-hauled loads as in self-haul loads, and food waste was also much higher. Lumber and other wood was very high in both self-haul and drop box loads, but was comparatively scarce in the compacting garbage truck loads. Residential versus commercial hauler loads also differed strongly. Residential hauler routes had a significantly

higher percentage of magazines, rigid plastic containers, yard debris, diapers, container glass, aluminum foil, and pet litter. On the other hand, commercial hauler routes had significantly higher percentages of corrugated cardboard, high-grade (office) paper, film plastic, wood lumber, pallets, and food waste..

"Drop Box Loads" actually consisted of two very distinct components - open drop boxes used for hauling demolition debris and other uncompacted wastes, and compactor boxes often used by large grocery stores and other major retail outlets. Table 10 shows the composition of these two components, based on 12 compactor box samples and 40 loose drop box samples. Food waste, wood, tar paper, rock and dirt, and paper are all materials that differ greatly between these two drop box types.

Geographic Differences

As was the case in the 1992-93 study, certain materials did show some significant geographic differences in disposal, but the differences were generally fairly small in magnitude. Geographic differences were examined in three ways - first using the classification of counties by recovery goal as set forth in Oregon Revised Statutes 459A.010 (from Senate Bill 66 - the 1991 Oregon Recycling Act), second by comparing samples taken on the west side versus east side of the Cascade Mountains, and third by comparing residential garbage routes and self-haul garbage inside and outside city limits.

Results of the comparison by county goal are shown in Table 11, with the most rural counties (the 7% counties) appearing on the right side of the table. The following trends were noted:

- A number of common recyclables were more frequent in the rural county disposed solid waste than the urban counties. This trend was particularly true for magazines, glass containers, tinned food cans, aluminum foil, and other non-ferrous metal. For the first three materials listed, the differences were highly significant. The same trends were noted in the 1992-93 study for most of these materials.
- Cardboard and newspaper also made up a larger component of the solid waste in the more rural counties, but the trend was not strong enough to be statistically significant. However, both of these materials are expected to be generated in much greater amounts in urban areas, due to the increased thickness of local newspapers in the urban areas and expected greater generation of cardboard in the areas with greater commercial activity. The fact that newspaper and cardboard did not show higher disposal is probably due to the better recycling opportunities and higher recovery rates in the more urban counties. The same weak trend was also noted for both of these materials in the 1992-93 study.
- Office paper disposal was highest in the most rural counties in the current study. This is the opposite of the 1992-93 study, when office paper was lowest in the most rural county. Grant and Harney Counties were the "7%" counties examined in the current study, whereas Jefferson County was the "7%" county examined in 1992-93. It is unknown why such different results were obtained from these rural counties in the different study years.
- Rigid plastic containers (packaging) were more common in waste from rural counties, whereas plastic products as a whole were generally more common in urban areas. The same trend was noted for both in the 1992-93 study.
- Generally, the two 7% counties examined showed very low disposal rates for materials associated with construction and demolition, such as lumber, carpet, asphalt roofing/tarpaper, rock and dirt, gypsum wallboard, and fiberglass insulation. However, this may be due to the very low levels of construction and demolition activities in these two particular counties rather than a trait common to rural counties. Harney and Grant Counties have held almost constant in population since 1990, growing by about 1% over a five-year period. In contrast, the state as a whole grew 10.2% in population over the same 5 years, and Jefferson County, the "7%" county used in the 1992-93 study, grew 17.7% in population. Jefferson County did not have higher than average levels of construction and demolition materials in its wastestream in the 1992-93 study, but it was much closer to the statewide average than was true of Harney and Grant Counties in the 1994-95 study.
- Yard debris disposal was perhaps slightly higher in urban counties when compared to rural counties in the current study, but the differences were not statistically significant. In the 1992-93 study, the higher disposal of yard debris in urban counties was statistically significant. It could be that collection and composting programs have reduced yard debris disposal in urban areas, but it is not clear that this is the case.

**Table 10: Drop Box Loads - Loose vs. Compactor Boxes
Selected Material - Unweighted**

Material	Loose Drop Boxes (n=40)		Compactor Boxes (n = 12)		
	% composition	Confidence Interval (90%)	% composition	Confidence Interval (90%)	
TOTAL PAPER	22.96	(18.36-27.56)	40.43	(30.36-50.50)	**
Paper Packaging	14.74	(10.73-18.75)	26.99	(17.81-36.17)	*
Other Paper	8.21	(5.85-10.58)	13.44	(5.40-21.48)	
Cardboard	9.24	(5.99-12.49)	13.71	(7.92-19.51)	
Newspaper	1.44	(0.68- 2.19)	2.56	(0.23- 4.89)	
Magazines	0.46	(0.05- 0.86)	0.66	(0.00- 1.62)	
High-grade Office Paper	1.57	(0.44- 2.70)	2.63	(0.00- 5.48)	
Low-grade Recyc. Paper	4.55	(2.81- 6.28)	8.17	(4.40-11.95)	
Nonrecyclable Paper	5.71	(3.78- 7.64)	12.69	(8.17-17.20)	
TOTAL PLASTICS	7.92	(5.47-10.36)	11.58	(7.63-15.53)	
Plastic Packaging	4.60	(2.52- 6.68)	7.09	(4.43- 9.76)	
Rigid Plastic Containers	0.38	(0.20- 0.56)	1.17	(0.73- 1.60)	**
Other Plastic Packaging	4.22	(2.17- 6.27)	5.93	(3.51- 8.34)	
Plastic Products	3.32	(2.03- 4.60)	4.49	(1.41- 7.56)	
OTHER ORGANICS	41.76	(35.77-47.75)	36.87	(25.57-48.16)	
Yard Debris	4.10	(0.79- 7.41)	0.22	(0.00- 0.55)	*
Wood	21.89	(15.65-28.12)	4.26	(1.87- 6.66)	***
Food Waste	6.75	(3.27-10.24)	31.12	(19.03-43.22)	***
Tires	0.00	(0.00- 0.00)	0.00	(0.00- 0.00)	
Other Rubber Products	0.29	(0.09- 0.48)	0.25	(0.00- 0.60)	
Disposable Diapers	0.12	(0.01- 0.23)	0.30	(0.00- 0.61)	
Carpet	0.73	(0.25- 1.21)	0.00	(0.00- 0.00)	*
Textiles + mixed	2.88	(0.90- 4.86)	0.67	(0.00- 1.35)	
Misc. Organics	5.00	(2.51- 7.49)	0.04	(0.00- 0.11)	***
GLASS	1.25	(0.67- 1.84)	1.50	(0.52- 2.49)	
Dep. Bev. Bottles	0.13	(-0.00- 0.27)	0.08	(0.00- 0.17)	
Other Container Glass	0.51	(0.27- 0.75)	1.20	(0.38- 2.03)	
Window + Nonrecyc. Glass	0.61	(0.23- 0.99)	0.22	(0.00- 0.49)	
METALS	7.32	(5.02- 9.62)	5.06	(0.33- 9.78)	
Aluminum Beverage Cans	0.05	(0.03- 0.08)	0.35	(0.10- 0.61)	*
Other Aluminum	0.16	(0.00- 0.32)	0.11	(0.01- 0.20)	
Tinned Cans	0.19	(0.08- 0.30)	0.55	(0.00- 1.12)	
Other Metal	6.92	(4.59- 9.24)	4.04	(0.00- 8.90)	
OTHER INORGANICS	18.30	(11.93-24.68)	2.08	(0.00- 5.20)	***
Rock Soil Concrete	12.88	(6.79-18.96)	0.33	(0.00- 0.74)	***
Other Misc Inorganics	5.43	(1.95- 8.91)	1.75	(0.00- 4.89)	
"MEDICAL" WASTE	0.02	(0.00- 0.04)	2.36	(0.00- 6.55)	
OTHER HAZARDOUS MATLS	0.48	(0.07- 0.89)	0.12	(0.00- 0.32)	
TOTAL PACKAGING	23.22	(17.54-28.90)	40.25	(30.15-50.34)	**
TOTAL PRODUCTS	52.07	(43.50-60.65)	26.29	(14.24-38.34)	**
TOTAL NON-MANUFACTURED	24.71	(17.14-32.28)	33.46	(22.37-44.56)	

* difference significant at $p < .05$
 ** difference significant at $p < .01$
 *** difference significant at $p < .001$

Table 11: Composition by County Category Under SB 66
Percentage Composition and 90% Confidence Intervals
Selected Material - Uncorrected for Detailed Sample Examination

Material	30% Counties		25% Counties		15% Counties		7% Counties	
TOTAL PAPER	28.35	(26.25-30.45)	29.13	(26.41-31.84)	29.36	(27.08-31.63)	34.42	(29.85-38.99)
Paper Packaging	13.30	(11.99-14.61)	13.16	(11.42-14.89)	14.24	(12.07-16.41)	15.18	(11.77-18.58)
Other Paper	15.05	(13.57-16.53)	15.97	(14.01-17.93)	15.12	(13.33-16.90)	19.24	(16.86-21.62)
Cardboard	6.50	(5.59- 7.42)	6.72	(5.32- 8.12)	7.15	(5.85- 8.46)	8.46	(6.72-10.20)
Newspaper	2.90	(2.29- 3.52)	2.64	(2.28- 3.00)	3.43	(2.71- 4.15)	3.55	(2.88- 4.22)
Magazines	1.07	(0.84- 1.31)	1.38	(1.09- 1.66)	1.38	(0.93- 1.83)	3.07	(1.98- 4.15)
High-grade Office Paper	1.32	(1.00- 1.65)	2.15	(1.40- 2.91)	1.53	(1.08- 1.98)	3.06	(1.95- 4.18)
Low-grade Recyc. Paper	9.17	(8.17-10.18)	8.47	(7.04- 9.90)	7.32	(6.21- 8.43)	7.50	(6.45- 8.55)
Nonrecyclable Paper	7.37	(6.44- 8.30)	7.77	(6.81- 8.73)	8.54	(7.35- 9.74)	8.78	(6.65-10.91)
TOTAL PLASTICS	9.10	(7.96-10.24)	7.58	(6.68- 8.48)	9.02	(8.11- 9.93)	7.25	(6.29- 8.21)
Plastic Packaging	4.51	(3.77- 5.25)	3.82	(3.36- 4.29)	4.76	(4.26- 5.27)	4.44	(3.88- 5.00)
Rigid Plastic Containers	1.29	(1.17- 1.41)	1.15	(1.04- 1.27)	1.50	(1.37- 1.64)	1.56	(1.34- 1.78)
Other Plastic Packaging	3.22	(2.50- 3.93)	2.67	(2.26- 3.08)	3.26	(2.81- 3.71)	2.88	(2.40- 3.36)
Plastic Products	4.59	(3.72- 5.46)	3.76	(3.04- 4.48)	4.26	(3.56- 4.95)	2.81	(2.25- 3.36)
OTHER ORGANICS	40.92	(38.36-43.47)	40.63	(37.57-43.69)	39.26	(36.55-41.98)	40.07	(33.35-46.79)
Yard Debris	6.56	(4.98- 8.15)	5.03	(3.19- 6.87)	5.30	(3.94- 6.66)	4.80	(2.82- 6.78)
Wood	7.23	(5.82- 8.65)	11.14	(8.23-14.06)	8.03	(6.31- 9.75)	6.86	(3.54-10.18)
Food Waste	15.11	(13.24-16.98)	12.74	(10.90-14.58)	16.22	(13.56-18.88)	16.98	(12.97-20.99)
Tires	0.06	(-0.00- 0.12)	0.01	(0.00- 0.03)	0.01	(0.00- 0.03)	0.16	(-0.00- 0.42)
Other Rubber Products	0.36	(0.26- 0.46)	0.45	(0.28- 0.62)	0.63	(0.43- 0.83)	1.16	(0.22- 2.10)
Disposable Diapers	2.00	(1.63- 2.37)	1.64	(1.27- 2.00)	1.85	(1.47- 2.24)	2.21	(1.43- 3.00)
Carpet	1.26	(0.63- 1.88)	1.23	(0.55- 1.91)	0.84	(0.43- 1.25)	0.38	(0.19- 0.57)
Textiles	2.92	(2.35- 3.50)	3.01	(2.05- 3.98)	3.24	(2.27- 4.20)	4.21	(3.35- 5.06)
Misc. Organics	5.42	(4.05- 6.79)	5.37	(3.62- 7.13)	3.15	(2.21- 4.08)	3.31	(1.29- 5.34)
GLASS	2.62	(2.13- 3.11)	2.71	(2.30- 3.11)	3.39	(2.85- 3.93)	4.10	(3.24- 4.97)
Dep. Bev. Bottles	0.13	(0.06- 0.19)	0.19	(0.13- 0.25)	0.09	(0.06- 0.12)	0.46	(0.04- 0.87)
Other Container Glass	1.72	(1.45- 1.99)	1.69	(1.51- 1.87)	2.69	(2.31- 3.07)	2.92	(2.36- 3.49)
Window+Nonrecyc. Glass	0.77	(0.35- 1.19)	0.83	(0.48- 1.17)	0.61	(0.28- 0.94)	0.72	(0.34- 1.10)
METALS	7.28	(6.44- 8.13)	8.57	(7.22- 9.93)	8.95	(7.65-10.26)	9.75	(7.76-11.73)
Aluminum Beverage Cans	0.12	(0.08- 0.15)	0.11	(0.08- 0.13)	0.27	(0.04- 0.50)	0.15	(0.08- 0.22)
Other Aluminum	0.20	(0.16- 0.24)	0.22	(0.16- 0.27)	0.30	(0.24- 0.36)	0.58	(0.11- 1.04)
Tinned Cans	1.51	(1.31- 1.71)	1.52	(1.34- 1.71)	2.15	(1.83- 2.46)	2.12	(1.80- 2.45)
Other Metal	5.45	(4.63- 6.28)	6.72	(5.37- 8.07)	6.23	(4.94- 7.53)	6.89	(5.01- 8.77)
OTHER INORGANICS	10.93	(8.33-13.53)	10.64	(8.18-13.10)	9.14	(6.98-11.30)	3.32	(1.97- 4.67)
Rock Soil Concrete	5.13	(3.00- 7.25)	5.09	(3.11- 7.08)	3.56	(1.74- 5.37)	0.77	(0.34- 1.21)
Other Misc Inorganics	5.80	(4.16- 7.45)	5.55	(3.95- 7.15)	5.58	(4.17- 6.99)	2.54	(1.21- 3.87)
"MEDICAL" WASTE	0.33	(-0.00- 0.79)	0.06	(-0.00- 0.14)	0.05	(0.01- 0.09)	0.08	(0.02- 0.13)
OTHER								
HAZARDOUS MATLS	0.48	(0.33- 0.62)	0.68	(0.41- 0.95)	0.83	(0.53- 1.14)	1.02	(-0.00- 2.08)
TOTAL PACKAGING	22.45	(20.58-24.33)	21.77	(19.45-24.09)	25.55	(22.90-28.20)	27.12	(22.22-32.01)
TOTAL PRODUCTS	46.89	(44.40-49.38)	52.53	(48.19-56.88)	45.64	(41.89-49.40)	47.63	(42.49-52.76)
TOTAL								
NON-MANUFACTURED	30.66	(27.82-33.49)	25.70	(22.24-29.16)	28.80	(25.60-32.00)	25.26	(20.84-29.67)

** "7% Counties" are the most rural. The counties with higher recovery goals are more urban and near population centers.

- Food waste was perhaps a bit higher in the rural counties when compared to urban counties, but the results were not statistically significant. In contrast, food waste was significantly higher in rural counties in the 1992-93 study.
- There was no trend in the current study regarding disposable diapers. The 1992-93 study had found significantly higher levels of disposable diapers in the more urban counties.

Eastern versus Western Oregon

The counties on the east side of the Cascades are generally drier and more rural than those on the westside. However, strong recycling programs exist in some of these counties - particularly the two “25%” counties (Deschutes and Wasco).

Surprisingly, few of the trends demonstrated by the “urban-rural” comparisons discussed in the previous section were also present in the eastside-westside comparison. Also, not many of the trends found in the 1992-93 study were noted in the current study. In fact, as can be seen in Table 12, there were very few significant differences between waste composition of eastern versus western counties.

One surprising difference is that yard debris and lumber were actually higher on the east side as opposed to the west side - opposite of expected. For yard debris, and to a lesser extent for wood waste, much of the difference was due to the composition of self-haul loads. For the 91 self-haul samples taken in the six eastern counties, 15.3% of the waste was yard debris and 17.2%

was wood waste. For the 207 self-haul loads from western counties, only 4.6% was yard debris and 13.5% was wood waste. Drop box loads were also different for wood waste, with wood being 21.8% of the eastern county drop box loads but 15.8 percent of the western county drop box loads. It may be that in the western counties it is easier to find composting or other operations that will accept yard debris at below-disposal prices, but it is not clear that this is the case.

With the exception of magazines and low-grade recyclable paper, there was generally no significant differences between eastside and westside composition for common recyclable materials. Magazines followed the expected trend, with significantly higher levels of disposal on the more-rural east side. It is unknown why low-grade recyclable paper shows up more in the westside than eastside.

In-City versus Rural Waste

Besides looking at just counties as a whole, individual loads were classified as to whether they were from “urban” (i.e. in-town) or “rural” (away from town). Many of the haulers run separate residential routes in rural areas even in the more-urban counties, and self-haulers could also be classified in this manner. Table 13 shows the differences in composition for urban versus rural self-haulers and residential hauler routes. It was not possible to examine commercial loads, mixed loads, or drop box loads in this manner since almost all of these types of loads were from urban sources.

The main difference between urban and rural garbage routes was in the amount of yard debris

Table 12: Eastern vs. Western
Selected Material - Percent Composition and 90% Confidence Levels

Material	Eastern Counties		Western Counties	
	% comp.	Confidence Interval (90%)	% comp.	Confidence Interval (90%)
TOTAL PAPER	28.44	(26.40-30.47)	29.61	(28.04-31.18)
Paper Packaging	13.51	(11.90-15.12)	13.59	(12.53-14.64)
Other Paper	14.93	(13.46-16.40)	16.02	(14.93-17.11)
Cardboard	7.09	(5.84- 8.35)	6.74	(6.02- 7.46)
Newspaper	3.12	(2.67- 3.58)	3.02	(2.67- 3.38)
Magazines	1.95	(1.53- 2.37)	1.29	(1.06- 1.51) *
High-grade Office Paper	2.36	(1.65- 3.06)	1.50	(1.20- 1.80)
Low-grade Recyc. Paper	6.35	(5.51- 7.18)	8.92	(8.21- 9.64) ***
Nonrecyclable Paper	7.57	(6.68- 8.45)	8.14	(7.43- 8.84)
TOTAL PLASTICS	8.25	(7.32- 9.18)	8.70	(8.06- 9.34)
Plastic Packaging	4.25	(3.71- 4.78)	4.56	(4.10- 5.02)
Rigid Plastic Containers	1.23	(1.13- 1.34)	1.38	(1.29- 1.46)
Other Plastic Packaging	3.01	(2.51- 3.52)	3.19	(2.75- 3.62)
Plastic Products	4.00	(3.21- 4.80)	4.14	(3.71- 4.57)
OTHER ORGANICS	42.38	(39.58-45.17)	39.39	(37.58-41.20)
Yard Debris	7.24	(5.60- 8.88)	4.79	(3.81- 5.78) *
Wood	10.90	(8.67-13.12)	7.76	(6.40- 9.12) *
Food Waste	13.65	(11.78-15.53)	15.35	(13.91-16.78)
Tires	0.07	(0.00- 0.18)	0.03	(0.00- 0.06)
Other Rubber Products	0.60	(0.37- 0.82)	0.50	(0.39- 0.61)
Disposable Diapers	2.1	(1.62- 2.64)	1.87	(1.61- 2.14)
Carpet	0.78	(0.38- 1.19)	1.15	(0.78- 1.51)
Textiles + mixed	3.35	(2.60- 4.09)	3.07	(2.60- 3.54)
Misc. Organics	3.66	(2.54- 4.78)	4.88	(3.94- 5.81)
GLASS	2.87	(2.51- 3.23)	2.98	(2.70- 3.25)
Dep. Bev. Bottles	0.21	(0.12- 0.30)	0.15	(0.11- 0.18)
Other Container Glass	1.98	(1.74- 2.23)	2.17	(1.98- 2.37)
Window + Nonrecyc. Glass	0.68	(0.43- 0.93)	0.66	(0.48- 0.84)
METALS	9.62	(8.16-11.09)	7.87	(7.22- 8.52)
Aluminum Beverage Cans	0.13	(0.10- 0.16)	0.18	(0.09- 0.27)
Other Aluminum	0.32	(0.22- 0.41)	0.23	(0.20- 0.26)
Tinned Cans	1.60	(1.44- 1.77)	1.82	(1.66- 1.98)
Other Metal	7.58	(6.10- 9.05)	5.64	(5.00- 6.28)
OTHER INORGANICS	7.72	(5.76- 9.68)	10.50	(8.87-12.14)
Rock Soil Concrete	3.48	(1.75- 5.21)	4.47	(3.19- 5.76)
Other Misc Inorganics	4.24	(3.12- 5.36)	6.03	(4.91- 7.15)
"MEDICAL" WASTE	0.13	(0.02- 0.25)	0.19	(0.00- 0.43)
OTHER HAZARDOUS MATLS	0.61	(0.34- 0.89)	0.83	(0.62- 1.04)
TOTAL PACKAGING	23.48	(21.42-25.55)	23.56	(22.14-24.98)
TOTAL PRODUCTS	48.99	(45.44-52.53)	48.05	(45.79-50.31)
TOTAL NON-MANUFACTURED	27.53	(24.59-30.47)	28.39	(26.38-30.40)

* difference significant at $p < .05$

** difference significant at $p < .01$

*** difference significant at $p < .001$

**Table 13: Urban vs. Rural
Residential Hauler Routes and Self Haul Loads**

Material	Residential Hauler Routes		Self Haul Loads	
	Urban	Rural	Urban	Rural
Number of samples	90	23	213	72
TOTAL PAPER	34.35	38.16	14.88	16.01
Paper Packaging	13.36	14.86	7.62	8.62
Other Paper	21.00	23.30	7.27	7.39
Cardboard	5.68	6.37	4.23	5.10
Newspaper	4.22	5.79	1.57	1.50
Magazines	2.16	1.60	1.26	0.90
High-grade Office Paper	1.23	2.52	0.49	0.54
Low-grade Recyc. Paper	12.01	9.33*	4.49	4.05
Nonrecyclable Paper	9.05	12.56*	2.83	3.93
TOTAL PLASTICS	8.44	8.13	7.01	8.60
Plastic Packaging	5.33	5.73	2.27	2.95
Rigid Plastic Containers	2.05	2.26	0.80	1.34**
Other Plastic Packaging	3.29	3.47	1.46	1.61
Plastic Products	3.10	2.39*	4.74	5.65
OTHER ORGANICS	40.32	33.82*	50.09	41.24*
Yard Debris	10.62	2.51***	8.21	7.03
Wood	1.78	1.26	15.57	11.24
Food Waste	17.89	19.18	6.55	7.95
Tires	0.10	0.00	0.05	0.05
Other Rubber Products	0.41	0.68	0.53	0.49
Disposable Diapers	3.83	4.93	0.74	0.58
Carpet	0.34	1.05	2.73	1.19
Textiles + mixed	3.56	2.71	3.79	6.09*
Misc. Organics	1.78	1.50	11.93	6.62
GLASS	3.35	3.96	2.43	4.88**
Dep. Bev. Bottles	0.17	0.17	0.14	0.22
Other Container Glass	2.85	3.43	1.55	2.41
Window+Nonrecyc. Glass	0.33	0.37	0.73	2.25*
METALS	6.06	7.35	11.69	15.00
Aluminum Beverage Cans	0.13	0.16	0.25	0.10
Other Aluminum	0.27	0.34	0.31	0.29
Tinned Cans	2.50	3.36*	1.22	2.30*
Other Metal	3.15	3.48	9.91	12.30
OTHER INORGANICS	6.86	8.18	12.63	12.26
Rock Soil Concrete	1.95	1.49	3.57	2.90
Other Misc Inorganics	4.91	6.69	9.06	9.36
"MEDICAL" WASTE	0.14	0.03	0.02	0.14
OTHER HAZARDOUS MATLS	0.48	0.37	1.24	1.86
TOTAL PACKAGING	24.88	28.21*	13.92	17.40*
TOTAL PRODUCTS	39.29	43.59	63.49	59.52
TOTAL NON-MANUFACTURED	35.83	28.21**	22.58	23.08

* difference significant at $p < .05$

** difference significant at $p < .01$

*** difference significant at $p < .001$

present. Yard debris was about 4 times more common from urban routes than from rural ones. In contrast to the hauler routes, there was little difference in yard debris from self-haul loads. This indicates that people inside of cities are much more likely to put small amounts of yard debris in their garbage cans than are people in rural areas, but that both urban and rural dwellers generate pickup-truck loads that they will self-haul to disposal sites.

Some of the other trends noted in the comparison of urban and rural counties (by SB66 county goal) also appeared to be present in between urban and rural parts of the counties. Most common recyclable were slightly higher in rural garbage than in urban garbage, although this result was statistically significant only for tinned cans. Rigid plastic container were also more frequent in the rural garbage. However, magazines showed no statistically-significant difference between in-town and away-from-town generators, and in fact appeared to be slightly lower in the more rural garbage - opposite the case for comparisons between counties.

Seasonal Differences

Oregon's waste varies seasonally both in quantity and in composition. Table 14 shows the

estimated quarterly disposal by season, as reported by the landfills and other disposal facilities in Oregon that report tons disposed on a quarterly basis. The very small landfills in Oregon report annually rather than quarterly, but account for just a few percent of the total waste disposed statewide. These annual totals have been prorated by quarter by the same percentage as reported by quarterly sites for inclusion in Table 14. As can be seen, the breakdown by quarter shows a similar pattern in 1994 to that shown in 1992.

Table 15 gives the waste composition separately by season⁴. As in 1992, strong seasonal differences can be seen between seasons for certain materials, particularly yard debris, but the overall level of seasonal differences was not as high in 1994-95 as it was for the 1992-93 study.

Because the amount of waste disposed each season varies, the percentage composition alone does not give a complete picture. For example, a material discarded at a relatively constant rate throughout the year (as measured in total tons discarded per day) would show a lower percent composition in the summer than in the winter, since during the summer the percent composition would be diluted by higher disposal of materials such as yard debris.

Table 14. Tonnage Disposed by Season: 1994 and 1992

	Jan.-March	Apr-June	July-Sept.	Oct.-Dec.	Total
1994 Tons	541,006	599,390	639,086	555,911	2,335,394
Percentage	23.17%	25.67%	27.37%	23.80%	100.00%
1992 Tons	518,245	575,547	606,866	562,441	2,263,099
Percentage	22.90%	25.43%	26.82%	24.85%	100.00%

Table 16 looks at seasonal results in a different way - by multiplying the amount of waste disposed each quarter by the percentage composition. The 90% confidence interval is used for each season, so that the significance of differences between seasons can be determined⁵.

The following seasonal trends were noted:

- Yard debris disposal was much higher in the spring and summer quarters (April to September) than it was in the rest of the year. The same was also true in the 1992-93 study.
- Container glass was disposed at a slightly higher rate in the summer than in the winter
- Low-grade paper had the lowest disposal rate in the summer for 1994-95. No such trend was seen in the 1992-93 study.

Only some of the trends observed in 1992-93 were noted in 1994-95.

- Newspaper showed only slightly higher disposal in the fall than in other seasons, and the differences were not statistically significant. In 1992-93 the fall season had significantly higher disposal of newspaper than other seasons, corresponding to the time of year when newspapers are thickest with advertisements.
- Food waste did not show any statistically significant differences in seasonal disposal, although it was slightly higher in the spring and next highest in the summer quarters. In 1992-93, food waste disposal was significantly higher in the summer than in other seasons, with spring and fall being nearly tied for next highest disposal levels.

- Disposable diapers, which showed unexplained seasonal difference in 1992-93, showed no such seasonal differences in 1994-95.
- There were no significant seasonal differences in waste from packaging. In 1992-93, packaging waste was lowest in the spring.

Table 15: Seasonal Differences in Percent Composition
Percentage Composition and 90% Confidence Intervals
Selected Material - Uncorrected for Detailed Sample Examination

Material	January - March	April - June	July - September	October-December
TOTAL PAPER	28.99 (26.42-31.56)	29.60 (27.04-32.16)	26.57 (24.15-29.00)	31.61 (29.12-34.09)
Paper Packaging	13.86 (11.97-15.74)	13.37 (11.38-15.37)	13.18 (11.48-14.88)	13.99 (12.48-15.49)
Other Paper	15.13 (13.61-16.66)	16.23 (14.44-18.01)	13.40 (11.94-14.85)	17.62 (15.51-19.74)
Cardboard	6.57 (5.38- 7.77)	7.04 (5.66- 8.41)	6.63 (5.47- 7.79)	7.36 (5.97- 8.75)
Newspaper	3.11 (2.47- 3.75)	3.02 (2.43- 3.60)	2.63 (2.11- 3.15)	3.35 (2.90- 3.81)
Magazines	1.12 (0.80- 1.44)	1.42 (0.93- 1.91)	1.62 (1.25- 1.98)	1.71 (1.34- 2.08)
High-grade Office Paper	1.48 (1.07- 1.88)	1.55 (0.85- 2.25)	1.64 (1.13- 2.16)	2.42 (1.70- 3.13)
Low-grade Recyc. Paper	7.54 (6.53- 8.56)	9.27 (7.99-10.56)	6.13 (5.22- 7.03)	9.38 (8.22-10.55)
Nonrecyclable Paper	9.17 (7.82-10.51)	7.30 (6.32- 8.28)	7.93 (6.85- 9.01)	7.39 (6.54- 8.24)
TOTAL PLASTICS	8.37 (7.57- 9.18)	7.60 (6.80- 8.40)	8.59 (7.07-10.11)	9.99 (8.71-11.27)
Plastic Packaging	4.20 (3.69- 4.72)	3.95 (3.45- 4.46)	4.70 (3.47- 5.93)	5.09 (4.50- 5.68)
Rigid Plastic Containers	1.33 (1.20- 1.45)	1.34 (1.21- 1.46)	1.24 (1.12- 1.37)	1.45 (1.29- 1.61)
Other Plastic Packaging	2.88 (2.40- 3.36)	2.62 (2.20- 3.04)	3.46 (2.24- 4.67)	3.64 (3.13- 4.14)
Plastic Products	4.17 (3.52- 4.81)	3.65 (3.06- 4.24)	3.90 (3.03- 4.76)	4.90 (3.75- 6.05)
OTHER ORGANICS	36.87 (34.06-39.68)	42.39 (39.41-45.37)	42.19 (39.21-45.18)	40.02 (36.83-43.21)
Yard Debris	3.41 (2.28- 4.54)	7.15 (5.50- 8.81)	7.30 (4.87- 9.73)	4.63 (3.21- 6.06)
Wood	9.60 (7.52-11.68)	7.96 (5.26-10.66)	8.46 (6.49-10.43)	8.95 (6.29-11.61)
Food Waste	13.23 (10.98-15.49)	16.11 (13.83-18.40)	14.21 (11.85-16.58)	15.66 (13.55-17.76)
Tires	0.01 (0.00- 0.03)	0.04 (0.00- 0.09)	0.04 (0.00- 0.10)	0.08 (0.00- 0.20)
Other Rubber Products	0.58 (0.35- 0.82)	0.52 (0.26- 0.79)	0.63 (0.43- 0.83)	0.43 (0.27- 0.58)
Disposable Diapers	1.75 (1.22- 2.27)	2.34 (1.82- 2.86)	1.62 (1.33- 1.91)	1.95 (1.48- 2.42)
Carpet	1.36 (0.85- 1.88)	1.04 (0.33- 1.75)	1.08 (0.41- 1.75)	0.74 (0.36- 1.12)
Textiles	2.69 (2.23- 3.15)	3.06 (2.19- 3.92)	3.63 (2.76- 4.50)	3.52 (2.45- 4.59)
Misc. Organics	4.24 (2.96- 5.52)	4.15 (2.64- 5.67)	5.24 (3.64- 6.83)	4.07 (2.67- 5.47)
GLASS	2.62 (2.29- 2.95)	3.04 (2.47- 3.62)	3.13 (2.62- 3.64)	3.06 (2.61- 3.51)
Dep. Bev. Bottles	0.16 (0.10- 0.23)	0.24 (0.13- 0.35)	0.08 (0.05- 0.11)	0.17 (0.10- 0.24)
Other Container Glass	1.90 (1.64- 2.16)	1.88 (1.59- 2.16)	2.32 (1.98- 2.67)	2.38 (2.02- 2.74)
Window + Nonrecyc. Glass	0.56 (0.40- 0.72)	0.93 (0.43- 1.43)	0.72 (0.36- 1.08)	0.51 (0.32- 0.70)
METALS	8.45 (7.15- 9.75)	7.89 (6.64- 9.14)	9.23 (7.89-10.56)	7.87 (6.69- 9.05)
Aluminum Beverage Cans	0.12 (0.10- 0.15)	0.10 (0.06- 0.13)	0.17 (0.12- 0.23)	0.31 (0.00- 0.63)
Other Aluminum	0.23 (0.18- 0.29)	0.27 (0.17- 0.36)	0.22 (0.18- 0.26)	0.31 (0.24- 0.39)
Tinned Cans	1.62 (1.44- 1.81)	1.93 (1.68- 2.18)	1.56 (1.30- 1.82)	1.87 (1.61- 2.14)
Other Metal	6.47 (5.20- 7.75)	5.59 (4.32- 6.87)	7.27 (5.95- 8.60)	5.37 (4.24- 6.50)
OTHER INORGANICS	13.61 (10.39-16.83)	8.18 (6.09-10.28)	9.61 (7.22-12.00)	7.12 (5.06- 9.18)
Rock Soil Concrete	5.82 (3.02- 8.61)	3.27 (1.71- 4.84)	5.57 (3.59- 7.55)	2.17 (0.68- 3.65)
Other Misc Inorganics	7.80 (5.68- 9.91)	4.91 (3.40- 6.42)	4.04 (2.67- 5.42)	4.95 (3.42- 6.49)
"MEDICAL" WASTE	0.06 (0.01- 0.12)	0.47 (0.00- 1.18)	0.11 (0.00- 0.28)	0.04 (0.02- 0.06)
OTHER				
HAZARDOUS MATLS	1.01 (0.65- 1.38)	0.82 (0.48- 1.17)	0.56 (0.32- 0.79)	0.29 (0.19- 0.38)
TOTAL PACKAGING	23.11 (20.79-25.42)	22.52 (20.08-24.97)	23.06 (20.29-25.83)	25.61 (23.54-27.68)
TOTAL PRODUCTS	50.15 (46.79-53.50)	47.70 (43.36-52.05)	47.84 (44.12-51.55)	47.31 (43.53-51.09)
TOTAL				
NON-MANUFACTURED	26.75 (23.09-30.40)	29.77 (26.95-32.60)	29.10 (25.50-32.70)	27.08 (23.95-30.21)

Table 16: 90% Confidence Interval for Disposal by Season
"Estimated Tons Disposed"

Material	January-March	April-June	July-September	October-December
TOTAL PAPER	142956 -170718	162095 -192775	154357 -185306	161905 -189532
Paper Packaging	64750 - 85165	68205 - 92125	73340 - 95097	69405 - 86085
Other Paper	73640 - 90120	86569 -107971	76328 - 94900	86202 -109745
Cardboard	29106 - 42034	33928 - 50435	34937 - 49790	33173 - 48652
Newspaper	13369 - 20280	14590 - 21604	13495 - 20125	16097 - 21158
Magazines	4325 - 7778	5576 - 11453	7997 - 12672	7449 - 11568
High-grade Office Paper	5810 - 10158	5091 - 13501	7190 - 13786	9454 - 17427
Low-grade Recyc. Paper	35325 - 46297	47883 - 63301	33379 - 44925	45687 - 58622
Nonrecyclable Paper	42315 - 56879	37864 - 49643	43802 - 57566	36360 - 45790
TOTAL PLASTICS	40931 - 49660	40786 - 50342	45202 - 64643	48423 - 62643
Plastic Packaging	19963 - 25528	20694 - 26705	22161 - 37895	25034 - 31555
Rigid Plastic Containers	6508 - 7843	7246 - 8770	7129 - 8765	7195 - 8966
Other Plastic Packaging	12963 - 18177	13168 - 18215	14340 - 29822	17393 - 23035
Plastic Products	19051 - 26048	18338 - 25391	19363 - 30426	20848 - 33629
OTHER ORGANICS	184291 -214679	236242 -271946	250577 -288725	204739 -240182
Yard Debris	12317 - 24540	32980 - 52783	31100 - 62175	17845 - 33669
Wood	40695 - 63186	31525 - 63905	41453 - 66674	34960 - 64528
Food Waste	59387 - 83791	82873 -110291	75705 -105952	75330 - 98758
Tires	8 - 136	0 - 550	0 - 629	0 - 1098
Other Rubber Products	1900 - 4410	1586 - 4706	2738 - 5286	1509 - 3223
Disposable Diapers	6626 - 12267	10932 - 17169	8526 - 12175	8213 - 13465
Carpet	4572 - 10178	2002 - 10464	2602 - 11186	1996 - 6208
Textiles & mixed	12052 - 17042	13135 - 23526	17612 - 28731	13598 - 25539
Misc. Organics	16014 - 29848	15817 - 33972	23266 - 43648	14823 - 30392
GLASS	12409 - 15971	14796 - 21680	16732 - 23255	14523 - 19525
Dep. Bev. Bottles	520 - 1230	766 - 2123	335 - 727	576 - 1338
Other Container Glass	8886 - 11708	9559 - 12922	12638 - 17064	11236 - 15235
Window + Nonrecyc. Glass	2154 - 3882	2558 - 8548	2327 - 6896	1772 - 3890
METALS	38702 - 52765	39796 - 54766	50452 - 67486	37198 - 50336
Aluminum Beverage Cans	531 - 807	371 - 771	743 - 1446	0 - 3494
Other Aluminum	957 - 1579	1037 - 2176	1145 - 1681	1347 - 2152
Tinned Cans	7768 - 9795	10084 - 13071	8309 - 11640	8933 - 11913
Other Metal	28108 - 41921	25902 - 41148	38042 - 54932	23588 - 36134
OTHER INORGANICS	56201 - 91065	36478 - 61602	46146 - 76710	28126 - 51030
Rock Soil Concrete	16342 - 46579	10266 - 28985	22943 - 48241	3761 - 20314
Other Misc Inorganics	30732 - 53612	20354 - 38475	17043 - 34630	18999 - 36082
"MEDICAL" WASTE	71 - 630	0 - 7047	0 - 1808	100 - 358
OTHER HAZARDOUS MATLS	3516 - 7448	2879 - 7001	2043 - 5071	1067 - 2135
TOTAL PACKAGING	112467 -137540	120368 -149656	129690 -165099	130884 -153868
TOTAL PRODUCTS	253156 -289430	259892 -311955	281977 -329468	242002 -284011
TOTAL NON-MANUFACTURED	124943 -164476	161511 -195398	162951 -208986	133114 -167944

FOOTNOTES

- ¹ There were not sufficient number of disposal samples taken in the 7% (very rural) counties to allow separate analysis of high vs low disposal seasons.
- ² Metro. 1993-1994 Waste Characterization Study, Final Report. February 1995. Published by the Metro Solid Waste Department, 600 NE Grand Avenue, Portland, OR 97232-2736. 70 pp. plus appendices.
- ³ Department of Environmental Quality. Oregon Solid Waste Characterization and Composition 1992-93. Published by the DEQ Solid Waste Policy and Programs Section, 811 SW 6th Avenue, Portland OR 97229. 40 pp.
- ⁴ Unlike previous tables in this report, the percentages reported in Table 15 are not weighted by the "county goal" category. There were not sufficient samples taken to allow weighting for each quarter by wastestream and by county goal. The effect of this on the total results is small, since as demonstrated in Table 11, there is not much difference in composition between the urban and rural counties. However, since the percentage of samples taken from rural counties exceeds the percentage of statewide total waste disposed from these counties, the effect is to give the rural counties a bit greater effect on the results of Table 15 than they have on previous tables in this report.
- ⁵ The "90% confidence interval" takes into account sampling error only. It does not include other sources of error such as error in estimating weighting factors for the different waste substreams or errors resulting from materials such as food waste adhering to other materials as discussed later in this report. Thus, the information shown in Table 16 is more to show the magnitude of differences in disposal between seasons rather than to show the actual tonnage of each material disposed in each season.

**Table A1: Composition for All Material
1994-95 and Reweighted 1992-93**
Percentage Composition and 90% Confidence Intervals
Uncorrected for Detailed Sample Examination

Material	90% # present			90% # present			sig.
	Percent 1994	Confidence Interval	/total samp	Percent 1992	Confidence Interval	/total samp	
TOTAL PAPER	28.947	(27.578-30.315)	556/589	29.505	(28.231-30.780)	788/823	
Paper Packaging	13.487	(12.569-14.405)	554/589	12.012	(11.297-12.727)	782/823	*
Cardboard	6.747	(6.089- 7.406)	536/589	6.175	(5.741- 6.608)	762/823	
Low-Grade Pkg. Paper	3.211	(2.907- 3.515)	500/589	3.352	(2.898- 3.806)	729/823	
Bleached Boxboard	0.442	(0.398- 0.486)	376/589	0.492	(0.434- 0.549)	625/823	
Non-Recyclable Pkg. Paper	1.903	(1.529- 2.278)	392/589	1.192	(1.003- 1.380)	668/823	**
Mixed Paper/Materials	1.183	(0.999- 1.367)	464/589	0.802	(0.665- 0.940)	648/823	**
Other Paper	15.460	(14.477-16.442)	502/589	17.493	(16.549-18.438)	753/823	*
Newspaper	2.942	(2.602- 3.281)	439/589	3.241	(2.987- 3.495)	690/823	
Magazines	1.280	(1.113- 1.447)	277/589	2.162	(1.943- 2.380)	618/823	***
HiGrade Office Paper	1.664	(1.372- 1.956)	344/589	2.818	(2.466- 3.170)	670/823	***
Hardcover Books	0.328	(0.128- 0.529)	49/589	0.120	(0.070- 0.170)	68/823	
Other Low-Grade Paper	4.576	(4.060- 5.093)	438/589	2.761	(2.437- 3.085)	635/823	***
Other Non-recyclable Paper	4.669	(4.323- 5.015)	455/589	6.391	(6.024- 6.759)	719/823	***
Total Low-gr. Recyc. Paper ¹	8.558	(7.878- 9.238)	516/589	6.725	(6.099- 7.351)	755/823	**
Total Non-recyclable Paper ²	7.756	(7.178- 8.334)	503/589	8.385	(7.932- 8.838)	757/823	
TOTAL PLASTICS	8.569	(7.938- 9.200)	560/589	8.160	(7.626- 8.694)	788/823	
Plastic Packaging	4.348	(3.958- 4.737)	541/589	4.447	(4.152- 4.742)	771/823	
Rigid Plastic Containers	1.299	(1.227- 1.370)	486/589	1.322	(1.254- 1.391)	735/823	
Other Plastic Packaging	3.049	(2.678- 3.420)	532/589	3.124	(2.849- 3.400)	762/823	
Small Plastic Containers	0.212	(0.183- 0.240)	414/589	0.134	(0.112- 0.157)	497/823	***
Other Rigid Packaging	0.468	(0.411- 0.524)	483/589	0.456	(0.394- 0.519)	637/823	
Film Packaging	2.370	(2.025- 2.714)	512/589	2.533	(2.280- 2.787)	739/823	
Plastic Products	4.221	(3.736- 4.707)	546/589	3.713	(3.188- 4.238)	753/823	
Film Products	1.722	(1.344- 2.101)	496/589	1.098	(0.940- 1.256)	626/823	*
Rigid Pl. Prod. & Thermoset ³	1.514	(1.276- 1.752)	504/589	1.925	(1.606- 2.244)	721/823	
Mixed Plastic/Materials	0.985	(0.803- 1.167)	445/589	0.690	(0.331- 1.048)	286/823	
TOTAL OTHER ORGANICS	39.426	(37.792-41.060)	583/589	43.141	(41.402-44.879)	818/823	*
Yard Debris	5.803	(4.830- 6.776)	333/589	9.423	(8.404-10.442)	545/823	***
Leaves + Grass	4.808	(3.989- 5.626)	283/589	6.581	(5.802- 7.360)	452/823	**
Small Prunings	0.898	(0.439- 1.357)	130/589	2.461	(1.942- 2.979)	273/823	***
Limbs Trunks Stumps	0.098	(0.033- 0.162)	27/589	0.381	(0.212- 0.551)	42/823	*
Wood	8.569	(7.407- 9.731)	502/589	7.045	(5.737- 8.352)	607/823	
Untreated Lumber	3.909	(3.180- 4.638)	325/589	3.758	(2.650- 4.867)	356/823	
Treated Lumber	1.802	(1.363- 2.241)	167/589	1.014	(0.733- 1.295)	149/823	*
Pallets, Crates	0.920	(0.605- 1.234)	42/589	0.654	(0.290- 1.018)	52/823	
Wood Furniture	0.555	(0.333- 0.776)	32/589	0.203	(0.022- 0.385)	12/823	*
Other Wood Products	0.722	(0.401- 1.043)	226/589	0.684	(0.404- 0.964)	243/823	
Mixed Wood/Materials	0.661	(0.474- 0.849)	142/589	0.731	(0.351- 1.111)	116/823	

¹ "Total Low-grade Paper" includes low-grade packaging paper, bleached boxboard, hard-cover books, and low-grade other (printing/writing) paper.
² "Total Non-recyclable Paper" includes non-recyclable packaging paper, non-recyclable other paper, and mixed paper/materials.
³ "Thermoset Plastic" was measured as a separate category in the 1992-93 study, but was lumped with "Rigid Plastic Products" in 1994-95 since it was difficult to determine in the field what plastic was really thermoset.
* difference significant at p < .05
** difference significant at p < .01
*** difference significant at p < .001

Table A1continued
(page 2 of 3)

Material	90% # present			90% # present			sig.
	Percent Confidence 1994-5	Interval	/total samp	Percent Confidence 1992-3	Interval	/total samp	
Other Organics (continued)							
Food Waste	14.649	(13.480-15.818)	450/589	17.553	(16.187-18.920)	704/823	**
Tires	0.037	(0.007- 0.068)	10/589	0.081	(0.038- 0.124)	15/823	
Other Rubber Products	0.463	(0.378- 0.547)	268/589	0.461	(0.354- 0.569)	279/823	
Disposable Diapers & Hyg.	1.947	(1.718- 2.176)	310/589	1.798	(1.610- 1.987)	491/823	
Disposable Diapers	1.867	(1.647- 2.087)	292/589		not separated		
Other Disp. Hygiene Prod .	0.080	(0.057- 0.102)	124/589		not separated		
Carpet	1.146	(0.776- 1.516)	138/589	1.080	(0.677- 1.482)	120/823	
Other Textiles & Mixed	3.046	(2.604- 3.487)	482/589	2.462	(2.175- 2.748)	689/823	
Other Textiles	2.145	(1.823- 2.467)	453/589		not separated		
Mixed Textiles/matl	0.901	(0.724- 1.077)	304/589		not separated		
Dead Animals	0.063	(0.011- 0.114)	18/589	0.121	(0.038- 0.204)	38/823	
Tarpaper Roofing	2.131	(1.445- 2.816)	103/589	1.140	(0.623- 1.656)	70/823	
Other (mixed matl.) Furniture	1.507	(0.970- 2.044)	48/589	1.011	(0.646- 1.375)	47/823	
Other Misc. Organics	1.132	(0.879- 1.385)	307/589	0.967	(0.756- 1.178)	282/823	
GLASS	2.833	(2.549- 3.117)	476/589	3.997	(3.557- 4.436)	720/823	***
Dep. Bev. Bottles	0.148	(0.111- 0.185)	142/589	0.157	(0.120- 0.193)	146/823	
Other Container Glass	1.929	(1.772- 2.086)	441/589	2.467	(2.294- 2.640)	661/823	***
Other Clear Bottles	0.812	(0.716- 0.909)	350/589	1.253	(1.147- 1.359)	518/823	***
Other Colored Bottles	0.385	(0.317- 0.452)	193/589	0.504	(0.411- 0.597)	291/823	
Clear Jars	0.672	(0.607- 0.736)	352/589	0.614	(0.540- 0.687)	333/823	
Colored Jars	0.060	(0.048- 0.073)	107/589	0.096	(0.070- 0.122)	75/823	*
Window + Non-recyc. glass	0.756	(0.522- 0.989)	338/589	1.373	(0.970- 1.776)	479/823	*
Flat Window Glass	0.340	(0.120- 0.560)	39/589	0.293	(0.178- 0.408)	50/823	
Other Non-rec. Glass	0.415	(0.321- 0.509)	324/589	1.080	(0.698- 1.462)	455/823	**
METALS	8.065	(7.438- 8.692)	555/589	7.437	(6.793- 8.081)	778/823	
Alum. Bev. Cans	0.144	(0.097- 0.192)	387/589	0.117	(0.099- 0.135)	533/823	
Foil & Other Aluminum	0.236	(0.205- 0.266)	404/589	0.241	(0.169- 0.313)	570/823	
Alum. Foil, Trays	0.144	(0.129- 0.160)	364/589	0.138	(0.122- 0.154)	546/823	
Other Aluminum	0.092	(0.066- 0.118)	94/589	0.103	(0.032- 0.173)	53/823	
Tinned Cans	1.654	(1.529- 1.779)	458/589	1.554	(1.446- 1.662)	688/823	
Tinned Food Cans	1.440	(1.324- 1.556)	424/589	1.255	(1.178- 1.331)	646/823	*
Other Tin Cans	0.214	(0.157- 0.271)	135/589	0.299	(0.225- 0.374)	177/823	
Other Metal	6.031	(5.410- 6.652)	530/589	5.526	(4.907- 6.144)	719/823	
Other Non-ferr. Metal	0.127	(0.073- 0.181)	64/589	0.050	(0.021- 0.079)	44/823	*
Other Ferrous Metal	2.682	(2.261- 3.103)	402/589	2.650	(2.267- 3.033)	547/823	
White Goods	0.035	(-0.000- 0.094)	1/589	0.000	(0.000- 0.000)	0/823	
Small Appliances	0.857	(0.602- 1.112)	131/589	0.392	(0.259- 0.525)	85/823	**
Aerosol Cans	0.192	(0.169- 0.214)	317/589	0.159	(0.141- 0.178)	438/823	
Mixed Metal/Materials	2.138	(1.834- 2.442)	389/589	2.274	(1.909- 2.638)	461/823	

* difference significant at $p < .05$

** difference significant at $p < .01$

*** difference significant at $p < .001$

Table A1continued
(page 3 of 3)

Material	90% # present			90% # present			sig.
	Percent Confidence	Interval	/total samp	Percent Confidence	Interval	/total samp	
OTHER INORGANICS	10.289	(8.789-11.789)	439/589	6.996	(5.997- 7.994)	558/823	**
Rock, Soil, Litter (& fines) ⁴	6.181	(4.927- 7.435)	321/589	3.978	(3.297- 4.659)	405/823	*
Rock, Concrete Brick	2.603	(1.531- 3.675)	97/589	1.231	(0.783- 1.679)	123/823	
Soil, Sand, Litter (& fines) ⁴	3.578	(2.951- 4.206)	267/589	2.747	(2.274- 3.220)	347/823	
soil sand dirt	2.093	(1.531- 2.655)	164/589		not separated		
pet litter	1.485	(1.206- 1.765)	153/589		not separated		
Gypsum Wallboard	2.653	(1.929- 3.378)	109/589	1.580	(1.032- 2.127)	110/823	
Fiberglass Insulation	0.644	(0.128- 1.160)	67/589	0.285	(-0.000- 0.584)	57/823	
Other Misc. Inorganics	0.811	(0.587- 1.035)	221/589	1.153	(0.736- 1.570)	205/823	
"MEDICAL"⁵	0.185	(-0.000- 0.405)	75/589	0.330	(0.202- 0.459)	108/823	
HAZARDOUS MATERIALS	0.621	(0.496- 0.746)	315/589	0.435	(0.338- 0.531)	339/823	
Latex Paint	0.091	(0.041- 0.141)	18/589	0.121	(0.062- 0.180)	29/823	
Oil-based Paint	0.043	(0.016- 0.070)	24/589	0.058	(0.017- 0.099)	25/823	
Pesticides/Herbicides	0.002	(0.000- 0.004)	4/589	0.015	(-0.000- 0.031)	12/823	
Motor Oil	0.039	(0.013- 0.064)	25/589	0.017	(0.003- 0.030)	9/823	
Fuels	0.003	(-0.000- 0.006)	2/589	0.016	(0.006- 0.025)	12/823	*
Adhesives, Sealants	0.082	(0.048- 0.115)	52/589	0.014	(0.002- 0.026)	20/823	**
Caustic Cleaners	0.043	(0.019- 0.066)	21/589	0.016	(0.004- 0.028)	17/823	
Lead-Acid Batteries	0.035	(0.001- 0.070)	5/589	0.054	(0.006- 0.103)	10/823	
Dry Cell Batteries	0.071	(0.058- 0.085)	194/589	0.052	(0.042- 0.062)	237/823	
Asbestos	0.004	(-0.000- 0.011)	1/589	0.002	(-0.000- 0.003)	2/823	
Other Chemicals ⁶	0.208	(0.127- 0.290)	109/589	0.070	(0.040- 0.099)	58/823	**
TOTAL PACKAGING⁷	22.966	(21.716-24.216)	560/589	21.545	(20.551-22.539)	791/823	
TOTAL PRODUCTS	48.395	(46.480-50.311)	584/589	45.260	(43.180-47.341)	809/823	
TOTAL NON-MANUFACTURED⁸	28.639	(26.823-30.455)	541/589	33.195	(31.403-34.987)	783/823	**
Total Organics ⁹	78.660	(76.876-80.444)	588/589	81.446	(79.901-82.992)	822/823	
Total Inorganics ¹⁰	21.340	(19.795-22.886)	572/589	18.554	(17.266-19.841)	790/823	*
Supermix ¹¹	1.966	(1.798- 2.134)	393/589	5.529	(5.087- 5.972)	620/823	***
Fines ⁴	1.207	(0.933- 1.480)	103/589		see endnote 4		

⁴ In the 1992-93 study, most pet litter was included in the "soil, sand, and fines" category, but the organic portion such as fiber pellet litter was included as "miscellaneous organics". All litter and feces were included in the separate "pet litter" category in the 1994-95 study. Also, in 1992-93, "non-distinct fines" were included with "soil, sand, and fines". In 1994-95, "fines" that were not directly sorted into categories were weighed and then assigned to the appropriate categories based on a visual estimate by percentage, in the same manner as "supermix" (below).

⁵ To avoid risking the health of sorters, bags containing gauze, blood, tubing, or other medical waste were weighed entirely as "medical waste", even if the bag also contained non-medical waste. Almost all the "medical waste" measured here was not infectious waste as defined in Oregon state law.

⁶ "Other Chemicals" includes unknown substances that in many cases are probably not hazardous

⁷ "Total Packaging" includes paper and plastic packaging, wood pallets/crates, bottles and other glass containers, aluminum cans, foil, and trays, and tinned cans.

⁸ "Total Non-manufactured" includes yard debris, food waste, "other misc. organics", rock, concrete, and soil, and "Other misc. Inorganics".

⁹ "Organics", as used here, means "carbon-based materials" and includes materials such as plastics that are not compostable. "Total Organics" includes all paper, plastic, "Other Organics", "Medical", paints, pesticides, oil, fuels, adhesives, and "other chemicals".

¹⁰ "Total Inorganics" includes all glass, metals, "other Inorganics", caustic cleaners, batteries, and asbestos.

¹¹ "Supermix" is included in all the categories above. "Supermix" (and also "fines" for 1994-95) consists of small, often wet and difficult to distinguish, material left over at the end of sorting. The entire weight of "supermix" (and fines in 1994-95) is measured, and the percentage of supermix in each category is estimated visually, converted to weigh, and added back into that category. Thus, for 1994-95, about 3.2% of material (1.966% supermix and 1.207% fines) was distributed by category through taking gross weight of supermix/fines and through visual percentage estimates by category.

Table A2: Composition of Recent Oregon Composition Results
Percentage Composition All Materials
Uncorrected for Detailed Sample Examination

Material	Metro 1993-94 as received	Rest of Oregon 1994-94	Rest of Oregon 1992-93		Statewide Combined	
	all facilities	transfer stations only	using 1994-95 weighting	as originally reported	Metro 93-94 all facilities & rest 1994-95	
TOTAL PAPER	25.18	28.05	28.947	29.505	29.62	27.354
Paper Packaging	11.85	12.37	13.487	12.012	11.47	12.795
Cardboard	6.14	6.02	6.747	6.175	5.93	6.490
Low-Grade Pkg. Paper	2.38	2.77	3.211	3.352	3.13	2.860
Bleached Boxboard	0.31	0.38	0.442	0.492	0.53	0.386
Non-Recyclable Pkg. Paper	1.65	1.61	1.903	1.192	1.11	1.796
Mixed Paper/Materials	1.37	1.60	1.183	0.802	0.76	1.262
Other Paper	13.33	15.69	15.460	17.493	18.15	14.559
Newspaper	2.53	2.96	2.942	3.241	3.37	2.768
Magazines	1.91	2.27	1.280	2.162	2.34	1.546
HiGrade Office Paper	2.19	2.55	1.664	2.818	2.74	1.886
Hardcover Books	0.12	0.12	0.328	0.120	0.15	0.240
Other Low-Grade Paper	3.48	4.01	4.576	2.761	2.83	4.113
Other Non-recyclable Paper	3.10	3.75	4.669	6.391	6.71	4.005
Total Low-gr. Recyc. Paper ¹	6.29	7.28	8.558	6.725	6.64	7.599
Total Non-recyclable Paper ²	6.12	6.96	7.756	8.385	8.59	7.064
TOTAL PLASTICS	9.21	9.86	8.569	8.160	7.75	8.840
Plastic Packaging	2.85	3.27	4.348	4.447	4.35	3.714
Rigid Plastic Containers	0.86	1.01	1.299	1.322	1.37	1.113
Other Plastic Packaging	1.99	2.26	3.049	3.124	2.99	2.601
Small Plastic Containers	0.15	0.18	0.212	0.134	0.15	0.186
Other Rigid Packaging	0.64	0.74	0.468	0.456	0.43	0.541
Film Packaging	1.20	1.34	2.370	2.533	2.41	1.875
Plastic Products	6.36	6.60	4.221	3.713	3.40	5.126
Film Products	3.36	3.68	1.722	1.098	1.03	2.415
Rigid Pl. Prod.& Thermoset ³	2.37	2.15	1.514	1.925	1.89	1.876
Mixed Plastic/Materials	0.64	0.77	0.985	0.690	0.47	0.839
TOTAL OTHER ORGANICS	47.00	45.17	40.492	43.141	43.61	43.244
Yard Debris	5.10	4.86	5.803	9.423	10.19	5.506
Leaves + Grass	3.46	3.64	4.808	6.581	7.26	4.238
Small Prunings	1.31	0.93	0.898	2.461	2.58	1.072
Limbs Trunks Stumps	0.33	0.29	0.098	0.381	0.35	0.196
Wood	9.79	6.78	8.569	7.045	6.09	9.085
Untreated Lumber	7.28	4.83	3.909	3.758	3.08	5.335
Treated Lumber	0.35	0.21	1.802	1.014	1.06	1.188
Pallets, Crates	0.77	0.63	0.920	0.654	0.47	0.857
Wood Furniture	0.69	0.55	0.555	0.203	0.25	0.612
Other Wood Products	0.43	0.39	0.722	0.684	0.63	0.599
Mixed Wood/Materials	0.28	0.17	0.661	0.731	0.59	0.500

¹ "Total Low-grade Paper" includes low-grade packaging paper, bleached boxboard, hard-cover books, and low-grade other (printing/writing) paper.

² "Total Non-recyclable Paper" includes non-recyclable packaging paper, non-recyclable other paper, and mixed paper/materials.

³ "Thermoset Plastic" was measured as a separate category in the 1992-93 study, but was lumped with "Rigid Plastic Products" in 1994-95 since it was difficult to determine in the field what plastic was really thermoset.

Table A2 continued
(page 2 of 3)

Material	Metro 1993-94 as received		Rest of Oregon 1994-94	Rest of Oregon 1992-93		Statewide Combined
	all facilities	transfer stations only		using 1994-95 weighting	as originally reported	Metro 93-94 all facilities & rest 1994-95
Other Organics (continued)						
Food Waste	19.32	24.08	14.649	17.553	17.98	16.624
Tires	0.20	0.11	0.037	0.081	0.12	0.106
Other Rubber Products	0.89	0.99	0.463	0.461	0.46	0.644
Disposable Diapers ⁴	1.69	2.07	1.867	1.718	1.89	1.792
Carpet	1.34	1.19	1.146	1.080	1.08	1.228
Other Textiles & Mixed	2.20	2.57	3.046	2.462	2.53	2.688
Dead Animals	0.01	0.01	0.063	0.121	0.14	0.041
Tarpaper Roofing	5.22	1.35	2.131	1.140	1.02	3.437
Other (mixed matl.) Furniture	0.58	0.53	1.507	1.011	1.11	1.115
Other Misc. Organics ⁴	0.66	0.63	1.132	1.047	1.01	0.979
GLASS	2.78	3.31	2.833	3.997	3.79	2.811
Dep. Bev. Bottles	0.14	0.17	0.148	0.157	0.13	0.145
Other Container Glass	1.92	2.36	1.929	2.467	2.50	1.925
Other Clear Bottles	0.90	1.09	0.812	1.253	1.26	0.849
Other Colored Bottles	0.50	0.64	0.385	0.504	0.47	0.434
Clear Jars	0.47	0.57	0.672	0.614	0.65	0.587
Colored Jars	0.05	0.06	0.060	0.096	0.12	0.056
Window + Non-recyc. glass	0.71	0.78	0.756	1.373	1.15	0.737
Flat Window Glass	0.26	0.30	0.340	0.293	0.29	0.306
Other Non-rec. Glass	0.45	0.47	0.415	1.080	0.86	0.430
METALS	6.53	6.37	8.065	7.437	7.55	7.416
Alum. Bev. Cans	0.12	0.15	0.144	0.117	0.11	0.134
Foil & Other Aluminum	0.29	0.26	0.236	0.241	0.26	0.259
Alum. Foil, Trays	0.07	0.08	0.144	0.138	0.15	0.113
Other Aluminum	0.22	0.18	0.092	0.103	0.11	0.146
Tinned Food Cans ⁵	0.75	0.91	1.440	1.255	1.36	1.148
Other Metal ⁵	5.37	5.05	6.245	5.825	5.83	5.875
Other Non-ferr. Metal	0.20	0.17	0.127	0.050	0.05	0.158
Other Ferrous Metal ⁵	2.71	2.36	2.896	2.949	2.86	2.817
White Goods	0.14	0.03	0.035	0.000	0.00	0.079
Small Appliances	0.43	0.43	0.857	0.392	0.41	0.676
Aerosol Cans	0.11	0.13	0.192	0.159	0.17	0.157
Mixed Metal/Materials ⁶	1.78	1.93	2.138	2.274	2.33	1.987

⁴ "Other Disposable Hygiene Products" are included in this table with "Other Miscellaneous Organics". For 1992-93 statewide study results, an estimate of the quantity of "other disposable hygiene products" (0.08%) was subtracted from the "Diapers & Disposable Hygiene" category and added to "Other Miscellaneous Organics" to make this consistent with the results from other studies in this table

⁵ Metro did not report separate results for "other tinned cans". It is believed, but not confirmed, that "other tinned cans" were included with "other ferrous metal" rather than with "tinned food cans". In this table, the "other tinned cans" category has been added to the "other ferrous metal" category to make the statewide results comparable to the Metro results.

⁶ "Oil Filters" measured separately in the Metro 1993-94 study have been added to the "Mixed Metal/Materials" category to be consistent with statewide results.

Table A2 continued
(page 3 of 3)

Material	Metro 1993-94 as received		Rest of Oregon 1994-94	Rest of Oregon 1992-93		Statewide Combined
	all facilities	transfer stations only		using 1994-95 weighting	as originally reported	Metro 93-94 all facilities & rest 1994-95
OTHER INORGANICS	8.75	6.58	10.289	6.996	6.88	9.638
Rock, Soil, Litter (& fines) ⁷	1.92	1.64	6.181	3.978	4.08	4.379
Rock, Concrete Brick	1.00	0.61	2.603	1.231	1.13	1.925
Soil, Sand, Litter (& fines) ⁴	40.92	1.03	3.578	2.747	2.95	2.454
Gypsum Wallboard	2.76	1.90	2.653	1.580	1.50	2.698
Fiberglass Insulation	0.43	0.44	0.644	0.285	0.19	0.553
Other Misc. Inorganics	3.64	2.60	0.811	1.153	1.11	2.007
"MEDICAL"⁸	0.10	0.13	0.185	0.330	0.38	0.149
HAZARDOUS MATERIALS	0.45	0.51	0.621	0.435	0.43	0.549
Latex Paint	0.11	0.11	0.091	0.121	0.10	0.099
Oil-based Paint	0.05	0.07	0.043	0.058	0.06	0.046
Pesticides/Herbicides	0.01	0.01	0.002	0.015	0.02	0.005
Motor Oil	0.05	0.05	0.039	0.017	0.02	0.044
Fuels	0.01	0.02	0.003	0.016	0.02	0.006
Adhesives, Sealants	0.00	0.00	0.082	0.014	0.01	0.047
Caustic Cleaners	0.01	0.01	0.043	0.016	0.01	0.029
Lead-Acid Batteries	0.06	0.08	0.035	0.054	0.07	0.046
Dry Cell Batteries	0.02	0.03	0.071	0.052	0.05	0.049
Asbestos	0.00	0.00	0.004	0.002	0.00	0.002
Other Chemicals ⁹	0.13	0.15	0.208	0.070	0.06	0.175
TOTAL PACKAGING¹⁰	18.57	20.06	22.966	21.704	20.98	21.107
TOTAL PRODUCTS	50.77	46.12	48.395	45.101	44.60	49.399
TOTAL NON-MANUFACTURED¹¹	30.65	33.82	28.639	33.195	34.42	29.489

⁷ In the 1992-93 study, most pet litter was included in the "soil, sand, and fines" category, but the organic portion such as fiber pellet litter was included as "miscellaneous organics". All litter and feces were included in the separate "pet litter" category in the 1994-95 study. Also, in 1992-93, "non-distinct fines" were included with "soil, sand, and fines". In 1994-95, "fines" that were not directly sorted into categories were weighed and then assigned to the appropriate categories based on a visual estimate by percentage, in the same manner as "supermix" (below).

⁸ To avoid risking the health of sorters, bags containing gauze, blood, tubing, or other medical waste were weighed entirely as "medical waste", even if the bag also contained non-medical waste. Almost all the "medical waste" measured here was not infectious waste as defined in Oregon state law.

⁹ "Other Chemicals" includes unknown substances that in many cases are probably not hazardous. Metro category "other hazardous waste" was added to this category for the purposes of this table.

¹⁰ "Total Packaging" includes paper and plastic packaging, wood pallets/crates, bottles and other glass containers, aluminum cans, foil, and tinned cans.

¹¹ "Total Non-manufactured" includes yard debris, food waste, "other misc. organics", rock, concrete, and soil, and "Other misc. Inorganics".

1994 Household Hazardous Waste Information

Current Status

Participation rates have remained steady since 1991, however, collection event costs have dropped substantially from \$143 per participant to \$92 per participant. This is due primarily to reduced disposal costs under a new hazardous waste disposal contract. Over 75% of the hhw collected at events in 1994 was either recycled or processed for use as supplemental fuel.

Two new programs were implemented during 1994. The first is a voucher program with Metro. This program is for Oregon residents outside the Portland area that have no other options for disposal of hhw. These people obtain a voucher from DEQ or Metro which allows them to take their household hazardous waste (HHW) to Metro household hazardous waste disposal facilities. These facilities are usually only open to residents of the Portland metropolitan area. To date there has been interest in this program primarily from residents of areas of Oregon within a one hour drive of Portland.

The second new program allows any Oregon city or county to be a purchaser under DEQ's contract with a HHW contractor. Under this program, DEQ's contractor runs the HHW collection events, manages the collected HHW,

and is paid by the local jurisdiction. DEQ provides any necessary technical assistance to help prepare for the event. This allows the local jurisdictions to arrange collection events as they are needed, rather than when DEQ is able to fit them into their schedule. Eight collection events have been held using this new program. This program is consistent with DEQ's goal of having more local responsibility for hhw programs.

Currently six communities outside the Portland area are regularly sponsoring their own HHW collection events. These are Albany, Corvallis, Lane County, Medford, Tillamook County, and Lincoln County.

Metro has the only permanent collection facilities in the state. 1994 was the first time that Metro had two permanent collection facilities and a satellite collection program operating in the Portland area throughout the year. The addition of the second collection facility, increase in the number of full-service collection events and a new series of neighborhood-based events all contributed to a 41% increase in the number of household customers served over the previous year (17,583 customers in 1994 vs. 12,431 in 1993).

1991-1994 Oregon DEQ HHW Collection Event Cumulative Data

Year	Collection Events	Main collection participants	Paint collection participants	Total participants	Population served	% of households participating
1991	11	2,545	405	2,950	248,950	3%
1992	17	4,442	428	4,870	182,245	7%
1993	5	646	N/A	646	51,000	3%
1994 DEQ	7	2,204	298	2,502	130,725	5%
1994 Purchaser	5	1,661	N/A	1,661	140,900	3%
1994 Total (DEQ/Purchasers)	12	3,865	298	4,163	271,625	4%
1991-1994 DEQ	40	9,837	1,131	10,968	612,920	5%
1991-1994 (DEQ/Purchasers)	45	11,498	1,131	12,629	753,820	4%

Year	Total pounds of waste*	Ave. pounds per part.	Ave. cost per part.	Disposal Cost	Labor and Equipment Cost	Purchaser Invoice**	DEQ Total Cost**	HHW Total Invoice ***
1991	221,802	75	\$ 135	\$ 225,554	\$ 171,982	N/A	\$ 397,536	\$ 397,536
1992	489,578	101	\$ 141	\$ 441,982	\$ 246,807	N/A	\$ 688,789	\$ 688,789
1993	65,232	101	\$ 197	\$ 53,229	\$ 74,096	N/A	\$ 127,325	\$ 127,325
1994 DEQ	179,072	72	\$ 96	\$ 133,769	\$ 105,681	N/A	\$ 239,450	\$ 239,450
1994 Purchaser	108,930	66	\$ 87	\$ 79,049	\$ 66,153	\$ 131,626	\$ 13,576	\$ 145,202
1994 Total (DEQ/Purchasers)	288,002	69	\$ 92	\$ 212,818	\$ 171,834	\$ 131,626	\$ 253,026	\$ 384,652
1991-1994 DEQ	955,684	87	\$ 132	\$ 854,534	\$ 598,566	N/A	\$ 1,453,100	\$ 1,453,100
1991-1994 (DEQ/Purchasers)	1,064,614	84	\$ 127	\$ 933,583	\$ 667,719	\$ 131,626	\$ 1,466,676	\$ 1,598,302

*Note: Total pounds of waste includes useable product giveaway amounts and wastes diverted to local recyclers or non-profit organizations.

**Note: Purchasers are local governments which used the State contract for contracted waste collections and disposal services. These local governments (Tillamook, Lane, and Douglas Counties in 1994) paid for an average of 90% of contracted collection event costs. DEQ paid for the remaining 10%.

***Note: HHW total invoice does not include costs for local and state program staffing, technical assistance, and collection event promotional costs.

1994 Oregon HHW Collection Event Data

Location	Date	Main collection part.	Paint collection part.	Population Served	% Part	Total lbs.*	Ave. lbs. per part.	Cost per house.	Disposal cost	Labor and Equipment	Purchaser Invoice**	DEQ Invoice	HHW Total Invoice***
DEQ-Spon. Summer													
Woodburn	7/22/94	427	N/A	30,000	4%	30,440	71	\$ 95	\$ 24,579	\$ 16,134	N/A	\$ 40,713	\$ 40,713
Klamath Falls ¹	8/6/94	333	25	20,000	4%	29,340	82	\$ 103	\$ 20,212	\$ 16,543	N/A	\$ 36,755	\$ 36,755
Cottage Grove	8/13/94	239	N/A	7,500	8%	19,980	84	\$ 114	\$ 13,813	\$ 13,318	N/A	\$ 27,131	\$ 27,131
Baker City	9/10/94	194	N/A	10,000	5%	15,397	79	\$ 121	\$ 10,861	\$ 12,580	N/A	\$ 23,441	\$ 23,441
Lincoln City	9/24/94	382	208	22,225	7%	44,178	75	\$ 83	\$ 29,216	\$ 19,883	N/A	\$ 49,199	\$ 49,199
Total		1,575	223	89,725	6%	139,335	78	\$ 103	\$ 98,681	\$ 78,558	N/A	\$ 177,239	\$ 177,239
DEQ-Spon. Fall													
Dallas	10/29/94	313	75	21,000	5%	19,485	50	\$ 71	\$ 16,816	\$ 10,836	N/A	\$ 27,651	\$ 27,651
Roseburg	11/19/94	316	N/A	20,000	4%	20,252	64	\$ 109	\$ 18,272	\$ 16,287	N/A	\$ 34,559	\$ 34,559
Total		629	75	41,000	4%	39,737	57	\$ 90	\$ 35,088	\$ 27,123	N/A	\$ 62,210	\$ 62,210
Purchaser Events Fall													
Tillamook	10/22/94	323	N/A	8,000	10%	21,704	67	\$ 84	\$ 15,546	\$ 11,571	\$ 27,117		\$ 27,117
Pacific City	10/22/94	94	N/A	4,000	6%	10,283	109	\$ 152	\$ 6,036	\$ 8,262	\$ 14,298		\$ 14,298
Nehalem	10/22/94	139	N/A	4,000	9%	11,470	83	\$ 106	\$ 7,330	\$ 7,425	\$ 14,755		\$ 14,755
Lane County	11/4-5/94	1,008	N/A	120,000	2%	57,193	57	\$ 71	\$ 42,723	\$ 29,135	\$ 60,858	\$ 11,001	\$ 71,858
Reedsport	11/20/94	97	N/A	4,900	5%	8,280	85	\$ 177	\$ 7,414	\$ 9,760	\$ 14,598	\$ 2,575	\$ 17,174
Total		1,661	N/A	140,900	3%	108,930	66	\$ 87	\$ 79,049	\$ 66,153	\$ 131,626	\$ 13,576	\$ 145,207
1994 DEQ-Sponsored totals		2,204	298	130,725	5%	179,072	72	\$ 96	\$ 133,769	\$ 105,681		\$ 239,449	\$ 239,449
1994 Purchaser-Sponsored totals		1,661	N/A	140,900	3%	108,930	66	\$ 87	\$ 79,049	\$ 66,153	\$ 131,626	\$ 13,576	\$ 145,202
1994 HHW Totals (DEQ+Purchaser)		3,865	298	271,625	4%	288,002	69	\$ 92	\$ 212,818	\$ 171,834	\$ 131,626	\$ 253,025	\$ 384,651

*Note: Total pounds of waste includes useable product giveaway amounts and wastes diverted to local recyclers or non-profits.

**Note: Purchasers are local governments which used the State contract for contracted waste collection and disposal services. These local governments (Tillamook, Lane, and Douglas Counties in 1994) paid for an average of 90% of contracted HHW collection event costs. DEQ paid the remaining 10%.

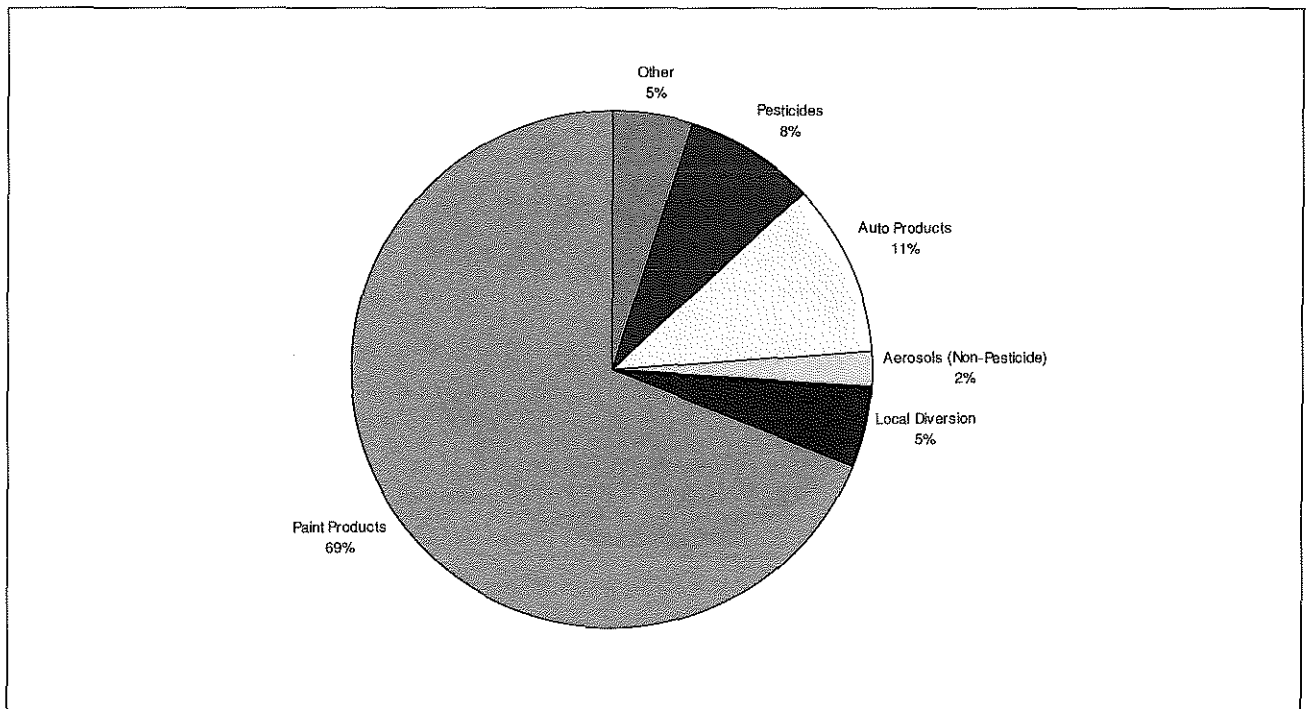
***Note: HHW total invoice does not include costs for local and state program staffing, technical assistance, and promotional costs.

¹ Klamath Falls HHW collection does not include additional paint pick-up in Bend. Participation is unknown for the Bend paint pick-up. 250 pounds of oil based paint and 400 pounds of latex paint were collected. Transportation, labor and equipment costs for the additional paint was \$639 and waste management costs were \$590. The total cost to DEQ for the Bend paint collection was \$1,229. This data is not included in the summary tables.

**1994 ODEQ HHW
Wastestream Breakdown (with waste diversions)
DEQ & Purchaser Sponsored**

Percent	Woodburn	Klamath		Baker Grove	Lincoln		Pacific				Lane Reedsport	Totals		
		Cottage Falls			City	City	Dallas	Roseburg	Tillamook	City			Nehalem	
Pesticide Solid	804	923	677	667	918	450	45	147	250	75	535	17	5,508	1.9%
Pesticide Liquid	874	1,525	779	1,109	999	358	3,964	784	603	900	2,877	640	15,412	5.4%
Pesticide Aerosol	120	90	30	60	120	20	95	160	70	100	182	95	1,142	0.4%
Oil	360	1,200	450	770	700	375	475	1,600	700	1,150		110	7,890	2.7%
Chlorinated Solvents	1,000										39		1,039	0.3%
Solvents	945	835	220	625	204	205	550	310	425	150	1,400	325	6,194	2.2%
Aerosol	531	750	83	460	1,050	660	420	1,040	250	200		190	5,634	2.0%
Latex	7,560	4,400	6,950	1,940	5,495	4,369	4,330	5,625	2,700	1,800	11,812	1,271	58,253	20.2%
Oil based paint	15,380	11,598	9,600	6,458	28,408	10,766	6,945	10,350	3,500	4,375	27,195	4,878	139,454	48.4%
Lead acid	1,400	5,250		2,525	1,000	1,150		750	1,300	800			14,175	4.9%
Alkaline Batteries	50	112		45	100	80	50	120		80	1,637		2,274	0.8%
Acids	732	1,345	264	149	198	49	438	200	150	200	481	85	4,291	1.5%
Bases	155	300	114	185	447	123	674	180	250	200	645	314	3,587	1.2%
Antifreeze		400	375	33	280	560	350		40	440		100	2,578	0.9%
Asbestos							110			500			610	0.2%
Fluorescent Lights	10		100					10	7	100	56		283	0.1%
Oxidizers	300	150	7	13	140	53	84	25	7	25	394	45	1,243	0.4%
PCBs			79				14				616		709	0.2%
Reactives	3	52	3		20			13	1	25	16		133	0.05%
PPE/Crushed oil containers	162	210	150	250	250	260	380	390	30	350		160	2,592	0.9%
Material not regulated by DOT							340						340	0.1%
Spontaneously combustible	50												50	0.02%
Solid tar		200											200	0.07%
Lead paint chips										390			390	0.1%
Subtotal- Contracted Waste Management	30,436	29,339	19,880	15,287	40,328	19,478	19,264	21,704	10,283	11,470	48,275	8,230	273,975	95.1%
Product give-away	0	0	100	110	100	7	113	0	0	0	150	50	630	0.2%
Paint redistribution					3,750						2,250		6,000	2.1%
Other redistribution						875					6,518		7,393	2.6%
Subtotal- Local Waste Management	0	0	100	110	3,850	7	988	0	0	0	8,918	50	14,023	4.9%
Total (in pounds) HHW 1994	30,436	29,339	19,980	15,397	44,178	19,485	20,252	21,704	10,283	11,470	57,193	8,280	287,998	100%

Oregon HHW 1994 Total DEQ and Purchaser Collection Events Wastestream Breakdown

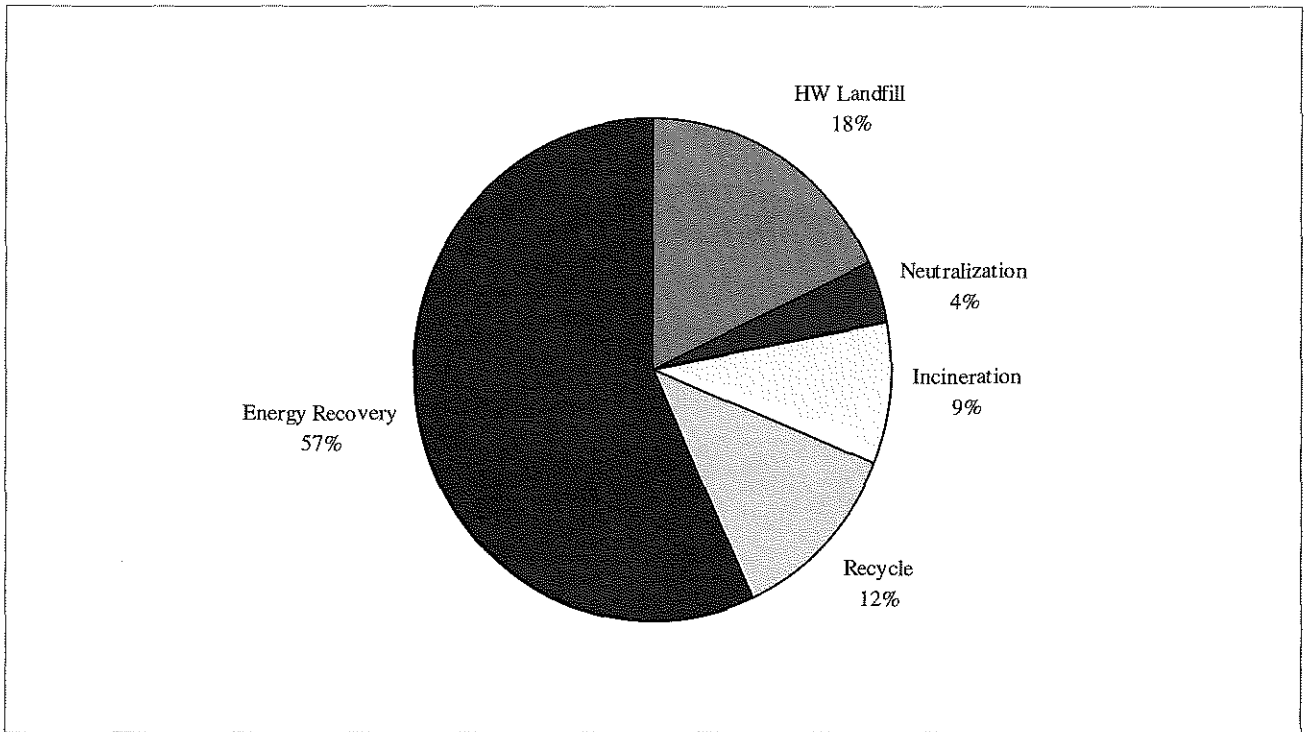


1994 Data

Graph includes 7 DEQ and 5 Purchaser HHW events

Local Diversion- Paint redistribution, usable product giveaway and other redistribution

Oregon HHW 1994 Total DEQ and Purchaser Collection Events Waste Management



1994 Data

Recycled-*Lead acid batteries, recyclable latex paint, antifreeze, fluorescent tubes*

Incineration-*Pesticide aerosols, pesticides/poisons*

Neutralization-*Acids/bases*

Energy Recovery-*Oil based paint, used motor oil, solvents, flammable aerosols*

HW Landfill-*Non-recyclable latex paint*

1994 Oregon CEG Collection Event Data

Location	Date	Part.	Total lbs.*	Ave. lbs. per part.	Ave. event cost/part.	Purchaser Invoice**	DEQ Invoice	Total Invoice***	CEG Participants Payment Amount	% paid by CEG Participant
DEQ-spons. Summer										
Woodburn	7/22/94	47	7,624	162	\$ 267	N/A	\$ 12,536	\$ 12,536	\$ 4,632	37%
Klamath Falls	8/6/94	9	2,510	279	\$ 161	N/A	\$ 1,451	\$ 1,451	\$ 731	50%
Cottage Grove	8/13/94	14	5,217	373	\$ 556	N/A	\$ 7,787	\$ 7,787	\$ 3,601	46%
Baker City	9/10/94	12	4,421	368	\$ 342	N/A	\$ 4,099	\$ 4,099	\$ 2,227	54%
Lincoln City	9/24/94	20	5,189	259	\$ 218	N/A	\$ 4,355	\$ 4,355	\$ 1,289	30%
Total		102	24,961	245	\$ 296	N/A	\$ 30,228	\$ 30,228	\$ 12,480	41%
DEQ-spons. Fall										
Dallas	10/29/94	12	2,606	217	\$ 255	N/A	\$ 3,054	\$ 3,054	\$ 1,286	42%
Roseburg	11/19/94	6	1,948	325	\$ 358	N/A	\$ 2,148	\$ 2,148	\$ 1,653	77%
Total		18	4,554	253	\$ 289	N/A	\$ 5,202	\$ 5,202	\$ 2,939	56%
Purchaser Events Fall										
Lane County	11/4/94	45	12,188	271	\$ 205	\$ 9,235	N/A	\$ 9,235	\$ 8,130	88%
Reedsport	11/20/94	3	875	292	\$ 324	\$ 972	\$ 109	\$ 1,081	\$ 257	24%
Total		48	13,063	272	\$ 215	\$ 10,207	\$ 109	\$ 10,316	\$ 8,387	81%
1994 DEQ-Sponsored totals		120	29,515	246	\$ 295	N/A	\$ 35,430	\$ 35,430	\$ 15,420	44%
1994 Purchaser-Sponsored totals		48	13,063	272	\$ 215	\$ 10,207	\$ 109	\$ 10,316	\$ 8,387	81%
1994 CEG Totals (DEQ and Purch.)		168	42,578	253	\$ 216	\$ 10,207	\$ 35,539	\$ 45,746	\$ 23,807	52%

*Note: Includes wastes recycled locally.

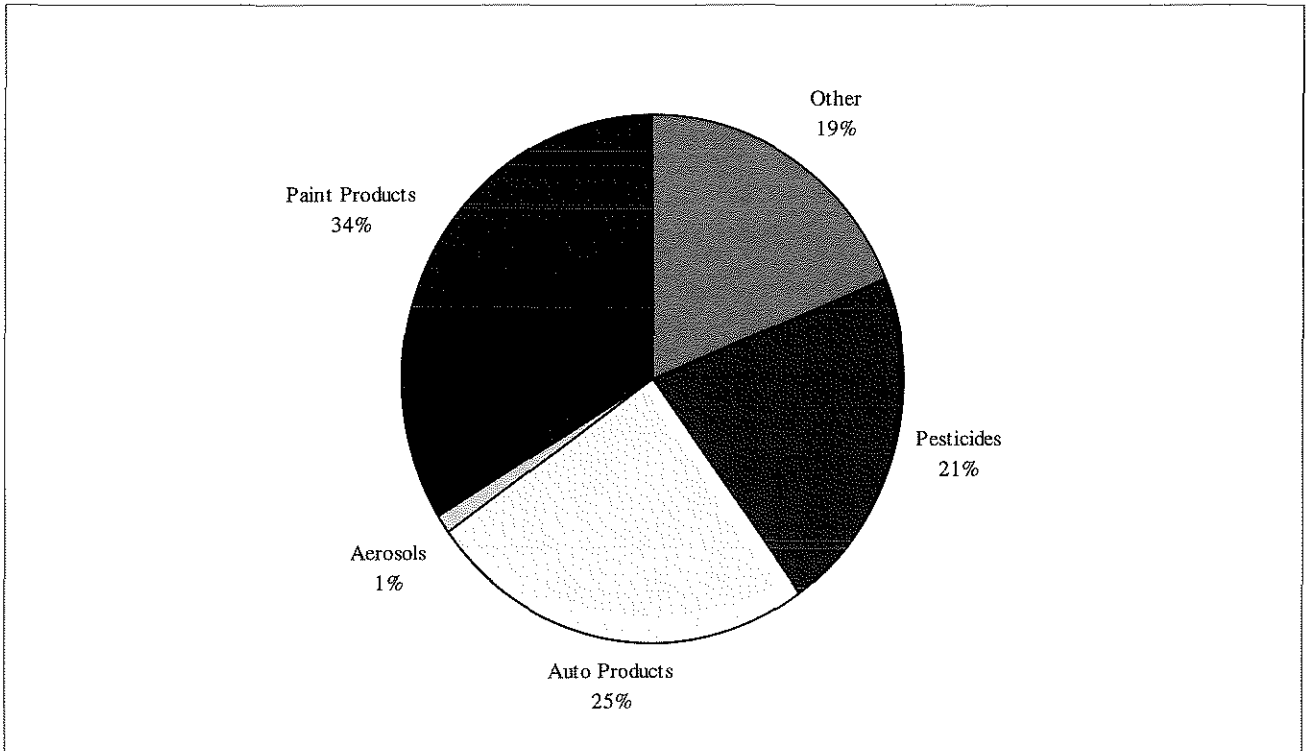
**Note: Purchasers are local governments which used the State contract for contracted waste collection and disposal services. These local governments (Lane and Douglas Counties in 1994) and participating CEG businesses paid for 99% of contracted CEG collection event costs. DEQ paid the remaining 1%.

***Note: CEG total invoice does not include costs for local and state program staffing, technical assistance, and event promotional costs.

1994 ODEQ CEG
Wastestream Breakdown (with waste diversions)
DEQ & Purchaser Sponsored - Totals

	Woodburn	Klamath	Cottage Falls	Baker Grove	Lincoln City	Dallas City	Roseburg	Lane	Reedsport	Totals	Percent
Pesticide Solid	921	123	1,500	410	213	63				3,230	7.1%
Pesticide Liquid	1,081	229	834	407	648	277	711	988	103	5,278	12.9%
Pesticide Aerosol						30		38		68	<1%
Oil										0	
Chlorinated Solvents				1,260		305				1,565	3.7%
Solvents	1,005	765	700	950	361			3,450		7,231	17.0%
Aerosol	59	100	18							177	<1%
Latex		125			450	131			78	785	1.8%
Oil based paint	2,217	402	800	778	2,892	734	225	5175	453	13,676	32.1%
Lead acid				415						415	1.0%
Alkaline Batteries			125			480		613		1218	2.9%
Acids	464	141	81	80	162	21	95	295	95	1,434	3.4%
Bases	455		236	20	63	82	761	270	131	2,018	4.7%
Antifreeze	665	400		98		335				1,498	3.5%
Fluorescent Lights								3		3	<1%
Oxidizers	435	225	13	3		53	156	58	15	958	2.2%
PCBs	50									50	<1%
Reactives	4									4	<1%
PPE/Crushed											
oil containers	18									18	<1%
Material not regulated by DOT		750							750	1.8%	
Contaminated soil	200		10		400			160		770	1.8%
Ash						95				95	<1%
Adhesives			150							150	<1%
Spontaneously combustible	50									50	<1%
Sub-total - Contracted											
Waste Management	7,624	2,510	5,217	4,421	5,189	2,606	1,948	11,050	875	41,440	97.3%
Other Redistribution								1,138	0	1,138	2.7%
Subtotal - Local											
Waste Management	0	0	0	0	0	0	0	1,138	0	1,138	2.7%
Total (in pounds)	7,624	2,510	5,217	4,421	5,189	2,606	1,948	12,188	875	42,578	100%

Oregon CEG 1994 Total DEQ and Purchaser Collection Events Wastestream Breakdown

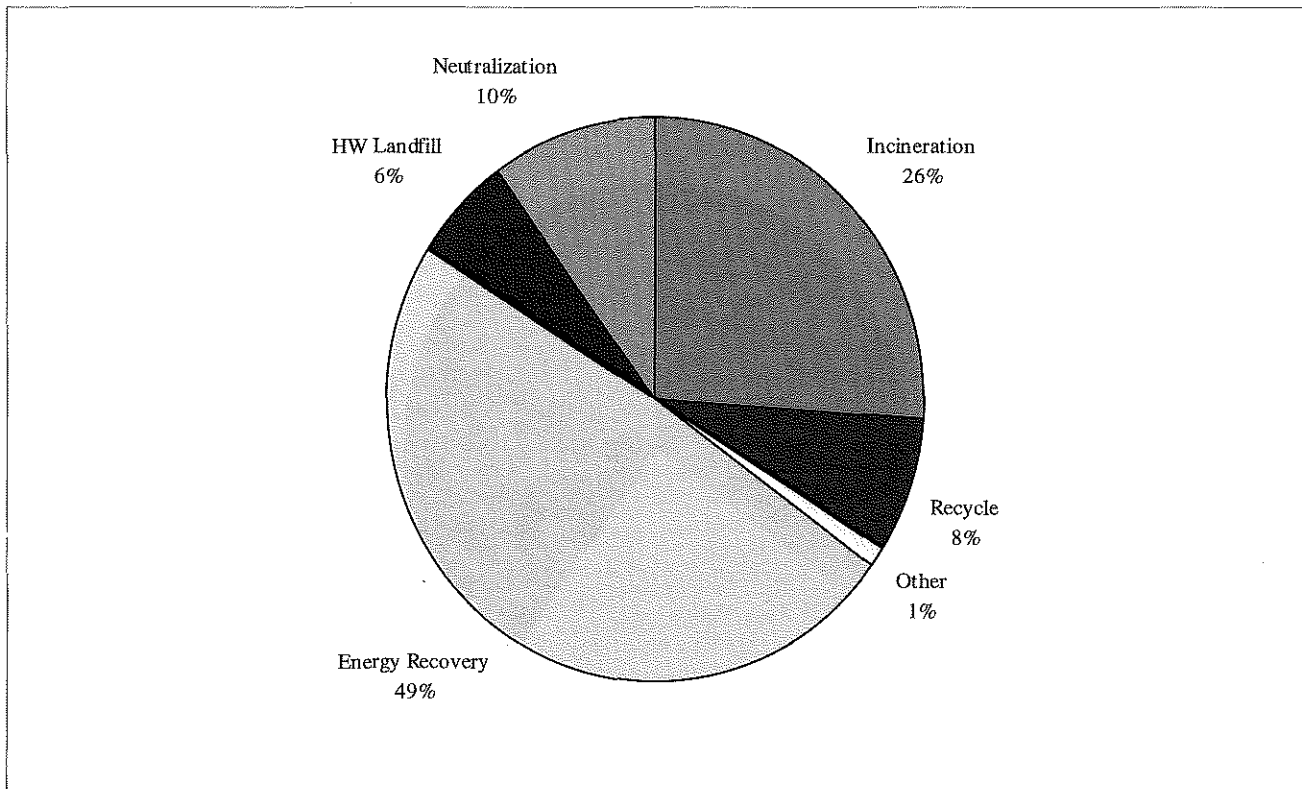


1994 Data

Graph includes 7 DEQ and 2 Purchaser CEG events

Other included local recycling of fluorescent lights, alkaline batteries, oxidizers, PCBs, reactives, contaminated soil, ash, adhesives and spontaneously combustible materials.

Oregon CEG 1994 Total DEQ and Purchaser Collection Events Waste Management



1994 Data

Recycled-*Lead acid batteries, recyclable latex paint, antifreeze*

Incineration-*Pesticide aerosols, pesticides/poisons*

Neutralization-*Acids/bases*

Energy Recovery-*Oil based paint, used motor oil, solvents, flammable aerosols*

HW Landfill-*Non-recyclable latex paint*

Other-*Includes beneficial reuse*

Plan Status: Moving Toward Waste Prevention for the Period 1994-1996

In January, 1994, the Environmental Quality Commission approved the Integrated Resource and Solid Waste Management Plan, 1995 - 2005. The plan was developed through an interactive process that involved more than a hundred citizens, haulers, local government, state agency representatives, and environmental groups from all across the state.

The state now has a new plan that sets new direction. It is clear that landfills and other disposal facilities must be managed in a way that protects humans and the natural environment through state-of-the-art systems; that it is essential to achieve a balance in supply and demand for recyclable materials, and the educational effort that made "RECYCLE" a household word must continue to promote recycling as a daily activity for every home, manufacturer, business, and institution.

But this plan goes beyond sound solid waste management practices to a vision of waste being managed as valuable resources. The Vision for 2005 is "A fundamental shift away from managing "garbage" to managing valuable natural resources, secondary resources and residuals."

For DEQ, the Plan provided a new directive. In the two years since the plan was adopted, the Department has focused on two new areas to move us up the solid waste management hierarchy and to further integrate activities; one is looking at waste prevention through the **RESOURCE EFFICIENT MODEL CITY PROJECT**, a community based voluntary program focusing on a whole facility resource efficiency approach. The other is the **BUDGET NOTE REVIEW** which further defines how to integrate the various aspects of the solid waste management system. These two efforts identified statutory needs and programmatic changes that will help move the state toward managing valuable natural resources rather than garbage, making the vision a reality.

Resource Efficient Model City Project

An integrated system is one that looks at the system as a whole and identifies how one action or activity impacts another. A basis for this approach has been in place since 1983 and is

reflected in the solid waste hierarchy that sets out that managing solid waste should begin with source reduction (waste prevention -not generating waste in the first place) followed by reuse, recycling, composting, energy recovery and finally disposing of residuals that cannot be reduced, reused or recycled. Oregon, like many other states, has not expended much effort in developing the framework necessary to fully use this approach.

The objectives and strategies in the Plan under the five chapters: Education, Waste Prevention, Material Recovery, Residual Disposal and System Management link efforts to establish a system that more closely reflects this hierarchy.

To use the hierarchy as comprehensive approach rather than as separate activity means that our effort must change. Instead of looking at what waste is going into disposal cans and recapturing valuable recyclable material we need a program that also focuses on procurement and use of materials. The premise being that efficient use of materials insures that fewer valuable resources will enter the waste stream.

The Plan directed DEQ to begin by developing a program targeting the first point of use of raw materials and products, that being manufacturers and business. In 1994, DEQ launched the Resource Efficient Model City Project.

The Department first modeled the Resource Efficiency, Waste Prevention Model City Project in Corvallis, Oregon during 1994-95. In cooperation with the Oregon Department of Energy and the Oregon Water Resources Department, DEQ worked with the city library, a middle school, and five local businesses. DEQ assisted participants to find greater efficiencies in

the use of materials, energy and water and to improve recycling. This approach had some very positive results which have been developed into case studies. For example:

- An insurance company cut its use of electricity by 34%.
- Changing its packaging system to reduce the number of cardboard boxes used, a computer software disk manufacture cut the amount of packaging going to customers by 68% and saved the company more than \$20,000 annually.
- Students at the middle school are teaching each other about resource efficiency and have implemented a vermiculture project to compost food waste for the District's centralized kitchen.
- A local farm and food processor reduced its use of water by more than 50% by recycling clean water through the vegetable processing system.

The program will continue in Corvallis as a community based program through a partnership between the Chamber of Commerce, the local solid waste service provider, the city government, Oregon State University Energy Extension Service, and the Department of Environmental Quality. The program is also expanding to the Cities of Milwaukie and Cannon Beach. There has been success in promoting the idea that by identifying ways to use less material, energy, water and improving recycling, companies and institutions can save money, become more competitive and at the same time conserve natural resources contributing to the livability of their community.

Budget Note Review Process

In 1995, the Oregon Legislature attached a note to the approved Department budget. The importance of this budget note to the statewide plan is that it provides an opportunity to review the need to incorporate plan objectives into statute.

“The Subcommittee requests the DEQ to review existing legislation and report to the 1997 Legislature on any recommended changes in waste reduction and recycling measurement, requirements and enforcement including the Department’s present and potential costs of implementation.”

Many recommendations that came out of the budget note process do not require statutory change, rather they will encourage rule change, program, or priority changes at the Department, and in local recycling programs. In either event, this is positive for the implementation of the statewide plan.

The budget note process began with Department staff gathering input from local governments, recyclers, haulers and interested public about the success of the existing law in achieving recycling and waste prevention goals and identifying areas that might need improvement. Five meetings around the state were held with the various stakeholders. The input received at these meetings has provided a framework for “issue papers” that were presented to the Department’s Solid Waste Advisory Committee (SWAC) during 1996. The result of the continued review and analysis by the SWAC and statewide stake-

holders has resulted in final legislative and program recommendations to help the state of Oregon achieve recycling and waste prevention goals.



Oregon Department of Environmental Quality
811 SW Sixth Avenue Portland, Oregon 97204

State of Oregon
Department of Environmental Quality

Memorandum

Date: January 8, 1997

To: Environmental Quality Commission

From: Langdon Marsh, Director



Subject: **Agenda Item "G"**, Petition to repeal a portion of OAR 340-024-0301, Vehicle Inspection Program (VIP) boundary, and remove west and east Scappoose. EQC Meeting: January 10, 1997

Statement of Purpose

The Commission must consider a petition submitted by the City of Scappoose to revise OAR 340-024-0301, to remove the census areas of west and east Scappoose from the Motor Vehicle Inspection Program (VIP) boundary.

Background

On November 29, 1996 the Department received a petition from the City of Scappoose asking for two actions to be taken by the Commission. First, that the Commission direct the Department to repeal that portion of the VIP boundary which includes Scappoose. Second, that the Commission direct the Department to stay implementation of the vehicle testing program in the Scappoose area until the Commission ruled on the requested boundary repeal. By statute the Commission is required to make a determination regarding the petitioner's request no later than 30 days after receipt of the petition, unless allowed additional time by the petitioner. The Department and the City of Scappoose agreed that the Commission would consider the question of delaying program implementation at the December 31st EQC meeting. The City also agreed that EQC consideration of the request for boundary repeal would be delayed pending completion of the City's technical analysis and report.

On December 30, 1996 the City of Scappoose asked that their request to stay implementation be removed from the agenda and not considered by the Commission. On January 6, 1997 the Department received a letter on behalf of the City of Scappoose pertaining to the second part of the petition, requesting that the Commission amend OAR 340-024-0301 to repeal the VIP boundary in west and east Scappoose. The letter makes several points that the City believes support their removal from the VIP program. The main arguments are summarized below. The Department's response follows. The city's letter is included as attachment C.

1. Events have occurred in and around Scappoose that, if looked at in isolation rather than on a regional basis, substantially mitigate the effect of commuter traffic from Scappoose into the Portland airshed. Specifically, the city has identified an industrial facility in Columbia County (Multnomah Plywood Corp.) that closed in 1994, and subsequently requested that their Air Contaminate Discharge Permit (ACDP) be canceled. The permitted emissions (VOC, NOx, and CO) from this facility would offset emissions generated by motor vehicles commuting into the Portland airshed from Scappoose. Substituting the permitted industrial emissions for those of motor vehicles should mitigate the need for vehicle testing in Scappoose.
2. The City has identified a private company that has recently started to provide daily shuttle service from Scappoose to Portland. The City intends to provide information on service levels at the January 10th EQC meeting. This service could reduce the number of motor vehicle trips from Scappoose into Portland, thereby reducing emissions and mitigating the need for vehicle testing.
3. The formula DEQ used to establish the VIP boundary is based on only one factor - estimated commute rates into Portland. The use of a percent commute rate methodology makes little sense if what DEQ actually desires is to measure and define the pollution problem. For example, while the commute rate for the city of Salem is well under the Department's 40 percent cut-off for inclusion in the boundary, the number of vehicles entering the Portland airshed is much higher than those coming from Scappoose. In addition, the process of selecting VIP boundary areas did not account for other factors such as plant closings, or other potential emission reduction strategies that could be implemented within a community.
4. The City opposes their inclusion in the VIP boundary because they believe testing vehicles from Scappoose is impractical. Scappoose residents must drive to Portland for vehicle testing. There is little fairness in requiring a small city like Scappoose to help solve the air quality problems of a large city like Portland. Scappoose commuters are at best a de minimus contributor to Portland's air quality problem.

Department Response

The Portland AQMA Ozone Maintenance Plan was designed as a regional strategy, addressing significant emission sources throughout the greater Portland and Vancouver metropolitan areas. With assistance from the 1992 State Task Force on Motor Vehicle Emissions in the Portland Area, as well as several additional advisory committees, the Department evaluated the individual and collective impacts of alternative ozone strategies before finalizing its recommendation to the Commission. While the emission contribution from any one geographic area may seem relatively small when compared to the entire AQMA emissions, each emission strategy is very important to the collective success of the Ozone Maintenance Plan. In this context, the Department believes that no contributing area should be viewed in isolation.

Emissions Trading (Facility Shut-Down)

The maintenance plan specifically states that shut down credits not relied upon in the maintenance demonstration will be allocated to increase the industrial growth allowance established in the plan. This issue was a priority for industry representatives on the advisory committee. Therefore, shut down credits from Multnomah Plywood should not be available to the City of Scappoose. In addition, ozone strategies were designed to match the contribution of each emission source category to an appropriate level of emission control. Source categories that contributed the most to airshed emissions were required to shoulder the greatest burden for emissions reductions. Emissions from motor vehicles account for approximately 28 percent of estimated 1996 Portland (VOC) emissions while industrial emissions account for only 15 percent. Substituting emissions reductions from Multnomah Plywood for Scappoose area motor vehicles would unfairly shift the strategy emphasis to the industrial source sector.

Reduced Vehicle Trips (Shuttle Service)

The Department has not had the opportunity to review the shuttle service data from Scappoose. However, the Clean Air Act requires that emission control strategies be both permanent and enforceable. A voluntary, private shuttle service would not meet these criteria. In addition, METRO's travel demand forecasting model anticipated ongoing improvements in transportation alternatives in forecasting future VMT. Therefore, improvements such as the Scappoose shuttle service have already been accounted for in the maintenance plan. Vehicle testing remains the most practical, enforceable strategy to reduce current and future motor vehicle emissions.

Boundary Selection

The 1993 legislature directed the Department to revise the VIP boundary to include the more urbanized contiguous portions of the region. The subsequent 1994 VIP boundary expansion that included Scappoose was based on both the number of vehicles commuting into the Portland area and the percent of the workforce (percent commute rate) from each census area. This approach attempted to fairly balance the emission impact of vehicles entering the Portland area with the equity and cost of operating an effective testing program. If the boundary had been based solely on the actual number of vehicles commuting into the Portland airshed, some high population census areas with low commuter rates into the Portland airshed (on a percentage basis) would have been added to the vehicle testing program. Such a program would unnecessarily include a high number of motorists who do not commute to Portland, with little or no air quality benefit to the Portland airshed. For example, adding the City of Salem to the testing program would capture approximately 1,880 workers commuting into the Portland AQMA. However, it would also unnecessarily subject over 45,500 motorists to testing requirements who do not commute into Portland. Operating such a program would not be cost effective.

Summary of Public Input Opportunity

Public comment was considered during both 1994 and 1996 rulemaking actions for the motor vehicle testing program. Since that time the Department has presented information and listened to public comment during several meetings of the Scappoose City Council. These meetings are open to the public.

Authority of the Commission with Respect to the Issue

Under ORS 183.390, an interested person may petition an agency to adopt or amend rules. The rules governing submission, consideration and disposition of the petition are set forth in the Attorney General's Uniform Rule 137-01-070. Oral presentations by other affected parties are within the Commission's discretion.

Alternatives and Evaluation

The Commission must either deny the petition in writing or initiate rulemaking within 30 days of submission.

Intended Future Actions

The Portland Ozone Maintenance Plan has been submitted to EPA for approval. All adopted strategies are on schedule for implementation.

Department Recommendation

The Department recommends that the Commission deny the petition submitted by the City of Scappoose and retain the Scappoose census areas in the Motor Vehicle Inspection and Maintenance Program.

Attachments

- A. Petition filed by the City of Scappoose (November 22, 1996)
- B. Department Memorandum to the Commission regarding delay of VIP implementation in Scappoose. (December 18, 1996)
- C. Letter on behalf of the City of Scappoose regarding repeal of OAR 340-24-0301, VIP boundary for west and east Scappoose.

Reference Documents (available upon request)

Ozone Maintenance Plan for the Portland Area

Approved:

Section:

Armedt L. L. L.

Division:

Gregory A. G.

Report Prepared By: David L. Collier

Phone: (503) 229-5177

Date Prepared: January 8, 1997

dlc

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10/13/95

COPY

November 22, 1996

**TARLOW
JORDAN &
SCHRADER**
ATTORNEYS AT LAW

Langdon Marsh, Director
Dept of Environmental Quality
811 SW Sixth Ave #3A
Portland OR 97204

Re: Revision to Portland Area Motor Vehicle Inspection and Maintenance
Program Boundary
Our File No. 42629/26936

Dear Mr. Marsh:

This office represents the City of Scappoose. Enclosed please find the original and two copies of our Petition to Repeal a Portion of the Rule Adopting the Portland Area Vehicle Inspection Program Boundary as to W. Scappoose and E. Scappoose and to Stay Implementation of the Motor Vehicle Inspection Program for W. Scappoose and E. Scappoose which we are submitting to the Department of Environmental Quality to present to the Environmental Quality Commission for review and determination.

Please direct all communications concerning this Petition to the undersigned. Enclosed is a confirmation postcard. Please fill out the date of filing and return to this office.

Very truly yours,

TARLOW, JORDAN & SCHRADER

/s/ **E. ANDREW JORDAN**

E. ANDREW JORDAN

Enclosure

cc w/enc: Environmental Quality Commission
City of Scappoose

RECEIVED
NOV 29 1996

AIR QUALITY DIVISION
Dept. Environmental Quality

1600 SW CEDAR HILLS BLVD
SUITE 100
PORTLAND OR 97225
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Toll-Free:
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780-7508

STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY

CITY OF SCAPPOOSE,) Case File No. _____
(Areas - W. Scappoose and E. Scappoose)
)
Petitioner,)
)

PETITION TO REPEAL A PORTION OF THE RULE ADOPTING THE PORTLAND AREA VEHICLE INSPECTION PROGRAM BOUNDARY AS TO W. SCAPPOOSE AND E. SCAPPOOSE AND PETITION TO STAY IMPLEMENTATION OF THE MOTOR VEHICLE INSPECTION PROGRAM FOR W. SCAPPOOSE AND E. SCAPPOOSE

Petitioner City of Scappoose
Attn: Don Otterman
P.O. Box P
Scappoose, Oregon 97056

Petitioner's attorneys: Tarlow, Jordan & Schrader
E. Andrew Jordan
1600 SW Cedar Hills Blvd., Suite 100
Portland, Oregon 97225

Pursuant to ORS 183.390 and OAR 137-01-070, Petitioner, by and through its attorneys Tarlow, Jordan & Schrader, respectfully files this Petition with the Department of Environmental Quality to repeal that portion of OAR 340-024-0301 that includes Petitioner in the Portland Area Vehicle Inspection Program ("VIP"). In addition, Scappoose petitions the Department of Environmental Quality ("DEQ") to stay the implementation of the Vehicle Inspection and Maintenance Program scheduled to go into effect on December 1, 1996, until the Environmental Quality Commission ("EQC") acts on this Petition.

On July 24, 1994, the EQC adopted an expanded Motor Vehicle Inspection Program Boundary for the Portland Metropolitan Area ("Boundary"). The Boundary was reduced as of August 12, 1996, after hearing before the EQC. However, those residing within the amended Boundary are not required to participate in the vehicle testing program until December 1, 1996.

Petitioner petitions DEQ to seek from the EQC, a repeal of that portion of OAR 340-024-0301 shown in bold typeface below.

"340-024-0301
(1) In addition to the area specified in ORS 815.300, pursuant to ORS 468A.390, the following geographical areas, referred to as the Portland Vehicle Inspection

Area * * * are designated as areas within which motor vehicles are subject to the requirement under ORS 815.300 to have a Certificate of Compliance issued pursuant to ORS 468A.380 to be registered or have the registration of the vehicle renewed:

(2) * * * * * **In Columbia County the following tracts, block groups, and blocks are included: Tract 9710.98; Block Groups 2,3 of Tract 9709.98; Blocks 146B, 148, 152 of Tract 9709.98.** (Emphasis added)

Petitioner seeks to repeal that portion of the revised boundary language that includes Columbia County, referred to as W. Scappoose and E. Scappoose. Petitioner contends that the methodology used in obtaining the results shown on the "Census Tract Key for Expanded VIP Boundary" prepared by the Department of Environmental Quality does not most effectively measure impacts of vehicle miles travelled within the Portland airshed, and contends that use of an alternative methodology will reduce the Boundary and result in better air quality for the airshed.

The facts and analysis upon which Petitioner will rely to support this Petition will be presented to DEQ on or before December 31, 1996, as a technical report ("Report") presently being prepared by an air quality consultant under contract to the City of Scappoose. The Report is being compiled by Scappoose and is not available at the time of the filing of this Petition.

Petitioner further respectfully requests the EQC to abate temporarily all enforcement of the revisions to the Portland Vehicle Inspection Program Boundary within Columbia County until this Petition has been supplemented by the Report, reviewed by DEQ, and acted on by EQC.

Petitioner further requests an extension or enlargement of, and petitions DEQ to extend, the thirty (30) day time period provided in OAR 137-01-070 for DEQ to respond to this Petition for the reason that Petitioner is preparing the Report for submittal to DEQ on or before December 31, 1996, and requests that the time within which DEQ is required to respond to the Petition begin thirty (30) days after the date the Report is received by DEQ.

Respectfully submitted,

TARLOW, JORDAN & SCHRADER

/s/ E. ANDREW JORDAN

E. ANDREW JORDAN, OSB #72138
Attorney for City of Scappoose

State of Oregon
Department of Environmental Quality

Memorandum

Date: December 18, 1996

To: Environmental Quality Commission

From: Langdon Marsh, Director

Subject: Agenda Item "A", Petition to temporarily stay implementation of Vehicle Inspection Program (VIP). EQC Meeting : December 31, 1996

Statement of Purpose

The Commission must consider a petition submitted by the City of Scappoose to temporarily stay implementation of the Motor Vehicle Inspection Program (VIP) within the Scappoose portion of the expanded VIP boundary.

Background

On July 24, 1994, the Environmental Quality Commission (EQC), under existing legislative authority, adopted an expanded Motor Vehicle Inspection Program boundary for the Portland area. This expansion included U.S. Census tracts described by the Department as West and East Scappoose, as well as twenty-six other census tracts. The boundary was revised by the Commission on August 12, 1996, removing four census tracts with commute rates below 40 percent (Newberg, Dundee, Aurora, and Marquam).

On November 29, 1996 the Department received a petition from the City of Scappoose asking for two actions to be taken by the Commission. First, that the Commission direct the Department to repeal that portion of the VIP boundary which includes Scappoose. Second, that the Commission direct the Department to stay implementation of the vehicle testing program in the Scappoose area until the Commission rules on the requested boundary repeal.

By statute the Commission must make a determination regarding the petitioner's request no later than 30 days after receipt of the petition, unless allowed additional time by the petitioner. The Department and the City of Scappoose have agreed that the Commission will consider the question of delaying program implementation at the December 31st EQC meeting. The City is preparing a technical analysis and report in support of their boundary revision request. Since that analysis will not be available until late December, they have agreed to allow the request for a repeal of the boundary to be addressed at a later EQC meeting. The Department will review the city's analysis as soon as it becomes available and make a recommendation to the Commission in January or February.

Memo To: Environmental Quality Commission

Agenda Item "A", Petition to temporarily stay implementation of Vehicle Inspection Program (VIP). EQC Meeting Page 2

Authority of the Commission with Respect to the Issue

Under ORS 183.390, an interested person may petition an agency to adopt or amend rules. The rules governing submission, consideration and disposition of the petition are set forth in the Attorney General's Uniform Rule 137-01-070. Oral presentations by other affected parties are within the Commission's discretion.

Alternatives and Evaluation

The Commission must either deny the petition in writing or initiate rulemaking within 30 days of submission.

Summary of Public Input Opportunity

Public comment was considered during both 1994 and 1996 rulemaking actions for the motor vehicle testing program. Since that time the Department has presented information and listened to public comment during several meetings of the Scappoose City Council. These meetings are open to the public.

Conclusions

The expanded VIP boundary was implemented in most new areas in October 1995; however, because of legislative concerns the Department delayed over a year before implementing the vehicle testing program in Yamhill or Columbia counties. As of December 1, 1996 the vehicle testing program has been implemented in Yamhill and Columbia counties. Vehicle registration records were altered at the Department of Motor Vehicles (DMV) to incorporate the appropriate residents of Yamhill and Columbia counties. Letters were mailed in October to residents of both areas informing them of the testing requirements. Temporarily reversing the implementation would be inefficient and confusing for the public as well as the Department and DMV. Therefore the Department recommends that implementation of the vehicle testing program in Scappoose continue pending EQC review of the boundary issue in January or February 1997.

Intended Future Actions

A technical analysis and report is being prepared by a consultant for the City of Scappoose. It is anticipated that the report will review the Department's methodology for estimating the emission impact from motor vehicles and will explore alternative methodologies. It may also dispute the commute rate established by the Department for Scappoose vehicles entering the Portland

Memo To: Environmental Quality Commission

Agenda Item "A", Petition to temporarily stay implementation of Vehicle Inspection Program (VIP). EQC Meeting Page 3

airshed. The petition states that the report will be submitted to the Department on or before December 31, 1996. The Department will review the city's analysis as soon as it becomes available and make a recommendation to the Commission during the January or February EQC meeting.

Department Recommendation

The Department recommends that implementation of the vehicle testing program in Scappoose continue pending EQC review of the boundary issue in January or February 1997.

Attachments


- 1) City of Scappoose Petition.
- 2) Department letter of December 4, 1996 regarding petition milestone dates.

Reference Documents (available upon request)

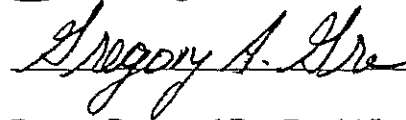
Ozone Maintenance Plan for the Portland Area

Approved:

Section:



Division:



Report Prepared By: David L. Collier

Phone: (503) 229-5177

Date Prepared: December 16, 1996

dlc

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10/13/95

January 3, 1997

VIA FACSIMILE: 229-5850
AND FIRST CLASS MAIL
State of Oregon
Department of Environmental Quality

RECEIVED

JAN 06 1997

OFFICE OF THE DEPUTY DIRECTOR

Environmental Quality Commission
c/o Susan M. Greco, Rules Coordinator
811 SW Sixth Avenue
Portland OR 97204-1390

Re: City of Scappoose Petition
Our File No. 42629/26936

Dear Commission Members:

The City of Scappoose has submitted for your consideration a Petition to Repeal a Portion of the Rule Adopting the Portland Area Vehicle Inspection Program Boundary. Specifically, the Petition seeks to remove from the Boundary the areas of West and East Scappoose.

At the time the City submitted its Petition, the City was in the process of studying the technical basis for including Scappoose within the Boundary. We have learned that by including Scappoose within the Boundary, DEQ estimates that emissions of ozone-causing pollutants can be reduced in the Portland/Vancouver Metropolitan air quality maintenance area by approximately 31 tons per year and that carbon monoxide emissions can be reduced by approximately 195 tons per year.

We also have learned that events have occurred in and around Scappoose that, if looked at in isolation rather than on a regional basis, substantially mitigate the effect of commuter traffic from Scappoose into the Portland air quality maintenance area. For example, Multnomah Plywood Corp. is included as a source of pollutants in the Portland Maintenance Plan. The facility is located north of Scappoose in Columbia County. Its air contaminant discharge permit authorized emission of 167 tons per year carbon monoxide (CO), 40 tons per year nitrogen oxide (NOx), and 23 tons per year of volatile organic compounds (VOC). Multnomah Plywood has been out of business since the summer of 1994, the time Scappoose was initially included in the Portland Vehicle Testing Boundary. Coincidentally, the Multnomah Plywood numbers alone substantially reflect the level of pollutants the airshed expects to receive from Scappoose-based commuters.

We also have learned that a private company recently started to provide a daily shuttle service from Scappoose into Portland. We do not have current user

**TARLOW
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SCHRADER**
ATTORNEYS AT LAW

JEFF BENNETT

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TARLOW, JORDAN & SCHRADER

Environmental Quality Commission
January 3, 1997
Page 2

data and will supply that to the EQC at its January 10 meeting. We believe, however, that the data will demonstrate that the shuttle service reduces the number of vehicle trips from Scappoose into Portland. We are advised by our air quality consultants that according to DEQ's data, if commuter trips were reduced by two to three percent, emissions would be reduced by the same amount as provided by the vehicle testing program.

The closing of Multnomah Plywood Corp. and commencement of the commuter shuttle service are but two of the sources we have found in a relatively short time period that have a real and calculable effect on the balance of pollutants generated and saved solely from the Scappoose area.

Of course, the difficulty the City has with inclusion within the vehicle testing boundary is a practical one. Scappoose residents must now drive to Portland for vehicle testing. On the surface, there is little fairness in requiring a small city like Scappoose to help solve the air quality problems of a large city like Portland. The formula DEQ used to develop the boundary is based on one factor and one factor alone - - estimated vehicle trips into the Portland AQMA. The process did not account for other factors that have a bearing on air quality such as plant closings, vehicle trip reduction programs, voluntary testing or use of remote sensing stations in outlying areas such as Scappoose.

The methodology also refused to use an objective approach to developing the commuter rate cut-off point. While it may have made sense for DEQ to say that if more than half of a community's workers commute into Portland all vehicles will need to be tested, instead DEQ developed commuter rates and "backed into" the percentage cut-off rate by drawing the line at a place where air quality objectives were met. This makes little sense to the nearly sixty percent of Scappoose drivers who do not commute into Portland every day.

Use of the percentage methodology also makes little sense if what DEQ actually desires to measure is actual pollution. We learned through our research that nearly twenty percent of Salem vehicles commute to Portland for work. While the Salem percentage clearly is well under the DEQ "forty percent line." the number of vehicles entering and polluting the Portland AQMA is much higher than those coming from Scappoose. Again, how does a Scappoose resident make sense out of this?

The City understands the difficult position in which the EQC finds itself. Political decisions are difficult to make. The City understands that the Ozone

TARLOW, JORDAN & SCHRADER

Environmental Quality Commission

January 3, 1997

Page 3

Maintenance Plan calls for attempts to increase the industrial growth allowance by adding back shutdown credits and by implementing new and enforceable emission reductions. That is why DEQ staff advised our consultants that the credit for the Multnomah Plywood Corp. goes to the general industrial growth pool instead of to Scappoose car owners. But again, how does a Scappoose resident understand why he or she needs to drive to Portland for vehicle testing when a company from near Portland can benefit from the Multnomah Plywood Corp. shutdown?

The EQC should consider the gains the Portland AQMA has received from the shut down of Multnomah Plywood Corp. and the voluntary shuttle system, and repeal that part of the vehicle testing rule that includes Scappoose. Scappoose commuters are at best a de minimus contributor to the air quality problems faced by Portland. We encourage the EQC to broaden its vision in the manner in which the vehicle testing boundary was drawn. Factors other than commuter percentages will provide a much truer picture of who actually contributes pollution to Portland's air.

Thank you for giving the City of Scappoose an opportunity to voice its position on this matter.

Very truly yours,

TARLOW, JORDAN & SCHRADER



JEFF BENNETT

cc: City of Scappoose
SJO Consulting Engineers

Oregon

DEPARTMENT OF ENVIRONMENTAL QUALITY

December 16, 1996

Mike Gordon
SJO Engineers
1500 SW 12th Ave.
Portland, OR 97201

RECEIVED
DEC 18 1996

SJO CONCERNED ABOUT...
PORTLAND...
Re: Emission credit from Scappoose I&M program.

Dear Mr. Gordon:

Upon further review of the methodology used to break out the Scappoose portion of the vehicle testing program emission credit, I believe that the figures I provided in my December 6th letter overestimate the Scappoose contribution. The December 6th estimate used population to allocate the Scappoose portion of the total VOC, NOx, and CO emissions credit expected from the expanded boundary. I have now also reviewed the VMT allocations within METRO's travel demand forecasting model to assess VMT traveled within the AQMA associated with trips originating in Scappoose.

On a VMT basis, the emission contribution from Scappoose is lower than on a population basis. Because these are imperfect estimating tools, emissions based on population and VMT constitute a range of emission reductions that could be expected. The expected emissions credit from the Scappoose area, on a VMT basis, is presented below:

Pollutant	Emission Reduction (lbs/day)	Emission Reduction (tons/yr)
VOC	34 lbs/day	5.6 tons/yr
NOx	18 lbs/day	3.0 tons/yr
CO	332 lbs/day	55.0 tons/yr

> 9.6

I know time is of the essence. It would take me additional time to break out pre and post I&M program emissions for the Scappoose area. I hope this information will suffice. If you have any additional questions please call me at (503) 229-5177.

Sincerely,

David L. Collier
PM10 Nonattainment Area Specialist
Air Quality Division

DLC:j
LTRIAH75993.DOC



811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696
TDD (503) 229-6993
DEQ-1

EQC
1-10-96
Item
"G"

CC: 11 251 88 NOI



RECEIVED
DEC 10 1996

SJO CONSULTING ENGINEERS, INC.
PORTLAND, OREGON 97201

December 9, 1996

DEPARTMENT OF
ENVIRONMENTAL
QUALITY

Mr. Mike Gordon
SJO Engineers
1500 SW 12th Ave.
Portland, OR 97201

Re: Emission Credit from Scappoose
I&M Program

Dear Mr. Gordon:

Here are the VOC, NOx and CO emission reduction credits that we anticipate will be achieved from the Scappoose census area portion of the Motor Vehicle Inspection and Maintenance Program. The table below shows the expected emission reductions for each pollutant in pounds per day and tons per year. I have also included our analysis of emissions from the Scappoose census area with and without the vehicle testing program. The emission reductions are estimated for the Ozone Maintenance Plan horizon year of 2006.

Scappoose Census Area Emissions Benefit in 2006 from Vehicle Testing Program

Pollutant	Area Emissions without I&M Program	Area Emissions with I&M Program	Emission Reduction
VOC	6,021 lbs/day 989 tons/yr	5,900 lbs/day 969 tons/yr	121 lbs/day 20 tons/yr
NOx	7,413 lbs/day 1,217 tons/yr	7,348 lbs/day 1,206 tons/yr	65 lbs/day 11 tons/yr
CO	42,999 lbs/day 7,063 tons/yr	41,814 lbs/day 6,867 tons/yr	1,186 lbs/day 195 tons/yr

31

I hope this information is helpful. Please let me know if you have any additional questions. I can be reached at (503) 229-5177 or by fax at (503) 229-5675.

Sincerely,

David L. Collier
Nonattainment Area Specialist
Air Quality Division

DLC:j
LTR\AH75982.DOC



811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696
TDD (503) 229-6993
DEQ-1

1-10-97

CITY OF SCAPPOOSE - VEHICLE INSPECTION NOTES

Tons of Pollutant per Year

Pollutant	Multnomah Plywood's PSEL	DEQ's Estimated Emissions Reduction from vehicle inspection for Scappoose
VOC	23 tons per year	5.6 tons per year
NO _x	40 tons per year	3.0 tons per year
CO	167 tons per year	55.0 tons per year

Comparison with the DEQ's Air Quality Maintenance Plan emission levels.

Tons of Pollutant per day

Pollutant	DEQ's Estimated Emissions Reduction from vehicle inspection for Scappoose	DEQ's Maintenance Plan Emission Levels	Impact of the reduction from Scappoose on the Maintenance Plan.
VOC	0.02 tons per day	287 tons per day	0.007%
NO _x	0.008 tons per day	149 tons per day	0.005%
CO	0.15 tons per day	918 tons per day	0.016%

City Manager
% Scappoose City Hall
52432 SE 1st
Scappoose OR 97056

Re: DEQ Testing

1996

Dear Sir:

After reading that DEQ is going to require testing of all Scappoose vehicles, I can only conclude that this is just another example of governmental bureaucracy imposing an unfair and unauthorized tax on the general public.

To tax 100% of a areas population because of the actions of 40% is neither equitable nor reasonable, the two criteria any law, ruling, regulation or what ever other terminology may apply must meet to be legal. If it does not meet these two criteria it is the counts duty to correct it. I have no problem with testing of vehicles which regularly commute for work or commercial purposes but for those who only enter Portland occasionally, it makes no more sense than for me to be required to license my vehicle in all of the states I pass through on a three legged journey to visit my children, here to Augusta GA to San Diego CA and return.

Additionally, I am reasonably certain that a portion of the money I spend thru the Portland merchants goes to support DEQ activities and that should be enough to constitute my fair share if any should be justified.

If DEQ feels they are short of funds, let them become more efficient rather than trying to perpetrate a scam on the tax paying public.

Sincerely

Albert C. Freitag

Albert C. Freitag
51403 S.E. Spring Lake Loop
Scappoose OR 97056
(503) 543-6845

CC: Spotlight
Chronicle

Steve Alverdes
31000 Vernonia Hwy
Scappoose OR 97056

September 12, 1996

Mayor Rita Bernhard
City of Scappoose
PO Box P
Scappoose OR 97056

Dear Mayor Bernhard;

In regard to DEQ vehicle testing being required in Scappoose, I am writing to express my opposition to this.

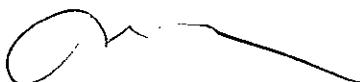
I am opposed to the inclusion of Scappoose and any of Columbia County for the following reasons:

- 1) I doubt if any significant change to air quality in the Portland air shed can be linked to Automobile testing by DEQ. Laws passed to improve automobile emission standards and attrition of the older automobile is the solution.
- 2) Scappoose should not be blamed for Portland's air quality problems.
- 3) Columbia County is NOT a part of the Portland area nor is it part of the urban growth boundary.
- 4) If 100% of Scappoose residents were to drive to Portland, this would not even come close to the number of people that drive in everyday from the Newberg area. To compare percentages of city populations versus actual numbers is a big mistake.
- 5) I have not talked to one resident of Scappoose that is for the inclusion of Scappoose in DEQ. If we wanted to be part of Portland, we would live in Portland.
- 6) It does not make sense for Scappoose residents to drive into Portland to have their car tested.

As the City of Scappoose has so aptly stated "We do not understand the logic that persists in identifying Scappoose as a significant contributor to their (Portland's) difficulties."

Please stop this insanity!

Sincerely,



Steve Alverdes

10-11-96

Joer Meyer Rita Bernhard

If DeQ want's SC2ppose
Included in there testing
then A DeQ testing be
open in SC2ppose. If
they don't want to open
a test station here then let
them stay out SC2ppose.

I work in portland due
to the simply fact that were the
job's art.

There is a lot of motorize
equipment in portland that are don't
test for Air Quality, Heavy Equipment
Small engine Run other equipment.

I feel there test for SC2ppose
to come under there control was
done so it come out in there
favor. there is a lot more
car coming from St. Helens and
portland passing thru SC2ppose.
then there is car in SC2ppose.

In short let SC2ppose take care
of SC2ppose and portland take
care of portland also if portland want's
to take care of SC2ppose they can
send cash. NO DeQ testing for
SC2ppose.
James L. Kisor.

Sept. 12, 1996

Mayor Bernhard,

I'm am definitely opposed to the inclusion of Scappoose in the state vehicle testing program. The DEQ had a meeting at the high school when this was first introduced. I attended and everyone there was opposed, but I personally felt the DEQ only conducted the meeting to let us know they were doing it despite how people felt. Tony Federici was also at the meeting and told DEQ officials that legally they could not extend the boundaries. When he died I felt our chances of being left out were also dead, I'm sorry to say.

At that meeting I stood up and said if we weren't connected enough with Portland to be included in the Extended Area Service we shouldn't be included in vehicle testing. I said they can't have it both ways. Apparently Newburg can though, because they

were accepted for extended area service
but left out of the vehicle testing program.
Even after Governor Kitzhaber vetoed the
bill that would have included them,
the boundaries were changed to exclude
them. I'd say someone in Newburg
has clout and Scappoose doesn't count.

Sincerely,
Roxanne Besmehn

ROXANNE BESMEHN
50776-4A DIKE RD
SCAPPOOSE, OR 97056
543-7538

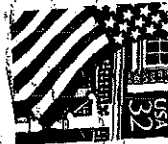
9-11-86

We do not need the
D.E. & test in this area.
Most of the trappers on the
road is none of egl. models
of Portland likes them,
let them have them.

Bob Becker

adhbhhl

050



13 Sept 96

To: Rita Bernhard

From: Tim Neketin *Wek*
52960 NW 6th
Scappoose OR 97056
(503) 543-3475

Subject: DEQ emissions testing for Scappoose

Though it may be true that "DEQ had not heard any comments from the community" I know that Gov. Kitzhaber heard from the community because I wrote to him when he vetoed the bill that would have removed Scappoose from the area to be included. I pointed out the inanity of driving to Portland to get my rig DEQ'd in order to get it licensed so I could drive it to Portland to get it DEQ'd the next time ... I'm sure you get the picture. By the way, I got no response from the governor's office.

My most unscientific wild-eyed guess is that there are about 3000 licensed vehicles in Scappoose, less than a third of which drive to Portland every day. Of course, DEQ/EQC will want facts not rhetoric so where do we go from here? Let me know how I can help.

ROGER M. BEARDSLEY
54102 KALBERER ROAD
SCAPPOOSE, OREGON 97056-2303
(503) 543-3534

September 12, 1996

Mayor Rita Bernhard
P.O. Box "P"
Scappoose, Or 97056

Dear Madam Mayor,

This is the first time in my 46 years that I have ever written a letter to a public official. I was very pleased to see that you solicited comments from the voting public about the issue of Scappoose being in Portland's expanded vehicle emission testing program.

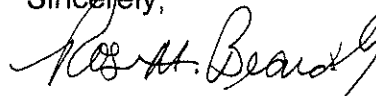
I am opposed to Scappoose being associated with anything to do with Portland, including their expanded vehicle emission testing program. I see no benefit, reward, or quality of life improvement by being subjected to the whims of Portland's government. Every time that Portland's leaders or Multnomah County's government shoves a program down the throats of their residents, they feel it is their birth right to impose their desires on the rest of the state's population, and I feel this is wrong!

I am a responsible adult, pay my bills, pay my taxes, and along with my wife am raising 3 children, and I certainly don't need an emission program along with the additional tax to tell me if I need to have my vehicles tuned up. I wish to have clean air and water for my children and grandchildren, but contrary to the beliefs of the governmental leaders in Multnomah county, not everyone in Scappoose drives a polluting car or relies on Portland for their livelihood. I understand that Portland had a couple of air pollution alerts in the last few months, but I don't feel that taxing and inconveniencing the residents of Scappoose is the answer to their problems.

If Scappoose or Columbia County had an air pollution problem, then we should look into the problem and determine appropriate solutions. I don't think that following in the footsteps of Portland's government is the solution to any problems that Scappoose may have.

I feel that Scappoose is a wonderful place to raise my children, and I also think that the city government is doing a great job. I understand that Portland holds considerable power over the state legislater, but I am certainly opposed to their demanding Scappoose residents to follow their desires. Keep up the good work, and try your best to keep this emission program out of Scappoose.

Sincerely,


Roger M. Beardsley

Sept. 16, 1996

2
N
E
W
H
I
P

Dear Mayor Bernhard,

We object strongly to the inclusion of seapoose in the DEQ testing.

We make very few trips to Portland and having to drive to Portland for testing would just cause us to be there more often. We have been retired 11 years & we do not go to Portland theatres or to Portland restaurants. Our shopping is not done in Portland.

It seems foolish to force us to comply to rules of another city we seldom visit.

Please register our protests.

Sincerely,

Don & Elaine Selloway

Mr. Eugene A. Oster
20928 NW Gilkison Rd.
Scappoose, OR 97056

Sept 19, 1996

Mayor Rita Bernhard
SCAPPOOSE OR

Dear Mayor Bernhard:

About the proposed DEQ
inspection of Scappoose Area cars:

For any typical trip from the
Scappoose area to Portland,
about half the distance driven
is outside the Portland metropolitan
area. When I count the
miles driven to other places,
about $\frac{1}{4}$ of my miles, about
3000 miles per year, or fewer,
is in the Portland metropolitan
area.

I very strongly object to
being required to submit to
DEQ testing for Portland,
 $\frac{3}{4}$ of my driving is outside
the Portland area.

Please call this to the
attention of DEQ officials
and other officials.

Thank you
Eugene A Oster

Dear Mayor Rita Bernhard

In regard to the D.E.Q.
Automobile testing thing.
I don't think we need it.
I do believe however that
the garbage and brush burning
that goes on in and around
Scappoose is a disgrace to
nature and should be
ended.

At times 10,000 cars all
running at once could not
smoke up our valley like
burning does.

Let on that if anything, not cars.

R. H. Wiley

321 40 Raymond Ch Rd

Scappoose Ore 97056

9-19-96



Dear Maya Bernard:

Having never before written a letter to a public official, I am unsure as to the proper format. However, my concern is so great regarding the DEQ issue that I am compelled to express the thoughts of the adults whom live in my household.

It seems irresponsible and ridiculous to assume that the entire working population of the city of Scappoose all commute to Multnomah County to work.

In perspective, one must acknowledge the number of vehicles traveling to the Portland-Metro area from around the state, to shop, visit doctors, vacationers
(1)



not to mention Commercial traffic which includes all shapes and sizes of vehicles. Their traffic is on a daily basis as well.

Due to the regulations being forced upon us, every vehicle in each home will be required to meet D.E.Q. regulations. Not just those used to commute to work.

My husband is employed by a firm in Portland. However, they provide him with a vehicle which has been tested and meets all of the D.E.Q. regulations.

Why do we have to get our 3 privately owned vehicles tested, One of which is a collectable and is absolutely never driven into Portland?

We have numerous family members who live at the coast which travel to Multnomah County much more than I
(2)



do, yet they will not
be required to meet DEQ
standards.

Portland-Metro needs to
wake up and realize that we are not
their pollution problem. The Portland
area needs to realize that they
are a part of the State of Oregon
and stop cramming their policies and
problems down the rest of the states
throat.

It's time they deal with
the real issue, their citizens are
causing the air pollution problems. The
remainder of the state, especially those
in close proximity to Portland, should
not be penalized.

In reverse of metro areas
Complaint of our Commuters, we have
numerous vehicles out here from
(3)



Portland due to the
various projects under
construction in Columbia
County.

We are a small community
and its easy for us to passively
allow ourselves to be controlled by
the big bully, (Portland & Multnomah
County).

We need to be unified in our
fight against their unfair policies
and practices, which they regularly
attempt to impose on us.

Sincerely,

Wendy Herrington
52303 SW Taylor
Scappoose, OR 97056

To The Editor,

I cannot understand how the Scappoose residents contribute any significant amount of emission to Portland air.

I have been a resident of Scappoose for 73 yrs. & have some knowledge of traffic flow through our town, & I can say a number of workers travel into Beaverton & surrounding areas by way of Cornelius Pass. A number of people living in the area are retired & we have our own facilities to accommodate us. I believe a traffic counter should be installed between St. Helens & Scappoose & likewise Cornelius Pass during the morning hours, to more evaluate this senseless move that's about to be performed.

I may add; why should anyone
be too concerned that whenever it
rains a little in Portland it pollutes
the Willamette river with some of the
worse kind of pollutants imaginable
that are flowing down the river to us.

Please examine the reasoning of
emission control for residents in our
area.

Sincerely
Henry J. Schmet

TO DEQ

①

I DON'T THINK THAT WE SHOULD HAVE TESTING IN OUR AREA FOR THE FOLLOWING REASONS.

① MOST OF THE TRAFFIC COMING + GOING TO PORTLAND COMES FROM WARREN ST. HELEN'S, DEER ISLAND, RAINIER, GOBLE AREA AND ALSO LONGVIEW/KELSO AREA

~~AND THAT THE REPS. FOR THE~~ ③
~~STATES. AND~~ BUSINESS PEOPLE DRIVING FROM PORTLAND TO COLUMBIA CTY.

WE HERE IN SCAPPOOSE HAVE A LOT OF TRUCK TRAFFIC SUCH AS STEINFELD'S, SCAPPOOSE SAND + GRAVEL, LOG TRUCKS AND LONE STAR GRAVEL TRUCKS,

LONE STAR CAN PUT AS MANY AS 30 TRUCKS A HOUR GOING TO PORTLAND.

YOU WOULD NOT THINK SO BUT I-5 ② GETS PRETTY JAM UP AND WASHINGTON PEOPLE DRIVE HIWAY 30 A LOT. WE ALSO HAVE SOME PEOPLE FROM VANCOUVER, CANAS, PORTLAND HAZELDELL WASHINGTON WORKING IN OUR AREA AT, HI SCHOOL PHARMACY, ~~SAFEWAY~~ SAFEWAY, PAYLESS, ARMSTRONG, BOISE CASCADE AND NOW FRED MEYER PLUS THE THEIR PRODUCE TRUCKS. THE TRUCKS CAN HAVE AS MANY AS 7 AXLES

16 HOURS A DAY 7 DAYS A WEEK
DRIVING TO PORTLAND TO SUPPLY PORTLAND
WITH OUR GRAVEL, IF YOU BELIEVE ME
LOOK AT OUR ROADS. THE DUMP TRUCKS ARE
HOOKED TO A TRAILER WHICH IS CALLED A
PUP. IF YOU ARE COUNTING AXLE OR TIRES
THIS IS INFORMATION YOU NEED. THE TRUCK
IS DIESEL (2) UP TO 5 AXLES LOADED, 4 EMPTY
THE PUP HAS 4 AXLES LOADED OR EMPTY

BESIDES THAT, 2 YRS OR SO AGO (5)
WHEN LONE STAR WANTED TO INCREASE
THE POLLUTANTS INTO THE AIR EVEN WHEN
THE PEOPLE WROTE LETTERS SAYING NO
YOU AS DEQ ALLOWED LONE STAR TO INCREASE
POLLUTANTS AND NOW YOU TELL US THAT
WE ARE POLLUTING YOUR AIR.

IF WE HAVE THE TRAFFIC GOING TO
PORTLAND THAT YOU SAY THAT WE HAVE

WHY DOESN'T TRIMET START A (6)
BUS SERVICE OUT HERE,
THE ONLY REASON THAT DEQ WANTS
TO BRING TESTING OUT TO SCAPPOOSE
IS BECAUSE THEY WANT MORE MONEY,
MORE POWER, MORE CONTROL, SPREAD MORE
GRIEVE, ADD TO THE GARBAGE. OUR AIR
QUALITY IS AND WILL CONTINUE TO BE

CLEANER THAN OTHERS SIMPLY (7)
BECAUSE WE DON'T THE BUILDING
TO KEEP THE POLLUTANTS HERE, BY THE
WAY THE WIND OR FLOW COMES MORE
FROM PORTLAND THAN TO IT. IN OTHER
WORDS THE EAST WIND BLOWS INTO
PORTLAND AND OUT ^{THROUGH} ~~THE~~ SCAPPOOSE.
MOST OF THE TIME.

YOU ARE POLLUTING OUR AIR (8)
NOT THE OTHER WAY AROUND.

SIGNED
MIKE SCHMIT
54176 FREEMAN RD
SCAPPOOSE, OR. 97056
503-543-7897

State of Oregon
Department of Environmental Quality

Memorandum

Date: December 23, 1996

To: Environmental Quality Commission
From: Langdon Marsh, Director 
Subject: Agenda Item H, Department of Environmental Quality's Recommendations
Regarding the Deadline for Accepting Comments on Proposed Rulemakings, EQC
Meeting: January 10, 1997

Statement of Purpose

At the Commission's request, the Department is making recommendations regarding the procedures for considering comments on proposed rulemaking. Specifically, the Commission would like to hear from either the advisory committee or a technical panel regarding proposed rules.

Background

In 1993, the legislature amended ORS 183.335 with the following subsection:

"When an agency has established a deadline for comment on a proposed rule under the provisions of subsection (3)(a) of this section, the agency may not extend that deadline for another agency or person unless the extension applies equally to all interested agencies and persons. An agency shall not consider any submission made by another agency after the final deadline has passed." ORS 183.335(13)(g).

The apparent purpose of this subsection was to prevent groups, especially other agencies, from affecting proposed rules after the public comment period had closed.

In the past, the Commission has asked either selected members of the advisory committee, a panel of technical experts or representatives of affected interest groups to attend the commission meeting when the proposed rules were to be adopted by the commission, and answer any questions the commission may have regarding the proposed rules. This commission meeting has occurred after the public comment period has closed.

Based on advise from the Attorney General's office, the commission can no longer follow this practice without violating ORS 183.335(13)(g). Rules adopted using this practice are at risk of being invalidated by a court since they would not have been adopted in compliance with rulemaking procedures. ORS 183.400(4)(c).

Memo To: Environmental Quality Commission

Agenda Item H, Department of Environmental Quality's Recommendations Regarding the Deadline for Accepting Comments on Proposed Rulemakings, EQC Meeting: January 10, 1997
Page 2

Alternatives and Evaluation

If the Department chooses to continue to close the comment period prior to the EQC meeting scheduled for adoption, the Department could still do the following:

- (1) The Commission can consider any advice from either staff of the Department or employees of the Department of Justice. Of course, this does not resolve the issue of EQC being able to hear from an advisory panel.
- (2) The Commission could consider a strict reiteration of comments which were received prior to the close of the comment period. No expansion or explanation of the comments would be allowed. This would require that staff police the reiteration of the comments received. Any failure to limit the reiteration of the comments creates a risk that the courts would invalidate the rules in question.
- (3) The Commission could consider information presented by the official advisory committee, since the members would be agents of the Department for the development of the rules in question.
- (4) Information could be accepted by the Commission that is generally related to the subject matter involved in the rules, including information that would be related to the impact of the proposed rules. The comments could not address the actual rule language but only the general subject matter of the proposed rules. This would also require policing by staff to limit the comments to the subject matter and ensure that the comments do not relate to the actual rules in question.

The Commission asked the Department of Justice to consider whether the Department could schedule the comment period to end on the date of the Commission meeting when the rules would be considered for adoption. ORS 183.335(3) requires an agency to "consider fully any written or oral submission" regarding a rulemaking proposal. Furthermore, the legislature, at one time, required agencies to provide a response to public comments. The Department still follows this practice. With the comment period ending on the date of adoption, the Department would not have time to fully digest and respond to the public comments received at the meeting.

Department Recommendation

The Department is recommending that we continue to employ the procedures used by the Department in the past. The director will continue to appoint an advisory committee for helping the Department in developing the rules. A comment period will be set and a hearing will be scheduled, if needed.

For those rules which appear to the Department to be controversial or the Commission has expressed interest in, the Department will schedule the comment period to extend through a

Memo To: Environmental Quality Commission

Agenda Item H, Department of Environmental Quality's Recommendations Regarding the Deadline for Accepting Comments on Proposed Rulemakings, EQC Meeting: January 10, 1997
Page 3

Commission meeting. At that meeting, the Commission can hear from staff, technical experts, the advisory committee, affected parties and the general public. The Department will continue to schedule a public hearing(s) and accept both written and oral comments at the hearing. The adoption of the rules will be scheduled for a later Commission meeting.

This procedure will allow the Commission to hear from interested and affected parties without violating the prohibition on late comments. Furthermore, the Commission could still hear from the official advisory committee, staff and Department of Justice employees on the rules at the meeting scheduled for adoption of the rules. This procedure will also allow the Department to thoroughly review and respond to all comments received, whether orally or written, at the Commission meeting or at the public hearing.

The Department requests that the Commission discuss the matter, and provide advice and guidance to the Department regarding the proposed procedures.

Reference Documents (available upon request)

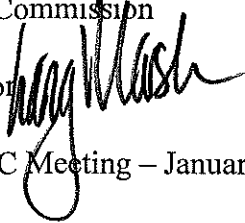
ORS Chapter 183

Report Prepared By: Susan M. Greco
Phone: (503) 229-5213

State of Oregon
Department of Environmental Quality

Memorandum

Date: December 30, 1996

To: Environmental Quality Commission
From: Langdon Marsh, Director 
Subject: Agenda Item I - M, EQC Meeting - January 10, 1997

Statement of Purpose

To provide the 1997 Legislature with the attached reports, either as required by law, or in response to specific direction provided to the Department by the 1995 Legislature.

Background

Information Item I: 8th Annual Environmental Cleanup Report

⇒ The Waste Management & Cleanup Division (WMCD) is required under ORS 465.235, to provide this annual report to EQC, the Governor and the Legislature. The report provides information on program goals, accomplishments and status.

Information Item J: Report to 1997 Legislature on Alternative Funding Mechanisms for the Toxics Use Reduction Program

⇒ The Hazardous Waste Policy and Program Development Section of WMCD was directed by the Legislature, in a 1995 budget note, to review the current funding source for the Toxics Use Reduction Program and to evaluate alternative funding mechanisms for this program. This report summarizes the results of this evaluation and provides the Legislature with four new fee options as alternate funding sources.

Information Item K: Report to 1997 Legislature on Orphan Site Funding Review

⇒ The Cleanup Policy and Program Development Section of WMCD was directed by the Legislature in a 1995 budget note to convene a task force to review alternate funding sources for the fees supporting orphan site cleanups. This report summarizes the results of this review effort and presents the Legislature with several funding alternatives.

Information Item L: Report to 1997 Legislature on Solid Waste “Budget Note” Review

⇒ The 1995 Legislature asked the Department to “review existing legislation and report to the 1997 Legislature on any recommended changes in waste reduction and recycling measurement requirements, and enforcement . . .” The attached “Budget Note” Report contains the Department’s analysis and recommendations.

Information Item M: Solid Waste Management Program Biennial Report to the 1997 Legislature

⇒ This biennial report is in four parts. The first three parts provide data on information on the status of solid waste generation, waste prevention, recycling and disposal in Oregon. The fourth part is a status report from Portland Metropolitan Service District on waste reduction program planning and implementation.

Authority of the Commission with Respect to the Issue

The Commission is being provided these reports to the Legislature as a point of information. No action is being requested of the Commission.

Alternatives and Evaluation

Please refer to individual reports for summaries of the alternatives and evaluations.

Summary of Public Input Opportunity

Information Items J, K, and L involved public processes. Each relied on Advisory and/or Review Committees for input, direction and review. Public notices of meetings were provided to interested parties on the Agency’s mailing lists.

Information Items I and M are reports from the Department to the Legislature about program achievements, and did not involve public participation or involvement. These Program Reports are made available to the public for information purposes.

Conclusions

The Department will be providing these five reports to the 1997 Legislature.

Intended Future Actions

The Department anticipates that future actions will be required with respect to Information Items J, K, and L. These three items address funding issues for specific programs within the WMCD and if an alternative funding source is selected by the Legislature, the Department anticipates significant future work in conjunction with establishing a new funding scheme. This work may

Memo To: Environmental Quality Commission
Agenda Item I - M, EQC Meeting Page 3

include tasks such as development of the funding scheme, statutory amendments, and promulgation of rules.

Department Recommendation

It is recommended that the Commission accept these reports.

Attachments

All reports are attached.

Reference Documents (available upon request)


RE: Information Item K:

“Financing Orphan Site Cleanups: A Public Policy Perspective on Orphan Site Cleanup Issues,” Submitted to the Department by the Orphan Site Funding Task Force, July, 1996

- ⇒ The Orphan Site Funding Task Force was appointed by the Director in January, 1996 to assist the Department in review of alternate funding sources. This group of subject matter and policy experts reviewed the orphan site program, provided advice on program improvements and, from a public policy perspective, advised what groups should bear the cost of orphan cleanups. The guidance provided by the Task Force helped the Department develop the list of alternate funding sources reviewed. Their recommendations and conclusions are provided in this report.

Approved:

Division:

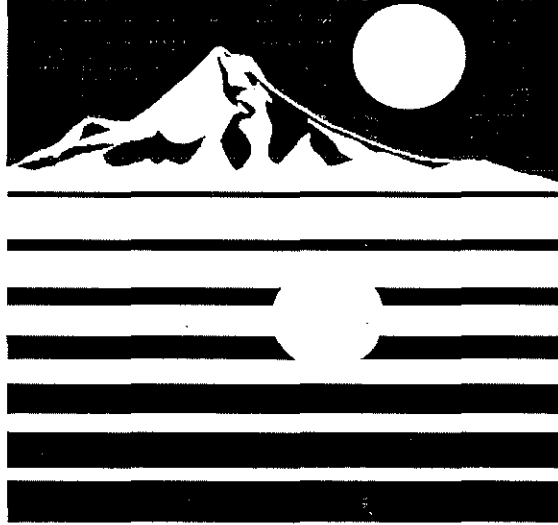

WMCD, Mary Wahl, Administrator

**Environmental Quality Commission
Meeting**

January 9-10, 1996

Item I

8TH ANNUAL
ENVIRONMENTAL
CLEANUP
REPORT



J A N U A R Y
1 9 9 7



Foreword

1996 has been a year of growth and achievement for The Department of Environmental Quality's (DEQ) Environmental Cleanup Program. DEQ has implemented Oregon's revised cleanup law ensuring maximum environmental protection, certainty, speed and cost-effectiveness; expanded program innovations to maximize cleanups and brownfields redevelopment; and identified options to provide stable funding for the cleanup program.

1997 will be challenging with the adoption and implementation of the new environmental cleanup rules. Other prime focus areas for 1997 include:

- Brownfields redevelopment
- Prospective purchaser agreements
- Partnering with other groups to address local concerns at contaminated sites
- Community outreach
- Dry cleaner response cleanups
- Orphan site cleanups
- Stable funding
- Managing the growing number of voluntary cleanup sites

This report provides highlights of the above and other changes made to the cleanup program, expands on its goals for this biennium and identifies challenges ahead. It also summarizes the accomplishments of the past fiscal year and projects the current year's activity levels. Finally, the report also includes a summary and update of the current four year plan.

Respectfully,



Langdon Marsh, Director
Department of Environmental Quality

EIGHTH ANNUAL ENVIRONMENTAL CLEANUP REPORT

January 1997

submitted to:

Governor John Kitzhaber

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Oregon Legislative Assembly

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Environmental Quality Commission

by:

Langdon Marsh, Director
Department of Environmental Quality

Mary Wahl, Administrator
Waste Management and Cleanup Division

Introduction

Oregon's Environmental Cleanup Program was established in 1988 by the Department of Environmental Quality (DEQ) and given the responsibility of implementing Oregon's environmental cleanup law (ORS 465.200-900) and leaking underground storage tank cleanup law (ORS 466.706-845, 895). This report presents cleanup program activities for the past fiscal year (July 1995 - June 1996). It summarizes cleanup actions in progress, those completed during the current fiscal year, and those projected for completion through June 1997. It also includes a summary of the four-year plan through 1999.

ENVIRONMENTAL CLEANUP PROGRAM: CONTINUOUS IMPROVEMENTS

1996 has been a year of growth and achievement for the environmental cleanup program. We developed rules to implement the cleanup law amendments adopted last legislative session, expanded the prospective purchaser and brownfields programs to respond to Oregon's ever-increasing development needs, and worked in partnership with local government, various state agencies and private interests to clean up contaminated areas.

1997 will begin with the proposed new cleanup rules before the Environmental Quality Commission (EQC) in January. We will be working with the legislature to solve funding problems in the orphan site, cleanup, spill response and underground storage tank cleanup programs. Also, in 1997, DEQ will continue implementation of the dry cleaner cleanup program using funds dedicated specifically for cleanups at dry cleaner facilities, as adopted by the 1995 Legislature.

We're ready to meet these challenges and continue to look for better ways to clean up hazardous substance contaminated sites in Oregon while also accommodating economic development needs and the specific and diverse interests of localities.

FOCUS AREAS:

- Implement the proposed new environmental cleanup rules
- Emphasize brownfields redevelopment and prospective purchaser agreements
- Partner with other groups to clean up area wide problems
- Expand community outreach efforts
- Continue orphans site cleanups
- Implement dry cleaner cleanups
- Resolve funding problems

CLEANUP RULES

In July 1995, DEQ began an 18 month process to develop the new cleanup rules required by House Bill 3352, Oregon's revised environmental cleanup law. In October 1996, DEQ released the proposed rules for public notice and comment, after extensive public participation and community outreach efforts. The EQC is expected to adopt these rules at their January 1997 meeting.

The Cleanup Policy and Program Development Section worked with a 13 member advisory group and two 15 member technical work groups during the rule development process. The advisory and work group were made up of representatives from all segments of the affected community, including local government, private consultants, attorneys, environmental groups,

minority groups, and industry. A consensus was achieved in support of the draft rules through a series of mutual agreements aimed at making the rules as workable as possible.

Early Implementation

DEQ decided to implement the new cleanup law to the maximum extent possible during rule development, rather than wait until the rules were in place.

Early implementation includes:

- Negotiating prospective purchaser agreements;
- Implementing risk-based cleanups;
- Began developing generic remedies in partnership with industry; and
- Looking at reasonably likely future land use in the determination of site risks.

Early implementation was facilitated by timely discussion and resolution of site specific issues through the Site Clearinghouse, a forum of DEQ project managers, technical staff and program managers.

BROWNFIELDS / PROSPECTIVE PURCHASER AGREEMENTS

The Environmental Cleanup Program has long supported Brownfields concepts through a variety of initiatives implemented over the last seven years. DEQ has developed statewide approaches to remove barriers hindering the reuse of contaminated property. The Voluntary Cleanup Program works cooperatively to provide oversight of investigations and cleanups to allow property transactions to occur in a timely manner.

DEQ negotiates prospective purchaser agreements to encourage cleanups that otherwise would not likely occur. These agreements provide substantial public benefit while relieving purchasers from future cleanup liability and creating greater incentives for banks to finance development. The cleanup program has also facilitated federal and state initiatives to provide grants, long term loans and/or technical assistance to communities and local government involved in cleanups during revitalization efforts. DEQ has worked with the City of Oakridge to assist in the cleanup and redevelopment of a large, abandoned mill. As part of the Governor's community solutions team, DEQ is providing technical assistance and education for the revitalization of inner Northeast Portland through the Martin Luther King Jr. Boulevard redevelopment project. (See below.)

Brownfields Case Study--Salem Riverfront Park

The Salem Riverfront Park site is an 18 acre parcel located on the west side of downtown Salem, adjacent to the Willamette River. The City of Salem owns the site and intends to develop it as a municipal park. The City entered into DEQ's Voluntary Cleanup Program in 1993 to clean up contamination caused by prior industrial uses at the site before development of the park.

The primary environmental concerns at the site are soil and groundwater impacts from past practices and the disposal of wastes. Surface water and sediments were evaluated and were not impacted by contamination at levels affecting human health or the environment.

DEQ divided the cleanup into separate phases to facilitate park development. Cleanup of the northern portion of the site was completed in July 1996, and DEQ issued a "no further action" letter to the City. Phase 2 of the cleanup addresses the southern portion of the site. Cleanup of this area is currently underway. Following completion of Phase 2, the site will be cleared for park development.

Prospective Purchaser Agreements and Orphan Sites

Prospective purchaser agreements are excellent tools for helping to accomplish cleanups at orphan sites. Orphan sites are high environmental priorities because of the nature and extent of contamination; however, responsible parties are either unknown or unable to pay for the cleanup. In these instances, the state finances and conducts the cleanup. Because of limited resources, DEQ is unable to complete cleanups at all orphan sites. Serious threats are removed, but, in some cases, residual contamination remains. Often, costs to clean up the remaining contamination reach or exceed the property value. Potential purchasers or developers are often not willing to take on the cleanup liability of these properties.

Prospective purchaser agreements allow DEQ to partner cleanup efforts at orphan sites with prospective purchasers, mitigating state costs and boosting the potential for redeveloping land. For example, this fall, DEQ signed a prospective purchaser agreement with Pacific Fibre Products, Inc. for the former orphan site, Vadis Pole Yard in North Plains. The most significant terms of the agreement provide for Pacific Fibre to complete the remaining soil cleanup. DEQ has already conducted a major soil removal at the site. Pacific Fibre has also agreed to reimburse the orphan site fund for a substantial portion of the removal costs and make a contribution toward a portion of the future monitoring costs of groundwater at the site. In exchange for the substantial public benefits that Pacific Fibre is providing by significantly contributing toward the cleanup and returning the abandoned property to productive use, DEQ has agreed to limit Pacific Fibre's cleanup liability.

PARTNERING TO ADDRESS ECOSYSTEM CONCERNS

Columbia Slough Cleanup

The Columbia Slough sediment cleanup is one of DEQ's highest priorities. It is a good example of a "place-based" or geographic ecosystem initiative requiring coordination among many groups. DEQ is working with the City of Portland Bureau of Environmental Services, the City of Gresham, Multnomah County, the State Health Division, local Drainage Districts, and other local associations to clean up the Slough.

Asian, Russian and other populations consuming fish from the Columbia Slough may be exposed to PCBs, pesticides and heavy metals exceeding levels safe for protection of human health. Extensive public risk communication efforts are underway, while the City, with DEQ's oversight, completes a remedial investigation and feasibility study to assess human health and ecological impacts and to identify cleanup options.

This partnering effort and ecosystem or geographic approach are essential to fully identify the potential sources of hazardous substances that reach the Slough from many sources. Contamination may be as varied as pollution from sewer overflows, industrial process releases, stormwater outfalls, or contaminated land adjacent to the Slough. Individual site cleanup is being approached comprehensively to prevent continuing contamination and to reduce ongoing public health and environmental risks.

Martin Luther King Blvd. Redevelopment Project

The Martin Luther King Blvd. project is another example of a "place-based" initiative. As part of the Governor's Community Solutions Team Project, DEQ's Northwest Region cleanup staff joined a multi-agency, community-based task force in June 1996. The task force is called the Martin Luther King, Jr. Blvd. Action Committee. The committee was formed to develop and implement strategies to revitalize properties in Northeast Portland near Martin Luther King Blvd. DEQ conducted a field survey along a three mile stretch of the boulevard as well as file reviews of the area. Based on this information, DEQ staff developed a report to assist both current owners and/or operators and potential site purchasers or developers with the identification of properties having potential environmental liabilities so they can be dealt with early, more efficiently and cost effectively.

COMMUNITY OUTREACH

The environmental cleanup program has conducted many outreach efforts with various groups this year. For example, the Voluntary Cleanup Program continues to conduct surveys of those involved in the program to gauge participant satisfaction and to identify ways to improve the program. As an outgrowth of this effort, the Voluntary Cleanup Program has formed a focus

group which meets twice a year to evaluate and target improvements. The focus group is made up of industry, local government, banking representatives, and current and past voluntary cleanup participants. The focus group has identified several issues which the program has successfully implemented.

DEQ hosted several community discussion groups across Oregon to reach a broad cross section of Oregonians and to solicit their advice during rulemaking for the new Environmental Cleanup Law. Over 300 people attended these sessions and their input was valuable in helping to draft the proposed rules.

DRY CLEANER ENVIRONMENTAL RESPONSE

The Dry Cleaner Environmental Response Program was established by the 1995 Legislature. The law's stated purpose is to prevent future releases of dry cleaning solvent and to clean up existing contamination at eligible dry cleaner sites. The law requires members of the dry cleaning industry to pay fees into an environmental cleanup fund and to practice sound environmental management, in exchange for relief from liability for cleanup costs at their businesses.

Each dry cleaning facility is required to pay \$1000 annually. Dry stores (facilities where dry cleaning is deposited and picked up, but not cleaned) pay \$500 per year. There is also a per gallon fee on the purchase of dry cleaning solvent. Approximately 335 dry cleaners are paying into this account, which will be used to pay for the cleanup of dry cleaning solvent contamination at eligible dry cleaners.

DEQ's initial activities include developing program policy and guidance and visiting approximately 100 dry cleaner sites to offer technical assistance and to inform dry cleaners how the law affects them.

DEQ has issued the first notification of funding availability for site assessment and/or site cleanup. Assessment and/or cleanup of the first eligible sites is anticipated to start in early 1997.

ORPHAN SITE CLEANUPS

Since creation of the program, 21 sites have been declared orphans--those sites where the responsible party is either unknown or unwilling or unable to pay for cleanup. Orphan sites are the state's highest environmental priorities, where state funds pay for cleanup. There are many more sites than 21 sites in Oregon where no responsible parties are available to pay for cleanup. However, only 21 are declared orphans because state funds are used only on the highest priority sites.

DEQ has largely completed cleanup at five sites: Hi Dollar John's, Industrial Battery, Rogue Valley Circuits, Rose City Plating, and Technical Images. The remaining orphan sites are still under investigation and may require significant expenditures of state funds to clean up or

contain contamination threatening human health or the environment. DEQ is working cooperatively with the United States Environmental Protection Agency (EPA) and the City of Sweet Home to track down the source of contamination in the area's groundwater. DEQ is also working with the City of Sweet Home to find funding to connect residents with affected wells to the city water supply. In addition, Springfield Airport has been identified as a potential orphan site. (For orphan site locations, refer to the glossary, Hazardous Substance Cleanup Orphans Map.)

Several milestones in the Orphan Site Cleanup program were achieved last year. In March, DEQ and EPA reached agreement on a final cleanup strategy for the McCormick and Baxter project. EPA declared McCormick and Baxter a federal superfund site and has assumed responsibility for the remaining investigation and cleanup costs. In addition, two cleanup plans addressing shallow and deep groundwater contamination at East Multnomah County were approved. The parties responsible for the contamination have been identified and have agreed to pay for the cleanup. Investigations into the sources of groundwater contamination in the Lebanon area resulted in the discovery of NuWay Cleaners, another high priority orphan site. Removal of contaminated soil took place at Nu-Way Oil (at a cost of \$1.9 million), Astoria Plywood (\$1 million), and Vadis Pole Yard (\$385,000.) Removals at four other sites are planned for Spring 1997.

The Orphan program is also working with prospective purchasers to redevelop or reuse five brownfields orphan sites: The City of Astoria is interested in acquiring the Astoria Plywood site and the City of North Bend is interested in the Chambers Fuel Oil site. Both sites are planned to be used as part of future community redevelopment projects. The Technical Images site in Newberg site purchased by a private company in March 1996. Other private companies have expressed interest in purchasing Rogue Valley Circuits in Medford and Rose City Plating in Portland.

SPILL MANAGEMENT

In May 1996, the Spill Management Program was restructured to provide a centralized program combining oil and other hazardous materials spill prevention, planning and preparedness, along with local and federal government coordination and emergency spill response. This structure allows DEQ to administer the program more efficiently and also provides for technical response specialists whose full time jobs are spill response and management.

Spill incident reports to DEQ have increased at a rate of roughly 10% to 15% a year. Currently, the spill program is seeking input from an external advisory group on how best to focus limited resources in future years. Without additional spill prevention education and outreach efforts, the number of spills will continue to rise. Also, whether Oregon is adequately prepared to respond to a spill incident is a significant concern to the program. Geographic response plans are a key spill "preparedness" approach and currently cover only very limited portions of the state.

UNDERGROUND STORAGE TANK CLEANUPS

Risk Based Corrective Action

In April 1996, DEQ issued interim guidance for risk based corrective action (RBCA) at underground storage tank cleanup sites. This is part of a national effort to identify how to reach protective standards without doing more cleanup than necessary. RBCA involves a more detailed evaluation of site contamination and may result in less cleanup effort being required. Industry representatives strongly endorsed adoption of this process.

Heating Oil Tanks

Leaks of residential heating oil tanks are a large concern for homeowners because of the potential threat to their health, the environment and because of concerns about the costs of cleaning up contamination resulting from these leaks. Another concern is that heating oil tank leaks may delay property transactions. DEQ has provided assistance to homeowners with heating oil tank releases; however, there is no authorized funding for this activity. Increasing demand for assistance along with budget limitations have caused DEQ to review its role in this area. This issue is expected to be a topic for discussion during the 1997 legislative session.

FUNDING ISSUES

Funding to continue environmental cleanups at the current level is uncertain in several areas.

Orphan Site Cleanups: Neither of the two fees intended to pay for orphan site cleanups has proved reliable. In 1993, the Attorney General advised DEQ that the petroleum load fee should not be used for this purpose because of a constitutional restriction of petroleum fees for highway purposes. The second fee, a fee on the possession of hazardous substances, has been the subject of criticism from various fee-payer groups. The Legislature has continued to support the program with temporary sources, primarily general fund and lottery. In 1995, the Legislature directed DEQ to conduct a review of potential funding alternatives. DEQ convened a blue ribbon task force to provide a framework for addressing this issue and also asked a group of stakeholders to comment on an extensive list of potential alternative funding sources. The results of DEQ's review are presented in a separate report. The task force report also includes program recommendations and is available through DEQ's Waste Management and Cleanup Division in Portland.

Hazardous Substance Contaminated Sites: Funding for the largest part of the cleanup program will also need to be addressed in the coming biennia. The program has been funded by fees on disposal of hazardous waste at the landfill in Arlington and by recovery of oversight costs from responsible parties. The Arlington fee has declined because of decreasing waste from cleanups and other waste streams. The decline in revenue is expected to continue and the rate of decline to possibly increase significantly as early as 1997. DEQ will focus on solving this problem during the 1997-99 biennium.

Spill Response: Initially, spill response activities were intended to be funded by a petroleum load fee. However, as with orphan sites, the attorney general advised in 1993 that use of this fee for any non-highway spill response could violate the state's constitution. Since 1993, spill response funding for other than highway spills (the greater portion of the program) has been drawn from the state's cleanup fund described above.

Underground Storage Tank Cleanups: The primary funding sources for this program are grants from the Environmental Protection Agency. Recoveries from responsible parties for DEQ staff oversight also help to pay for the cleanup of leaking underground storage tanks. There are two major problems in funding these cleanups.

First, the federal grants have declined over the past several years, and in spite of continually improving cost recovery effectiveness, revenues are not sufficient to support the program. The 1996 grant was 40% of the budgeted amount and although Congress is expected to restore some of the program's funding, it is not likely to be returned to 1995 levels. Second, residential heating oil tanks, which are not eligible for federal funds under the underground storage tank cleanup program grants, are a growing issue for homeowners who are concerned about liability, particularly in property transfers.

Four Year Environmental Cleanup Plan

A four-year plan of action for the environmental cleanup program is required by ORS 465.235 beginning in 1991. The 6th Annual Environmental Cleanup Report (1995) included the first update to the original plan, covering the 1995-97 and 1997-99 biennia. The following is a condensed version of that report.

The plan estimates the number of preliminary assessments, remedial investigations, feasibility studies and remedial actions to be initiated and completed during the four year period. It also includes information about leaking underground storage tank cleanups.

The four-year plan was predicated on the 1995-97 budget request. Five new Site Response positions requested in that budget were not approved. The Voluntary Cleanup program, while completing more projects than projected, has not completed the number of project phases, as noted in Table A.

TABLE A
Projects Completed

PROJECTS	Projected				
	1/88-6/91	7/91-6/93	7/93-6/95	7/95-6/96	7/96-6/97
Site Assessment					
Suspected Releases Added	957	279	293	162	165
Confirmed Release List Additions ¹	33	69	106	29	45
Facilities Added to Inventory ¹	24	39	55	13	22
Site Screenings	126	251	460	229	160
Preliminary Assessments	181	136	175	74	65
Voluntary Cleanup					
Removals and Interim Actions	0	7	12	13	21
Remedial Investigations	1	7	22	9	14
Feasibility Studies	0	2	7	4	8
Remedial Design & Remedial Actions	0	1	7	7	8
Completed Projects	0	10	29	25	30
Site Response					
Removals	11	9	23	14	8
Remedial Investigations	7	21	16	8	9
Feasibility Studies	6	8	6	5	5
Remedial Design & Remedial Actions	6	6	10	6	4
Underground Storage Tank Cleanup					
Regulated Tanks:					
Releases Reported	2487	2004	845	326	400
Cleanups	746	608	299	284	300
Heating Oil Tanks:					
Releases Reported	419	650	1,052	737	900
Cleanups	149	275	245	279	350

Note: Many Voluntary program cleanups do not require completion of all phases of a traditional cleanup. Often, a preliminary assessment or remedial investigation provides sufficient information to determine that the site does not exceed acceptable risk levels. In other cases, the cleanup is performed independently and the phases of the cleanup are not completed with DEQ oversight.

¹ Additions only; has not been reduced for 4 sites removed (delisted) from each of lists.

TABLE B
Projects Initiated

PROJECTS	Projected				
	1/88-6/91	7/91-6/93	7/93-6/95	7/95-6/96	7/96-6/97
Site Assessment					
Site Screenings	118	93	473	240	180
Preliminary Assessments	91	170	193	73	80
Voluntary Cleanup					
Removals and Interim Actions	1	8	18	19	20
Remedial Investigations	2	28	53	15	16
Feasibility Studies	0	2	28	5	7
Remedial Design & Remedial Actions	0	5	21	6	7
Operations and Maintenance	0	0	1	1	1
Site Response					
Removals	14	18	23	6	8
Remedial Investigations	43	19	32	7	3
Feasibility Studies	18	6	7	4	2
Remedial Design & Remedial Actions	15	11	14	7	5
Operations and Maintenance	2	2	4	8	1
Underground Storage Tank Cleanups					
Regulated Tanks	1172	1209	873	206	250
Heating Oil Tanks	287	457	500	539	600

TABLE C: 4-Year Plan

PROJECTS	COMPLETED		INITIATED	
	7/95-6/97	7/97-6/99	7/95-6/97	7/97-6/99
Site Assessment				
Suspected Releases Added	300	300	N/A	N/A
Confirmed Release List Additions	60	60	N/A	N/A
Facilities Added to Inventory	35	35	N/A	N/A
Site Screenings	350	350	356	356
Preliminary Assessments	120	120	138	138
Voluntary Cleanup				
Project Development	50	50	50	50
Removals	5	5	5	5
Remedial Investigations	12	12	25	25
Feasibility Studies	12	12	12	12
Remedial Design & Remedial Actions	22	33	22	33
Site Response				
Removals	16	20	30	30
Remedial Investigations	14	18	16	16
Feasibility Studies	14	16	16	16
Remedial Design & Remedial Actions	6	8	12	12
Underground Storage Tank Cleanup				
Releases Reported	1000	1200	N/A	N/A
Cleanups	400	500	800	900

TABLE D

ENVIRONMENTAL CLEANUP PROGRAM

GOVERNOR'S RECOMMENDED BUDGET

(1997-1999)

ACTIVITY	FTE	BUDGET	FUNDING SOURCES
Hazardous Substance Cleanups (High priority enforcement, Orphan Site, Voluntary)	95.90	12,970,093	HSRAF ¹ including cost recoveries
		8,640,614	Orphan Site Account
		701,657	Federal Funds
Superfund Cleanup (McCormick and Baxter)	1.50	11,760,400	Federal Funds
UST Cleanup	22.75	1,346,639	Grant cost recoveries, HSRAF ¹
		1,665,089	Federal Funds
Emergency Response (Spills)	10.00	564,083	General fund, petroleum load fee, other spill revenue
		657,387	HSRAF ¹ , including cost recoveries
		596,698	Oil Spill Planning
		100,000	Illegal drug lab funds
Dry Cleaner Cleanup Program ²	3.00	1,797,678	Dry Cleaner Emergency Response Fund

¹ Hazardous Substance Remedial Action Fund

² Includes waste minimization portion of program

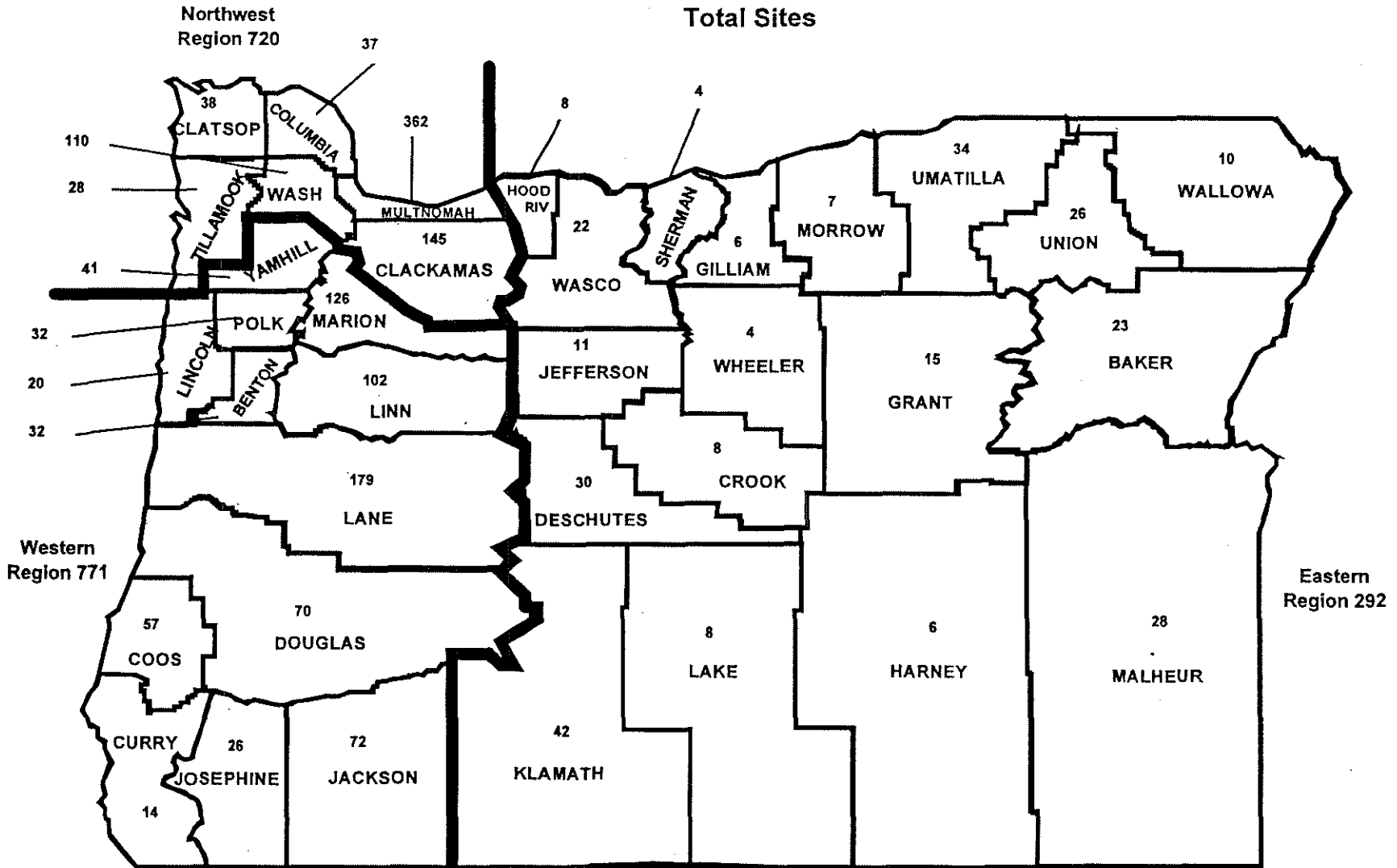
Appendix

Maps of Site Locations:

- Total Sites on Environmental Cleanup Database
- Site Screenings and Preliminary Assessments
- Site Response Sites
- Voluntary Cleanup Sites
- Sites Contaminated by Petroleum Tanks
- Permitted Underground Storage Tanks
- Hazardous Substance Cleanup Orphans

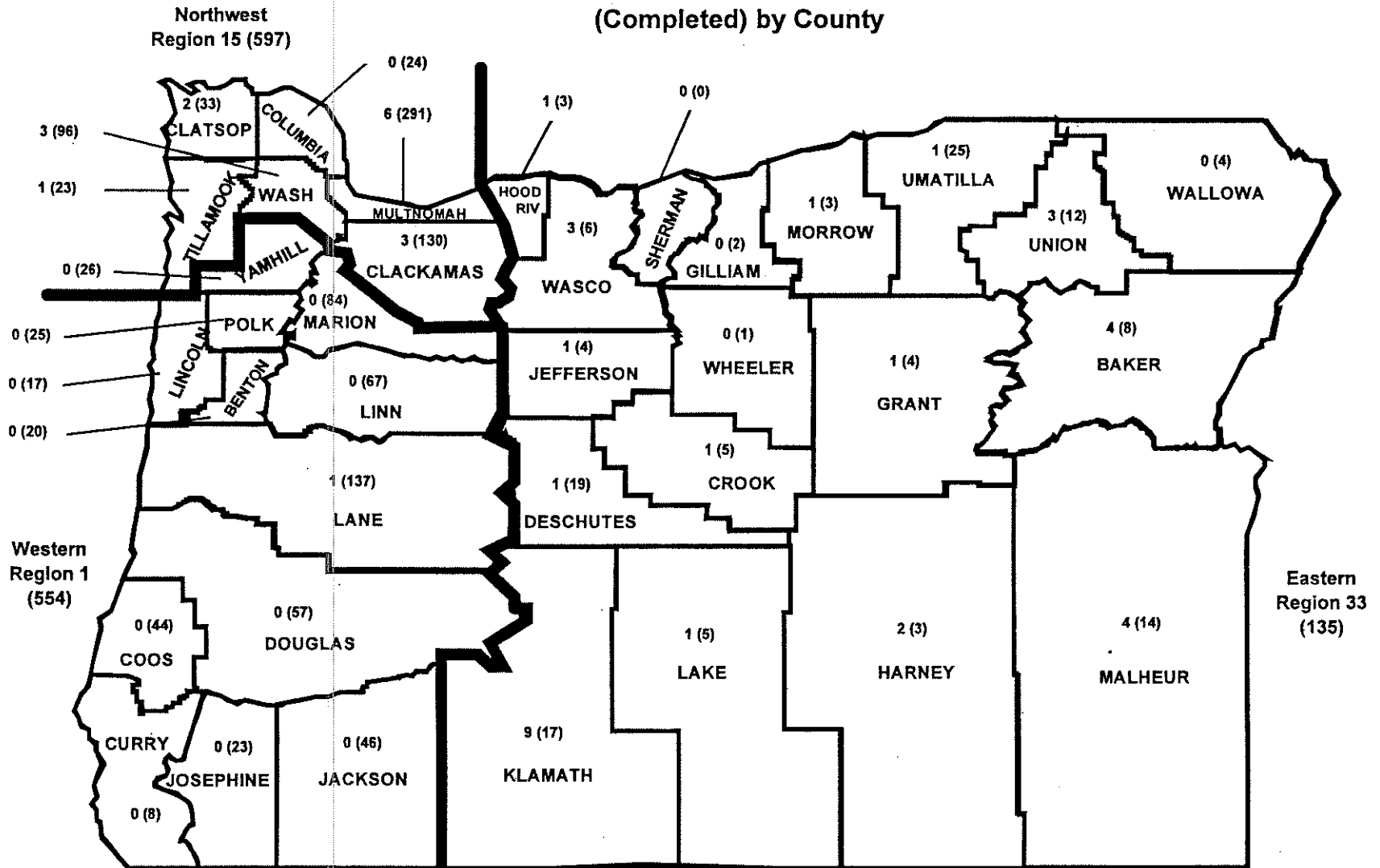
GLOSSARY

Environmental Cleanup Site Information Database-- Total Sites



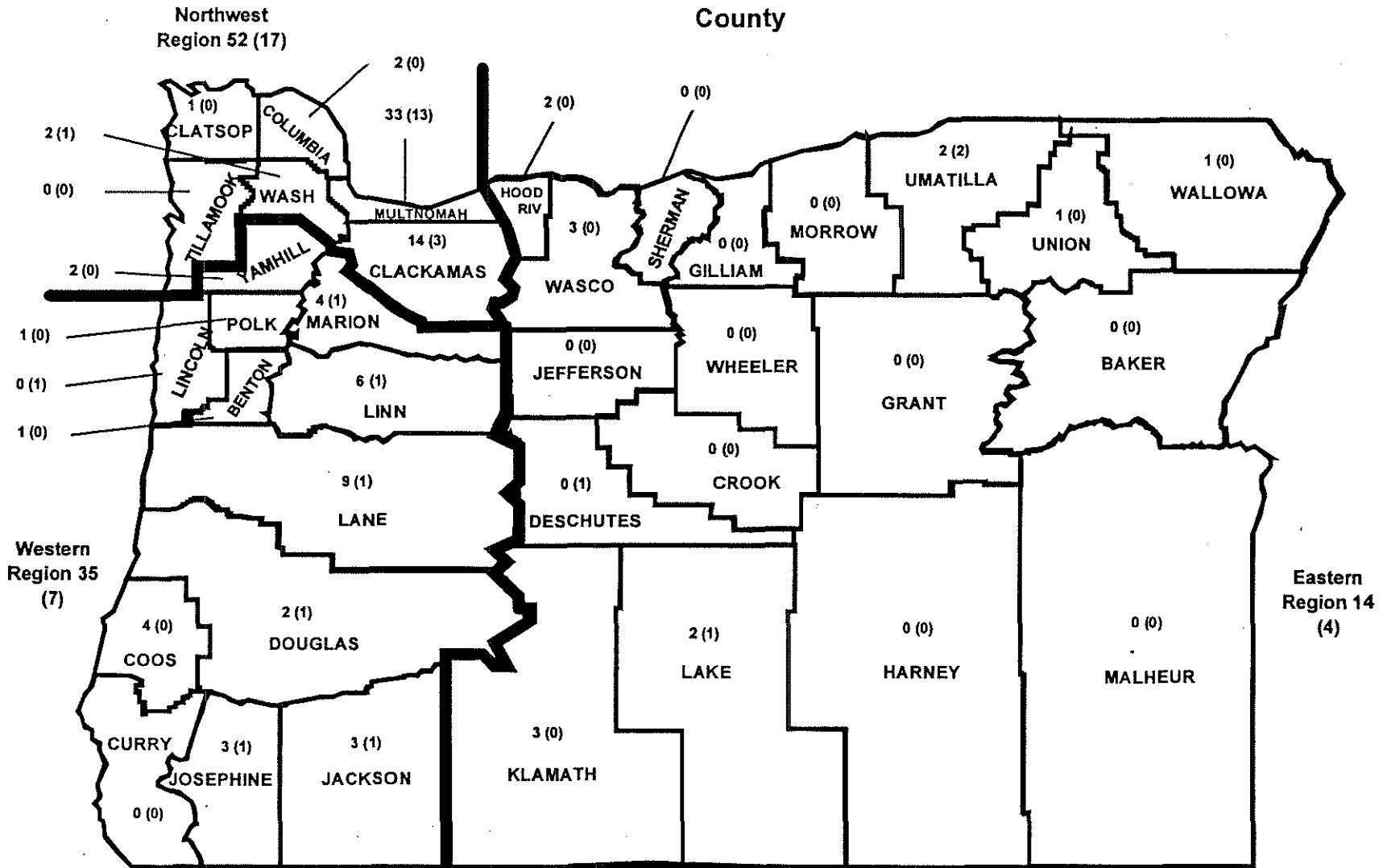
Total Sites = 1783
As of December 23, 1996

Sites With Screenings or Preliminary Assessments Underway (Completed) by County



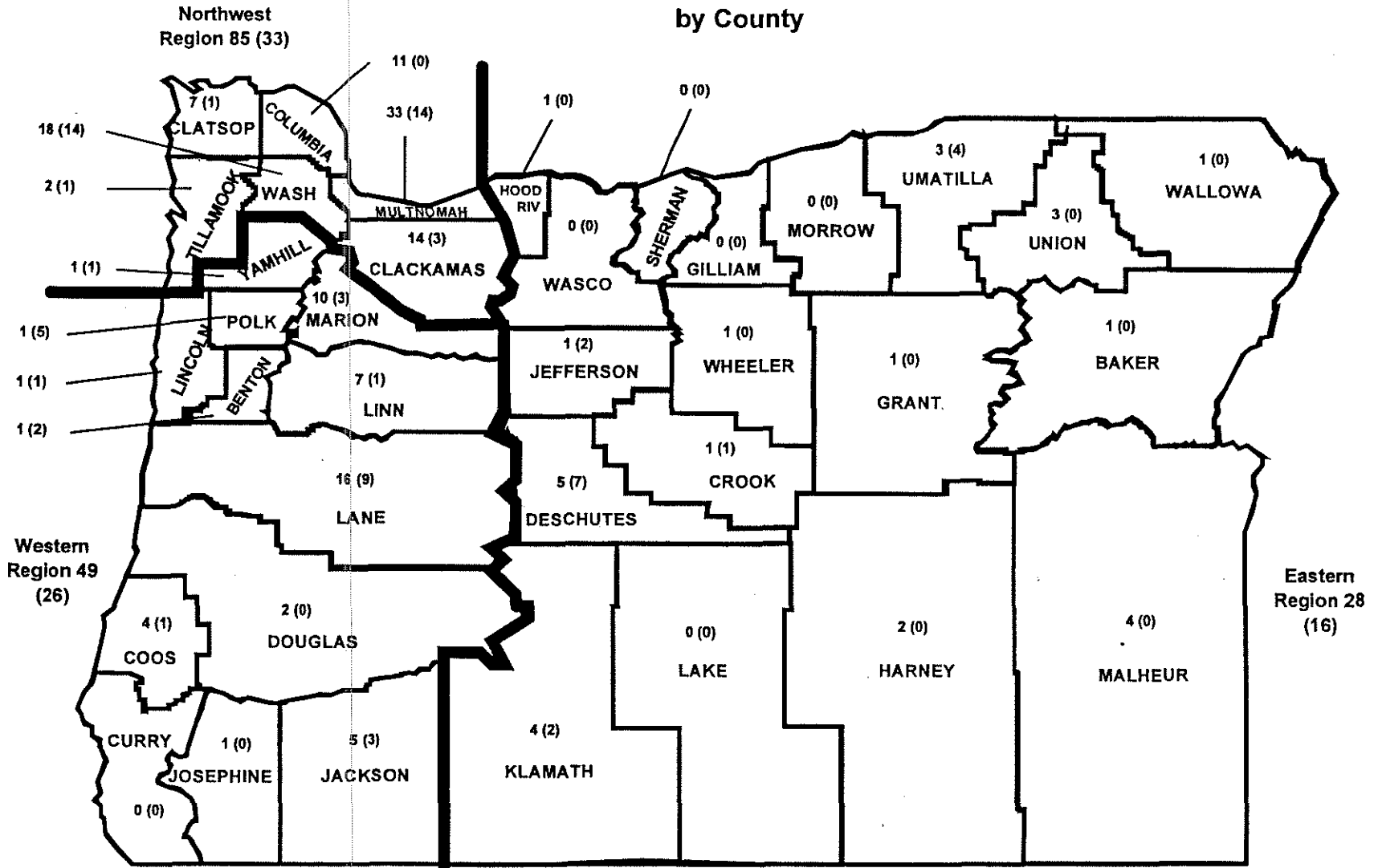
Total Sites = 49 (1286)
As of December 23, 1996

Site Response Program Cleanups Underway (Completed) by County



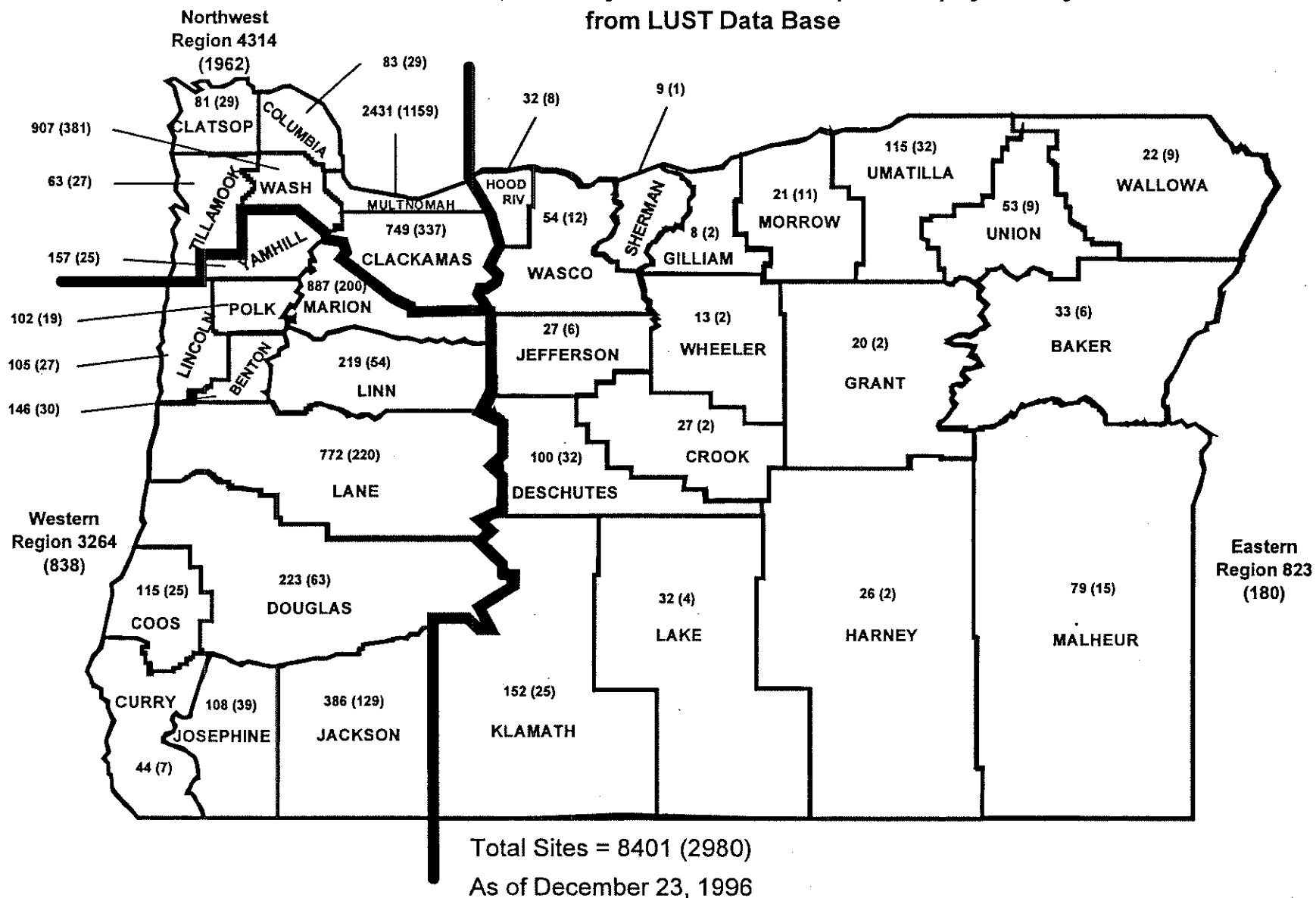
Total Sites = 101 (28)
As of December 23, 1996

Voluntary Cleanup Program Cleanups Underway (Completed) by County

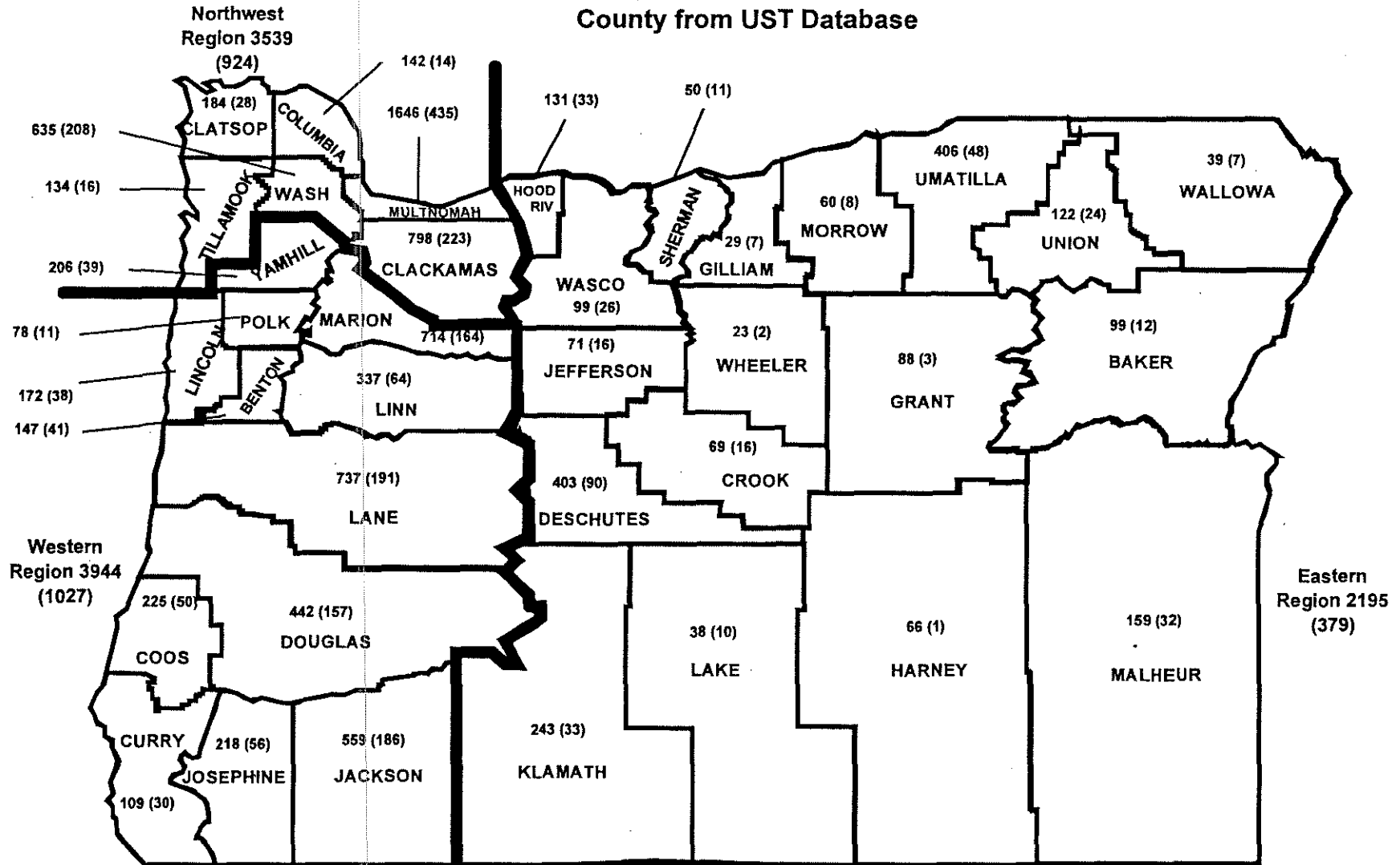


Total Sites = 162 (75)
As of December 23, 1996

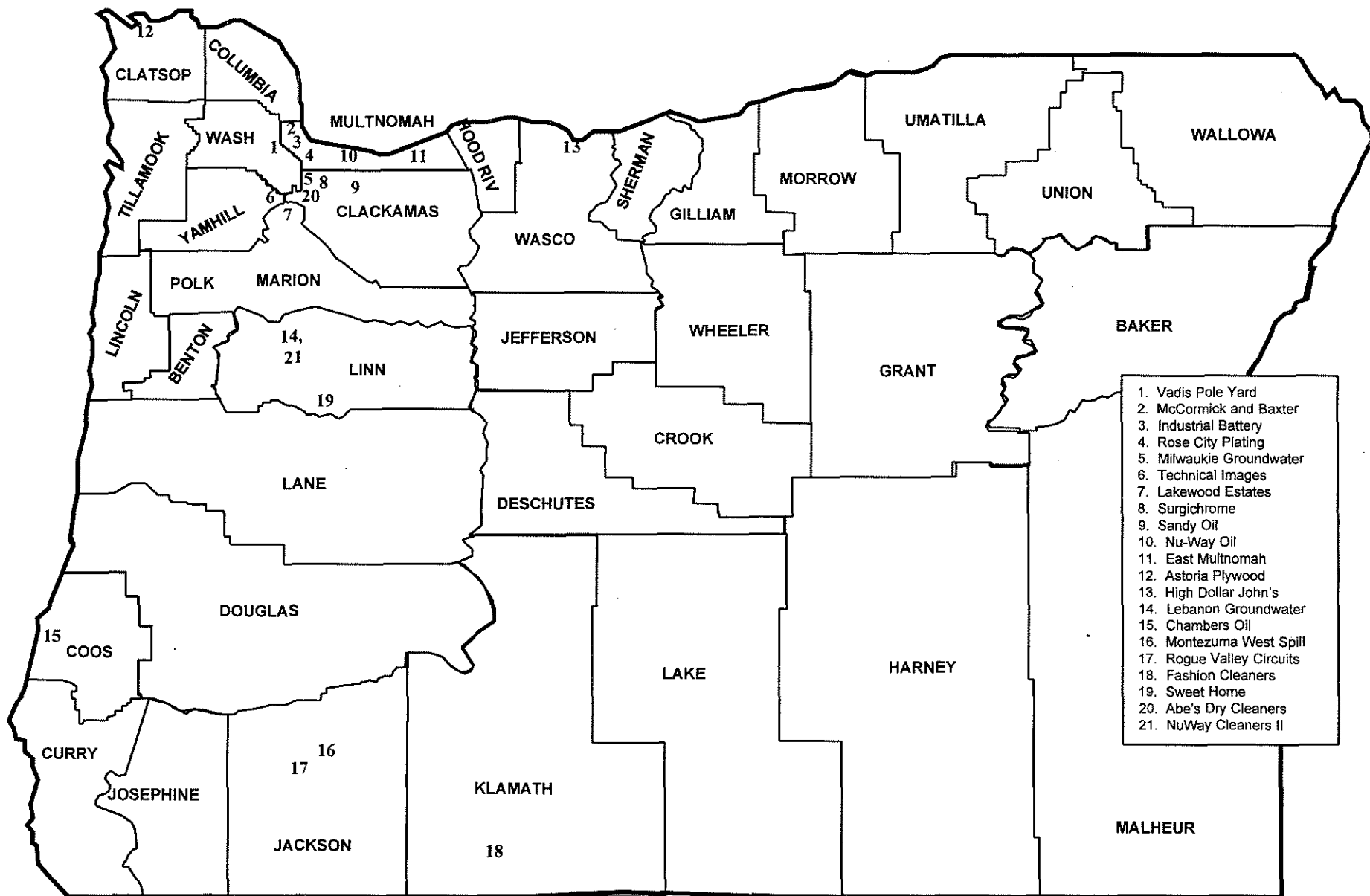
Sites Contaminated by Petroleum Tanks (Cleaned) by County from LUST Data Base



**Permitted Underground Storage Tanks (New Installations) by
County from UST Database**



Total Tanks = 9678 (2330)
As of December 23, 1996



Oregon's Hazardous Substance Cleanup Orphans

Environmental Cleanup

GLOSSARY

aquifer: an underground bed or layer of earth, gravel or porous stone that contains water.

background: the level of hazardous substance occurring naturally in the environment prior to a spill or release.

brownfield: vacant, contaminated property that is typically industrial and is located in a developed urban area.

confirmed release list: a list of properties where it has been verified that a hazardous substance has been released into the environment. Sites on the confirmed release list do not necessarily require any cleanup action.

consent order: A legal document that specifies a responsible party's obligations when entering into a cleanup settlement with the state.

corrective action plan: a work plan specifying exactly how a site contaminated with petroleum products will be cleaned up.

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act--commonly known as Superfund; the federal law passed in December 1980 authorizing identification and cleanup of abandoned hazardous waste sites.

DEQ: Department of Environmental Quality; the Oregon state agency established to restore, enhance, and maintain the quality of Oregon's air, water and land.

EPA: United States Environmental Protection Agency; the agency responsible for enforcing federal laws protecting the environment.

EQC: Environmental Quality Commission; the five-member citizen panel appointed by the Governor to set the environmental policies and regulations for Oregon.

feasibility study (FS): a study conducted to determine different options for cleaning up a site; it is based on information gathered during the "remedial investigation." The FS examines different levels of cleanup, cost effectiveness, permanence and level of protection, as well as available technology.

groundwater: the mass of water in the ground that fills saturated zones of material such as sand, gravel or porous rock.

inventory: the list of sites where release of a hazardous substance has been confirmed and further investigation is necessary.

LUST: leaking underground storage tank.

NPL: National Priorities List; the EPA's official list of hazardous waste sites nationwide to be addressed under the Superfund law.

numeric cleanup standards: a matrix used in simple soil cleanups that defines “how clean is clean” by setting a pre-approved cleanup level.

orphan site: a site contaminated with hazardous substances where the owner/operator is unknown, unwilling or unable to pay for cleanup.

plume: the extent or boundaries of the spread of contamination in groundwater.

preliminary assessment (PA): the initial determination to confirm whether a hazardous substance has been released into the environment, and whether further action is necessary.

presumptive remedy: a preferred cleanup technology for common categories of sites.

release: a hazardous substance that has spilled, leaked or otherwise been discharged into the environment.

remedial action (RA): work done at a contaminated site to permanently clean up, control or contain the hazardous substances.

remedial investigation (RI): an environmental investigation that includes information on the types and concentrations of hazardous substances, the geology and hydrology of the area, and an evaluation of potential risks to human health and the environment.

removal: work done at a contaminated site to clean up or remove a release of hazardous substances, including but not limited to security fencing or other means of limiting access and instigating measures to prevent contamination spread.

risk assessment: a comprehensive evaluation that examines potential risk to human health and the environment in terms of routes of exposure, populations at risk, and degree of harmful effects.

SARA: Superfund Amendments and Reauthorization Act (1986); federal law reauthorizing and expanding the jurisdiction of CERCLA.

site investigation: an environmental investigation that includes information to determine whether a site should proceed to the next stage of investigation or whether it should be placed in a No Further Action status. A site investigation may be performed when a full RI/FS is not required.

Superfund: see CERCLA

ust: underground storage tank

work plan: a detailed report including a schedule for completing an investigation, a description of sampling methods, quality control measures, and safety procedures.

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**Environmental Quality Commission
Meeting**

January 9-10, 1996

Item J

REPORT

ALTERNATIVE FUNDING FOR OREGON'S TOXICS USE REDUCTION PROGRAM

Prepared for the 1997 Oregon Legislature

Prepared by

The Department of Environmental Quality
Waste Management and Cleanup Division
Hazardous Waste Program

December 1996

Alternative Funding Mechanisms for the TUR Program

Overview

The successful Toxics Use Reduction and Hazardous Waste Reduction Program (TUR) has traditionally been funded by the Office of the State Fire Marshal administered Hazardous Substance Possession Fee (HSPF). This fee also funds Oregon's Orphan Site Account which is administered by the Department of Environmental Quality (DEQ) and is the subject of a separate report outlining potential funding alternatives.

As with most broad-based fees, the use of this fee to fund TUR activities has inherent inequities that concern some fee payers. Because of this, the Legislature asked DEQ to review the existing fee and evaluate other potential funding mechanisms. This report outlines four potential funding alternatives. Although each alternative reduces the inequities associated with the existing revenue source, there is no perfect match between who pays and who benefits. In addition, in each case, the proposed revenue sources will require more administrative overhead than the existing Hazardous Substance Possession Fee.

Description of the TUR Program

The 1989 Toxics Use Reduction and Hazardous Waste Reduction Act (TUR) was passed to encourage reductions in the use of toxic chemicals and the generation of hazardous waste whenever technically and economically feasible.

The law requires:

- ◆ certain Oregon facilities to develop comprehensive reduction plans for toxic chemicals and the generation of hazardous waste, and to report progress made in reducing these substances to the DEQ;
- ◆ DEQ to provide technical assistance to all facilities interested in reducing their use of toxic chemicals and/or their generation of hazardous wastes, whether or not they are required to develop a TUR reduction plan; and
- ◆ DEQ to monitor the use of toxic chemicals and the generation of hazardous waste in Oregon and to report periodically on the reduction of these materials.

Facilities that must comply include:

- ◆ Small Quantity Hazardous Waste Generators (SQG),
- ◆ Large Quantity Hazardous Waste Generators (LQG), and
- ◆ manufacturing facilities required to report to the federal Environmental Protection Agency under the Toxics Release Inventory (TRI) program.

DEQ has combined the technical assistance staff resources of the TUR program and those of the hazardous waste small business compliance assistance program to form the Waste Reduction Assistance Program or WRAP. The combining of these related activities has reduced duplication of efforts and administrative costs, increased DEQ's ability to provide services, and provided one-stop shopping for hazardous waste regulatory information and chemical and hazardous waste reduction.

Achievements include:

- ◆ providing more than 700 on-site technical assistance visits,
- ◆ developing a system for and responding to daily requests for telephone assistance,
- ◆ providing more than 60 workshops for Oregon businesses,
- ◆ establishing a technical publications library, and
- ◆ developing and distributing more than 300,000 copies of informational materials to assist companies and local governments reduce their chemical use and hazardous waste generation.

In addition, DEQ periodically reviews TUR plans, annually collects and evaluates chemical use and hazardous waste data from the approximately 500 facilities required to develop reduction plans, and administers the Governor's Award for Toxics Use Reduction which has been awarded to six Oregon institutions.

The Department has been highly successful in increasing the awareness of the advantages to reduced chemical use and hazardous waste generation, and in helping hundreds of facilities find less toxic chemical alternatives and better waste management techniques that reduce or eliminate many waste streams. Additionally, the Environmental Protection Agency and the US Congressional Government Accounting Office have recognized Oregon's TUR program as a model for a national TUR law under consideration.

Existing Program Funding

Since 1989, the TUR program has been budgeted at \$1,000,000 per biennium with funds generated through the State Fire Marshal's Hazardous Substance Possession Fee (HSPF). This fee is charged to companies and facilities that report to the Office of the State Fire Marshal under the Federal and State Community Right to Know Program and is based on

the type and amount of hazardous substance stored at the facility. This funding source was chosen by the 1989 Legislature because of the administrative ease of billing and collection. In addition, because providing technical assistance to all toxic chemical users was to be a major part of the program, the HSPF provides a broad base of fee payers. Even though the 1989 Legislature discussed other funding mechanisms, it chose the HSPF with the knowledge that it had some built-in inequities.

Currently, about 32,000 Oregon facilities report to the State Fire Marshal annually with 4,000 of these paying the HSPF. Of these 4,000 fee-payers, only 800 report use of toxic chemicals of concern to the TUR program. There are, however, more than 3,200 additional reporters, not required to pay the HSPF, that use those chemicals targeted for reduction under the TUR program

There are four main areas in which the HSPF does not correlate well with TUR activities.

These are:

- There is no one-to-one relationship between the facilities that pay the fee and those facilities that are required to develop a TUR plan. In fact, of the 4,000 fee payers less than 13% (500 facilities) are required to comply with the planning requirements of the law.
- There is not a complete overlap between the *toxic chemicals* covered by the TUR program and the *hazardous substances* on which fees are paid. The 340 toxic chemicals, defined in the TUR law, represent a small subset of the universe of 23,000 hazardous substances reported to the SFM. Of the 4,000 HSF payers only about 20% report using TUR toxic chemicals.
- The HSPF is based on the amount of the largest hazardous substance *stored* at a facility, whereas the TUR planning requirement applies to toxic chemicals actually *used* at a facility. In practice, this means that even for TUR planners that pay the HSPF do so based on what they store which is infrequently the largest TUR chemical used by that facility.
- Any Oregon company or local government that uses TUR chemicals, may request and receive technical assistance from DEQ, whether or not they are subject to TUR planning and whether or not they pay the HSPF. Technical assistance represents the major part of the TUR program activities.

DEQ has reviewed other potential funding mechanisms for the TUR program that attempt to align those that would pay for the program with those that take advantage of the program either through required planning activities or technical assistance.

Developing Funding Alternatives

From March to May, 1996 DEQ convened an advisory committee to review the TUR program and make recommendations for program improvements as well as to discuss the funding mechanism for the program. Although the committee did not come to a consensus about an alternative funding mechanism for the program, their guidance to the Department was to keep the funding as broad-based as possible. DEQ has tried to keep this concept in mind while evaluating funding opportunities.

DEQ also researched how the states of Massachusetts, Minnesota, and Washington fund their TUR programs.

In addition, the State Fire Marshal's Office has been helpful in discussions about funding option providing their insights based on their administration of the HSPF. It also has provided other technical comments and data that has been used in some of our analysis.

TUR Program Funding Alternatives

Each of the options below would partially address the inequities described above, although in every case there is a corresponding increase in the cost of administering the fee.

The Department's criteria for developing these options was to find a better match between:

- ◆ fee payers and those required to develop TUR plans
- ◆ fee payers and those that receive technical assistance, and
- ◆ fee payers and use of TUR chemicals of concern.

Option A: Modify the Existing HSPF Billing Procedures

OPTION OVERVIEW

Description: Change the existing HSPF billing procedures to bill facilities that report using TUR toxic chemicals.

Pros:

- Information on chemical use already reported in broad ranges to SFM
- Fee payers closely aligned with technical assistance users

Cons:

- Requires modifications to Hazardous Substance Employer Survey
- Requires development of new billing procedures based on toxic chemical use instead of hazardous substance storage.

(Cons Cont.)

- Higher administrative costs due to greatly increased number of fee payers and multiple invoicing.
- No close alignment of fee payers with facilities required to develop TUR plans

In this model, a fee would be charged on the use of chemicals of concern for the TUR program for which information is reported to the Office of the State Fire Marshal through the annual Hazardous Substance Employer Survey.

This fee could be further structured either as a flat fee or a tiered fee based on the number and/or quantity of chemicals used. If a flat fee were charged to all 8,000 facilities that report use of the chemicals of concern, the fee would be about \$62 per year. Under this proposal, there is no consideration of relative toxicity in setting a fee, since the TUR statute treats all chemicals of concern equally. Since this universe of fee payers has a close nexus with those facilities eligible to receive technical assistance it could be considered as a good funding source for the technical assistance portion of the TUR program.

Although, implementation of this type of a fee to fund the program would reduce existing inequities regarding one aspect of the program, technical assistance, some hazardous waste generators that do not use these chemicals would not be paying for the program. The number of facilities in this category is believed to be less than 50, or about 10% of the total TUR planning universe.

Other impacts of this approach include: significant changes to the Hazardous Substance Employer Survey form to bill gather the appropriate information necessary to prepare invoices based on toxic chemical use; the existing reporting ranges on the form, which currently are very broad, would have to be narrowed in order to charge a fee based on quantities of chemicals used; and invoicing would be somewhat more complicated due to the increase in the number of invoices, invoicing based on chemical use, and perhaps, generating separate invoices for the TUR program.

Option B: Increase the Hazardous Waste Generator Registration Fee

OPTION OVERVIEW:

Description: Increase the existing hazardous waste generator fee administered by DEQ to cover full funding of TUR activities.

Pros:

- Existing billing procedure already in place at DEQ
- Improved alignment of fee payers and facilities required to develop TUR plans
- Minimal increase in administrative costs

Cons:

- Significantly worsens alignment of fee payers with technical assistance users
- Increases in this fee are already being proposed to fund other hazardous waste programs

The regulated hazardous waste generator universe closely approximates those facilities required to complete a TUR plan. However, the universe of facilities receiving technical assistance under the TUR program greatly exceeds this hazardous waste generator universe, which is more closely approximated by the universe of fee payers described in Option A.

Currently, DEQ administers a fee charged to registered hazardous waste generators based on their generator status for any given reporting year. There are approximately 3,700 facilities registered as hazardous waste generators with DEQ. Of these, about 2,800 are conditionally exempt hazardous waste generators (CEG) and do not pay a fee. There are another 610 facilities that report as SQG and pay an administrative fee of \$200, and about 270 facilities that report as LQG, and pay a fee of \$350. This type of flat fee would result in a 185% increase in fees for SQG's and a 63% increase for LQG's. As an alternative, this fee could also be billed on the amount of hazardous waste generated or the number of waste streams generated by a facility with larger generators paying higher fees. These fees are already projected to be increased by 70% to fund other hazardous waste program activities.

Option C: New Fee on all hazardous waste generators, including Conditionally Exempt Generators (CEG)

OPTION OVERVIEW

Description: New fee on all hazardous waste generators currently NOT paying a hazardous waste fee to DEQ

Pros:

- Greatly improves the alignment of fee payers with technical assistance users
- Process already in place to identify potential fee payers
- Improves funding inequities for both TUR program plan administration and technical assistance activities

Cons:

- Substantially increases the administrative costs of invoicing and fee collection
- As in Option B, SQG's and LQG's are projected to see a 70% increase in fees to fund other hazardous waste program activities.
- There would still be a small number of facilities that use the technical assistance opportunities of the program and do not pay a fee.

This group of about 2,800 facilities accounts for the large majority of industry and local government facilities that ask for and participate in the technical assistance activities of the program. A new fee, charged to CEG's to pay for the TUR program would, therefore, increase the match between payers and users of the TUR program.

If CEG's were added to the 890 facilities paying for the program in Option B, each facility would pay about \$135 a year. Similar to Option B, this fee could also be scaled based on generator status, with LQG's paying the most and CEG's paying the least. An issue here, however, is the additional administrative costs for DEQ to invoice and collect relatively small fees from a substantially larger universe of fee payers.

Option D: New Fee on Facilities Required to Develop a TUR Plan

OPTION OVERVIEW

Description: Distribute the cost of the TUR program to those facilities required to develop TUR plans.

Pros:

- Aligns fee payers with regulated community of TUR planners, thereby eliminating funding inequities for the program administration activities
- System in place, at DEQ, to identify fee payers and to administer invoicing and fee collection

Cons:

- Greatly increases the inequities related to funding technical assistance
- Negative incentive to do a TUR plan.

There are approximately 500 facilities that are required, under the TUR Act, to prepare a reduction plan. The majority of these facilities already pay the HSF and are therefore paying for a small part of the TUR program. If these facilities were billed directly for the total cost of the program the average fee would be \$1000 per year. Such a fee would reduce the current funding inequities between fee payers and TUR planners. However, it does nothing to improve the match between fee payers and users of technical assistance. In fact, this fee would greatly increase this inequity. A new fee of this type would increase the cost of invoicing and collection for DEQ and, in addition, could be a negative incentive for facilities to do TUR planning.

Summary

Each of the above alternative fees attempts to address the perceived inequities associated with the existing revenue source. However, there is no perfect match between who pays and who benefits.

Since, technical assistance is provided on a voluntary basis to any facility that requests help, it makes the most sense to keep the funding mechanism for the TUR program as broad-based as possible, which is the one advantage of the existing HSPF. The added administrative costs for each of these fees, over the existing HSPF, makes it difficult to identify any of these fees as more desirable than the existing funding source.

TUR Funding Comparison

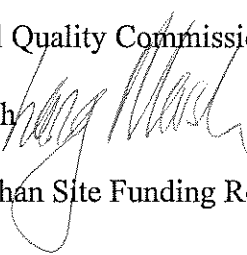
Funding Option	Closely Match Fee Payers with TUR Planners? (Y/N)	Closely Match Fee Payers with Technical Assistance Users? (Y/N)	Closely Match Fee Payers with TRI Chemical Users? (Y/N)	Potential Increase to Administer Fee	Comments
Existing HSPF	No	No	No	None	<ul style="list-style-type: none"> • very broad-based • TUR planners and TA recipients pay but they are only small portion of fee payers
Option A: Modify Existing HSPF	No	Yes	Yes	Medium	<ul style="list-style-type: none"> • Modifies existing HSPF billing procedures • Would require changes to SFM survey forms
Option B: Raise HW Fees	Yes	No	No	Low	<ul style="list-style-type: none"> • Modifies existing DEQ fee • This fee may be increased to fund other hazardous waste programs
Option C: New Fee on CEG's	No: if stand alone fee Yes If combined with Option B	Yes	No	High	<ul style="list-style-type: none"> • New group of fee payers for DEQ • Relatively large group and small fee adds to administrative costs
Option D: New Fee on TUR Planners	Yes	No	No	Medium	<ul style="list-style-type: none"> • potential fee payers are identified • Disincentive to do TUR planning

12/96

State of Oregon
Department of Environmental Quality

Memorandum

Date: January 2, 1997

To: Environmental Quality Commission
From: Langdon Marsh 
Subject: Report on Orphan Site Funding Review – January 10, 1997 Meeting

Enclosed is a copy of DEQ's Report to the 1997 Legislature on Orphan Site Funding Review. This Report is **Information Item K** on the January 10, 1997 meeting agenda. This is one of the five reports issued by the Waste Management and Cleanup Division that are being presented to the Commission.

The December 30, 1996 cover memo you received in your earlier packet provides the background information about this report. In sum, DEQ was directed by the Legislature in a 1995 budget note, to convene a task force to review alternate funding sources for the fees supporting orphan site cleanups. This report summarizes the results of this review effort and presents the Legislature with several funding alternatives.

OREGON DEPARTMENT OF
ENVIRONMENTAL QUALITY



REPORT TO THE 1997
LEGISLATURE
ON
ORPHAN SITE FUNDING
ALTERNATIVES

JANUARY, 1997

Department of Environmental Quality
Report to the 1997 Legislature on
Orphan Site Funding Alternatives

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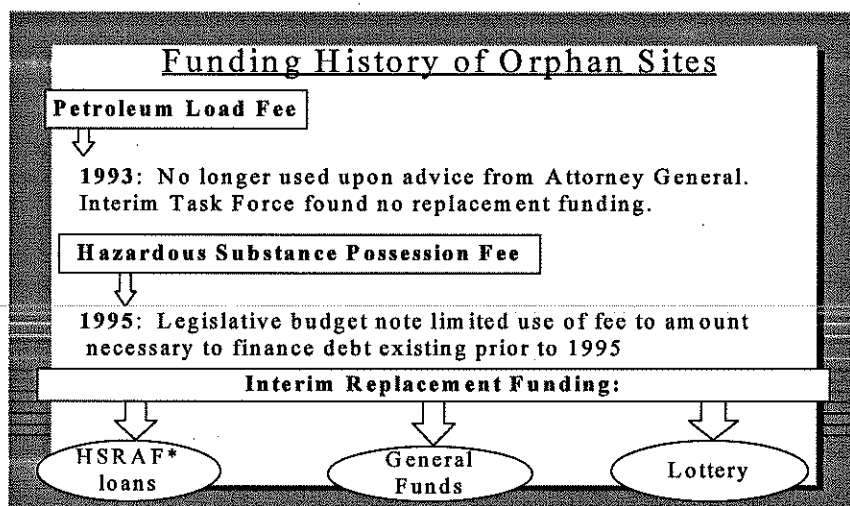
EXECUTIVE SUMMARY

Funding orphan site cleanups has been problematic virtually since the program was authorized in 1989. The Legislature has continually reaffirmed its support of this important program to protect the quality of Oregon's environment and in 1995 asked the Department of Environmental Quality (DEQ) to review potential alternatives to its current funding sources. DEQ invested substantial effort and enlisted the support of many constituencies to help identify and evaluate funding options. The issue is a thorny one and no ideal solution has emerged. This report evaluates the alternatives and provides a short list of those the Department considers most viable; many others also have merit.

Orphan sites are contaminated properties that pose risks significant enough to warrant state action to protect human health and the environment. DEQ cleans up at these sites because the individuals responsible cannot afford to do so or cannot be located, or because the source of contamination is not yet identified. These sites are high environmental priorities. Failure to take action leaves the neighboring community potentially exposed to risk and can allow the pollution to migrate, for example, to the groundwater and nearby lakes and streams. So far, DEQ has declared 21 orphan sites. Dozens more of the sites currently being worked on by responsible parties, as well as those yet to be discovered, may eventually become orphans.

The Funding Issue

Orphan site cleanups are currently financed with long-term bonds. Orphan legislation enacted in 1989 envisioned repaying the debt with equal shares of two fees: the Petroleum Load Fee, and the Hazardous Substance Possession Fee.



* Hazardous Substance Remedial Action Fund

As this funding history shows, problems have arisen with both fees. The constitutionality of the petroleum fee is in doubt and it is not used. The hazardous substance fee has been unpopular with feepayers, although it continues to fund half of the debt incurred prior to 1995. The remaining costs have been paid with temporary sources.

Process for Reviewing Alternative Funding Sources

DEQ worked with two committees to conduct a comprehensive review of funding alternatives. The Orphan Site Funding Task Force provided policy guidance on funding issues, and the Review Committee, comprised of potential fee payers, provided feedback on funding sources under consideration. (See Attachments for committee membership lists.) The Task Force also made recommendations that may enable DEQ to make use of private and other resources to help clean up orphans, thereby reducing the State costs. The recommendations are described in a separate report available from the Department and are the subject of a budget proposal.

Reliance on Bond Financing

One of the policy issues deliberated by the Orphan Site Funding Task Force was whether the State should continue to finance orphan sites cleanups with long term bonds. Since 1992, bonds have been issued each biennium to finance current cleanup costs. The Task Force concluded that the public interest is not best served by continuing to accrue this debt. It recognized, however, the difficulty in identifying funding sources capable of generating the estimated \$6 million per year needed to pay for both current cleanups and the debt already incurred. Therefore, the Task Force recommended that the State should decrease reliance on bond financing to the extent possible.

DEQ took this recommendation into account in evaluating the funding alternatives. For each option, the Department evaluated the impact of eliminating bond financing altogether, but also considered the effect of raising a smaller amount.

Analysis of Funding Alternatives Considered

DEQ investigated and evaluated a broad range of potential funding sources. These are described in the chart preceding Section II of the report. To facilitate review, the sources are grouped in three categories: (1) The most viable choices, that were strongest in the key characteristics; (2) other potential solutions that, for a variety of reasons, are not the best alternatives; and (3) the least viable options.

This Executive Summary section provides a summary evaluation of the most viable alternatives. The chart on page 5 includes a brief synopsis of the other options. The body of the report provides a complete description of each funding source and a discussion of its strengths and weaknesses as a funding mechanism for orphan sites.

HOW THE FUNDING SOURCES WERE EVALUATED

Three characteristics were most critical in determining viability:

- Ability to generate sufficient revenue
- Ease of administration
- Who would be impacted and how

The first two are straightforward: The funding mechanism must be able to generate all or a portion of the amount needed to fund orphans, without placing an undue burden on fee payers and significant additional State resources should not be necessary to administer the revenue source.

The third attribute addresses the question “which segments of Oregon’s population should pay to clean up orphans?” and goes to the root of why funding the program has been so difficult. To evaluate this third characteristic, each funding option was examined from two perspectives:

Nexus: The cost of most government activities that protect the environment are borne by those who cause, or have the potential to cause, pollution. The original orphan site funding scheme was based on such a connection, or nexus, by requiring those who deal with contaminants – hazardous substances, including petroleum – to bear the cost of cleaning up orphan sites.

Some feepayers criticize the existing hazardous substance fee because some substances assessed lack nexus with the risk of contamination. Others feel that it is not equitable for all those associated with contaminants to pay in lieu of those few not available or able to finance the cleanup themselves. The Orphan Site Funding Task Force advised that **nexus with the cause of orphans** is desirable. The Department agrees that it should be an important element in evaluating funding schemes.

From another perspective, the funding source could also have **nexus with those who benefit** from orphan cleanups. Those who benefit, for example, from clean water or increased property values resulting from cleanup, would satisfy this type of nexus.

Broad-based funding. If there isn’t a particularly strong reason to require a specific group to pay for orphan cleanups, then the cost should be spread broadly across a large universe. In this way, the cost borne by each individual can be relatively small. Broadly apportioning costs is often appropriate for problems that must be addressed by society at large.

MOST VIABLE OPTIONS

Of all of the options considered, the following alternatives best meet the viability characteristics. Each can raise a significant portion, if not all, of the revenue needed and would not be disproportionately costly to administer. None answers the nexus question completely. In fact, two of the three seek to assess a broad segment of Oregon’s population. The fees are not listed in priority order.

Business registration fee. This alternative assesses the approximately 60,000 entities registered to do business in Oregon, spreading the cost of orphan cleanups as broadly as possible across the business community. It has the potential to raise substantial revenue without significant adverse impact on individual feepayers; graduated fees would average about \$100 a year. The fee is not complicated and would not cost much to administer in most respects, although ensuring payment from such a large number of feepayers would require some compliance resources. This alternative is not justified by a nexus with orphan sites; businesses with the potential to cause future orphans would be charged the same as those without.

A related option (nexus-based business registration fee) narrows the group of businesses assessed to those that deal in some way with substances that cause contamination. The cost would be spread uniformly across this group, and would not apportion fees based on risk. This hybrid option combines broad-based and nexus characteristics.

First possession fee. This option, similar to the mechanism used to fund cleanups in the State of Washington, is based on nexus with substances causing contamination. The first possession fee is significantly different from Oregon's current hazardous substance fee. As the name suggests, only the first entity to possess the substance in the State is charged. Its nexus is stronger than the existing fee, because only substances identified as hazardous by EPA are assessed. On the other hand, a frequent source of contamination would not be included because Oregon's constitution would prevent assessing most, if not all, petroleum products.

The first possession fee is assessed based on wholesale value, rather than physical quantities, of the substance possessed. This method tends to minimize the impact on feepayers and makes it easier to pass the cost on to successive users of the product. A significant portion, although probably not all, of the revenue required for orphans could be generated. At the rate currently charged in Washington – \$7 per \$1,000 wholesale value – this option is estimated to generate about \$3 to 4 million dollars a year. Administrative costs would be higher for this option than the other two most viable options, at least initially, because it is substantially different than the current possession fee mechanism.

The Department also considered a number of modifications to the existing hazardous substance possession fee that would address criticisms of the fee as an orphan site funding source. These are listed as Other Potential Sources.

Solid Waste Disposal Fee: This is the broadest of the viable options because it is paid, indirectly, by virtually all Oregonians. It could also generate sufficient revenue to be a sole funding source. Although it would require a significant increase to the fees currently assessed by DEQ, the resulting cost per customer is not large: the amount needed for orphans is less than \$2 per ton of waste disposed. There would be no increase in DEQ's administrative costs to collect the additional fee. One potential concern is that this fee would be in addition to the 13-cent-per-ton disposal fee already assessed on solid waste, which is statutorily dedicated to pay for landfill orphan cleanups. No such orphans have been declared to date, although DEQ anticipates a need for these landfill orphan funds within the next two biennia. With this alternative, solid waste disposal would be the funding source for all orphan cleanups.

The remaining funding sources evaluated are summarized on page 5 of this Executive Summary.


Conclusion

Orphan sites are, by definition, those for which no one takes responsibility. As a result, the choice of a funding source is not an easy one. In addition, the State faces the question of whether the cost of cleaning up orphans should continue to be deferred. Both of these issues present many challenges and require balancing a variety of factors in order to attain equity and stability.

It is critical for both environmental and human health reasons that orphan site cleanups continue. The intent of this report is to provide the Legislature with sufficient information to identify appropriate funding sources for orphan site cleanups. The alternatives identified by DEQ as "most viable sources" present the fewest difficulties overall, however this report includes an analysis of all alternatives considered, as many of the other funding sources may also be quite appropriate.

Category/Alternative	Evaluation
Most Viable Alternatives - see pages 3 and 4	
<ul style="list-style-type: none"> • Business Registration Fee (broad-based and nexus-based) • First Possession Fee • Solid Waste Disposal Fee 	
Other Potential Sources	
Modified Hazardous Substance Possession Fee	Better nexus than existing fee because limited to contaminating substances. Revenue capacity restricted by small universe, many small businesses. Information available from existing SFM reporting process.
Environmental Income Tax Surcharge	Very small increase generates far more revenue than needed; impracticable to implement only for orphan sites. Tax on all businesses or individuals more equitable than a narrowly-based corporate tax increase.
Real Estate Transaction Fee	Very good revenue generating capability. Several other competing uses for this type of fee.
Petroleum Gross Operating Revenue Fee	Could generate a portion of revenue needed. Assesses petroleum industry, whose products are a common source of contamination, without violating constitutional restrictions on motor vehicle fuel. Nexus weakened by not being able to charge contaminating substances directly.
Petroleum Distillate Fee	Broad-based if passed on to consumers; adequate revenue generated. Inequity of charging only non-motor-vehicle petroleum products; could fall disproportionately on heating oil consumers.
Replacement Tire Fee	Could generate adequate revenue with minimal impact. Assesses broad segment of citizens over time. Little, if any, nexus.
Water Use Fee	Very broad-based; minimal impact on individual fee payers. Strong nexus with those benefiting from clean water. Local opposition; complicated to implement.
General Fund	Members of both advisory groups concluded that orphans are society's problem; since actual polluters aren't available, no group should be singled out to pay. Competition with many other State programs.
Least Viable Sources	
Insurance Premium Assessment	Good revenue generation capability. Existing insurance industry taxation, including retaliatory taxes make implementation impractical.
Pesticide Registration Fee Surcharge	Nexus with a subset of site contaminants. Could generate a portion of revenue needed. Could derail industry support for existing pesticide fee.
Hazardous Waste Generator Fee Surcharge	Current fee insufficient for existing hazardous waste program needs; impractical to increase for orphans.
Hazardous Waste Disposal Fee Surcharge	Revenue declining and is inadequate for other DEQ programs. Due to market conditions, a fee increase would decrease volume disposed.
Civil Penalties	Insufficient revenue; perception of "bounty hunting" to fund program.
Beverage Container Excise Tax	Both Beverage Container related fees were evaluated during review process. These have been removed from final list because they are being considered by the Governor to fund other programs.
Unrefunded Container Deposits	

ORPHAN SITE: a high priority cleanup conducted by the State because the responsible party is either unknown or unable to pay for the cleanup



SECTION I – Introduction

Since the orphan site cleanup program began in 1989, securing stable funding has been a recurring issue for the State. While local and State government, citizens, and industry all agree that these cleanups must occur, finding a funding source which makes the most sense has been challenging. The key difficulty has been that while we may prefer a connection between those who caused the problem and those held responsible for resolving it, at orphan sites it is impossible to rely on those directly responsible for causing the problem. This is because at orphan sites, those directly responsible are either unknown or unable to pay for the cleanup. As a result, the State pays for orphan cleanups.

The big question is who should provide the funding for State cleanups at orphan sites? This is a difficult question to answer because there is no “typical” cause of an orphan site. Orphan sites are the result of a variety of actions including accidents; abandonment; historical practices which were legal at the time but have caused severe health and environmental risks today; and uninformed owners and operators who violate regulations. Similarly, it is difficult to select an isolated set of substances which create orphan sites, nor is there a common type of business which typically causes orphan sites. Orphans have resulted from road-side spills, large wood-treatment facilities, small metal plating operations, dry cleaning stores, battery recycling facilities, and oil-refineries, to name a few.

Orphan cleanups were originally intended to be paid for by potential contributors to the problem of contamination. The original plan was that orphan site cleanups were to be financed based on the traditional “polluter pays” concept. This is consistent with having a nexus, or connection with those who are related to the cause of orphan sites. However, because of the issues described above, these feepayers have raised concerns with the current funding scheme. There is growing sentiment that as industries and other users of hazardous substances have become better educated about hazardous waste management issues, and as compliance rates with environmental regulations rise, it may be more difficult to justify orphan site cleanups with a funding scheme based on a polluter pays nexus. There is considerable support for identifying a very broad-based funding source for orphan site cleanups as an alternative to a nexus based funding scheme. The broad-based mechanism need not be connected to hazardous substances or polluters, but rather is justified based on the theory that orphan sites are ultimately an issue for all of society to resolve, and therefore, the costs of the solution should be borne by as many as possible. While it may not be easy to find a segment of the population which ought to pay for orphans, a broad-based mechanism allows the costs to be wide-spread, thereby having minimal impact on individual payers.

The Department of Environmental Quality (DEQ) has conducted an extensive evaluation of many possible alternate funding sources for orphan site cleanups. DEQ worked with a policy-oriented Task Force and a Review Committee to incorporate a range of analytical perspectives into the funding review process. The funding mechanisms were evaluated based on several characteristics, including whether they were broad-based or had an equitable nexus. These two attributes traditionally represent opposite ends of the spectrum of funding source characteristics; rarely is a fee both nexus based and broad-based. The other characteristics used to evaluate each funding alternative include revenue generating capability, administrative ease, and equity.

The Orphan Site Funding Task Force also considered the question of whether it remains appropriate to rely on bond financing to fund orphan site cleanups. The program is funded each biennium by the sale of bonds, so that each year the revenue required to service the debt increases. The Task Force concluded that it would be best to decrease reliance on bond funding to the extent possible. The Department's analysis of the funding sources allows for this scenario, but also permits evaluation using the current bond funding mechanism.

DEQ has identified several acceptable alternative funding sources. While finding sources of funding with an appropriate nexus has been challenging, there are several alternatives which can be structured so as to minimize inequities, while maintaining a sufficient nexus with those who are most likely to contribute to the causes of contamination. DEQ has also identified some good, very broad-based funding sources, with low impact on the individual fee payers, but very little nexus to the problem. In addition, there are some funding sources which have both a nexus to those associated with contaminating substances, and the fee is structured so that it is also fairly broad-based within that universe of fee payers.

Oregon's Orphan Site Cleanup Program

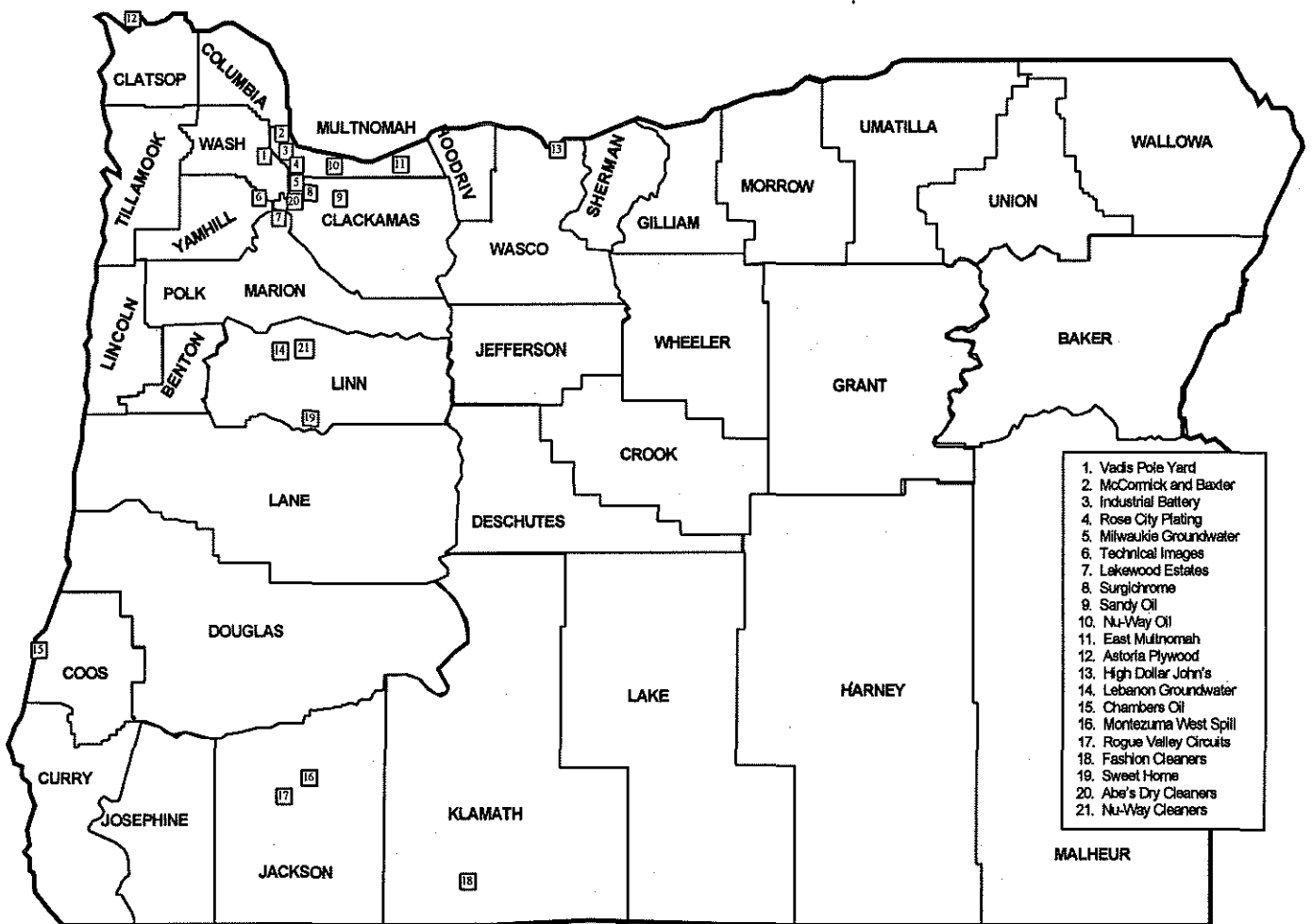
What is an orphan site? Two factors must exist for a site to qualify as an orphan. First, there is no viable responsible party to perform the cleanup. Second, DEQ has determined that the nature and extent of contamination makes the site a high priority. There are only three reasons that a viable party won't exist:

- ◆ the original source of contamination is *unknown* or the party has not been located;
- ◆ the known responsible party is *unable* to pay for the cleanup; or
- ◆ the responsible party is *unwilling** to pay for the cleanup

* DEQ has never had an orphan site because of an unwilling party

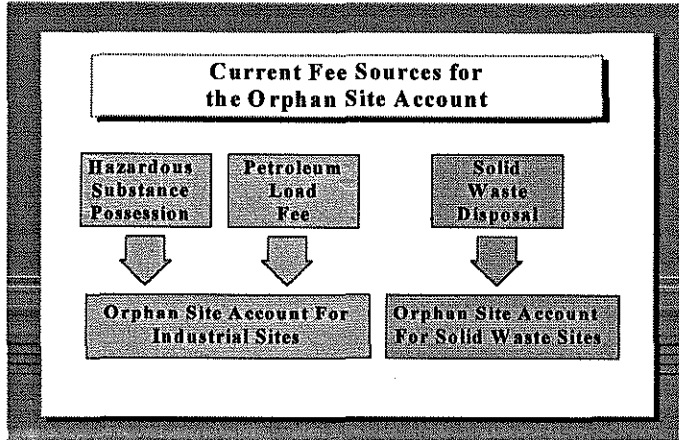
Only those sites which present a serious threat to human health and the environment are declared orphan sites. If cleanups are postponed, the contamination can migrate to a larger area, creating a larger problem and greater cleanup costs. In addition, the community is economically impacted because property values may decrease, these idle contaminated properties contribute to urban blight, and local governments suffer from the lost tax base represented by these orphaned sites. Orphan sites are essentially non-income producing assets left for the State to clean up and manage.

How big is the orphan site problem? In January, 1996, DEQ quantified the size of the problem as part of the funding evaluation process. DEQ determined that of the 1,613 contaminated sites in Oregon at that time, 32 would become orphans. While DEQ continues to complete high priority remedial actions at orphan sites, new sites are regularly discovered, and a portion of these sites become orphans. History shows that approximately 120 contaminated sites are discovered by DEQ each year; 2 of these typically become orphan sites. Based on this experience, DEQ operates under the assumption that orphan site cleanups shall continue into the foreseeable future. Remedial activities at orphan sites cost DEQ approximately \$8.5 million each biennium. In addition to these current costs, DEQ carries debt service of approximately \$3.5 million per biennium from previous orphan bond sales.



Oregon's Hazardous Substance Cleanup Orphans

How were orphan site cleanups to be funded? In 1989, the Legislature crafted a funding scheme for orphan cleanups based on the “polluter pays” concept. The law provides that orphan cleanups are funded directly through bond sales, the debt service of which is repaid with three fees.



For industrial orphan sites, a fee on possessors of hazardous substances, and a fee on purchasers of petroleum products, were to share the cost of debt service. As explained below, in recent years, the petroleum fee and part of the hazardous substance fee have been temporarily replaced with other sources of funding, and no longer represent viable funding sources for orphan sites. For solid waste orphan sites, a tipping fee on solid waste disposal is to be used for debt service.

The petroleum load fee requires the seller of petroleum products from a bulk facility to assess a delivery fee. The hazardous substance possession fee (HSPF) is a quantity-based fee assessed on a specific set of hazardous substances. A fee is paid only for that substance of which the greatest quantity is possessed. The HSPF is administered and collected by the State Fire Marshal based on information reported under the Community Right to Know Act. The Solid Waste Disposal Fee is currently a \$.13/ton tipping fee assessed on all solid waste generated or disposed in Oregon. To date, DEQ has not declared a solid waste orphan site, although a need for landfill orphan funds is expected within the next two biennia.

Why are the statutorily provided funding sources for industrial orphans unstable?

Petroleum Load Fee. In 1993, upon advice of the Oregon Attorney General’s office, DEQ stopped collecting the petroleum load fee. This advice came on the heels of a State Supreme Court decision finding a fee scheme similar to the petroleum load fee to be unconstitutional. The State constitution limits the use of revenues from taxes on motor vehicle fuel to supporting roadway construction, maintenance, and similar related activities.

The Legislature had contemplated the potential unconstitutionality of the petroleum load fee by providing for alternate funding sources in the statute if the fee was found to be unconstitutional. Because the fee was never formally challenged in court, these alternate funding provisions in the statute were never activated.

Hazardous Substance Possession Fee. In 1995, a Legislative budget note limited HSPF collected for orphan sites to the amount needed to finance debt on bonds sold prior to 1995-97 biennium. Limiting the collection of this fee was in response to concerns expressed by some of the fee payers. One common fee payer concern was that the substance possessed was hazardous

because of fire danger, not toxicity or ability to cause contamination. Another concern of some fee-payers is that they are responsible possessors and have never contributed to or caused an orphan, nor will they ever in the future. Many fee-payers believe that it is simply arbitrary or unfair for them to be singled out as financiers of orphan cleanups.

How are orphan cleanups currently being funded? When the petroleum load fee ceased to be a viable source for the orphan site cleanup program, the Legislature, recognizing the importance of continued funding for this program, appointed an Interim Task Force to identify a stable replacement funding source. This Task Force did not identify replacement funding, and since 1993, the Legislature has provided interim funding for debt service from Lottery funds, the General Fund, and loans from DEQ's Hazardous Substance Remedial Action Fund. These interim funding sources also pay for debt service incurred since 1995. Half of the debt service existing prior to 1995 continues to be paid for by the HSPF.

What has been done to address the orphan site funding issue? In a budget note from the 1995 Legislative session, DEQ was directed to convene a task force to review alternative financing mechanisms for both the petroleum load fee and the HSPF. This report summarizes the extensive review of alternative financing mechanisms that DEQ, in concert with the Task Force and Review Committee, has conducted during the past 18 months. It is DEQ's intent that this report provide the Legislature with sufficient information to select stable and reliable funding for orphan sites, for as long as there is a need for these cleanups.

The Process for Reviewing Alternative Funding Mechanisms

Finding acceptable and appropriate funding sources for orphan site cleanups has been a continuing issue. Several groups have examined the problem over the years and been unable to come up with workable solutions. In 1995, building upon the work that had already been done, DEQ designed a review process for maximizing the potential to identify viable and workable funding sources. This review process included an examination of the root of the funding issue; utilization of a variety of resources to ensure that we were on the right track in seeking viable alternative funding sources; and securing a range of input into both the process and substance.

DEQ's review process can be segregated into three major categories:

- (1) evaluation of policy-based issues;
- (2) research and analysis;
- (3) external review of alternatives.

(1) Policy: Forming a Basis

In January, 1996, DEQ convened the blue-ribbon Orphan Site Funding Task Force, comprised of former law-makers, economists, environmental attorneys and environmental policy analysts. The Task Force was asked to provide DEQ with policy-based guidance in four major areas:

- ◆ purpose and scope of orphan site cleanup program;
- ◆ projected funding needs for orphan site cleanups;
- ◆ which segments of Oregon's population should fund orphan site cleanups; and
- ◆ whether cleanups should continue to be financed solely with long-term bonds

The Task Force's July, 1996 final report, "*Financing Orphan Site Cleanups: A Public Policy Perspective on Orphan Site Cleanup Issues,*" provides an excellent summary and analysis of the policy direction provided. The Task Force strongly agreed that orphan site cleanups are a critical component to the state's overall cleanup program, and that without these cleanups, serious threats to both the environment and human health would remain unaddressed.

Program The Task Force made program recommendations, intended to result in an overall decrease of orphan site cleanup costs. The Governor's budget proposes a new staff position to enable the agency to begin development and implementation of these recommendations. The program changes are intended to reduce public costs, while achieving public environmental objectives and creating public benefits. One example of their suggestions is to partner with other interested parties – private or local government, to share cleanup costs. Once DEQ begins to implement these program changes, it will be possible to measure the cost savings and they will be factored into overall program funding needs.

Funding The following key principles were provided by the Task Force:

- ◆ Operate under the assumption that orphan sites will continue to be discovered at the current rate for the foreseeable future
- ◆ Cost savings may be realized through implementation of program recommendations from the Task Force; these savings should be factored into the orphan site budget only after sufficient time has passed so that these savings can be accurately measured and forecasted
- ◆ DEQ should evaluate alternate funding sources based on certain key characteristics including:
 - ◇ equity
 - ◇ revenue generating capability
 - ◇ nexus (tie between who pays and who caused the problem or benefits from solution)
 - ◇ broad-based
 - ◇ administrative ease
- ◆ Favor a "polluter pays" theory for assessing a fee on a certain segment of the population, however discussions did not lead to many examples of this sort of nexus that also met the equity criteria. If the link cannot be made to those who contribute to the problem, it is best to spread the costs as broadly as possible, so that the impact on any one individual is minimal. This is consistent with the sentiment that orphan sites are ultimately society's problem, since the ones who caused them are unable to take care of it. The Task Force recognized that General Fund was probably an equitable method for spreading the costs broadly, however also recognized the impracticalities of this option.

Bond Financing. In evaluating the question of whether orphan site cleanups should continue to be bond-funded, the Task Force considered these facts: If bonds are sold to fund cleanups in the 1997-99 biennium, the Department projects that payments on the debt will reach about \$2.4 million per year by 1998; that debt would finally be paid off in 2017. Each bond sale adds about \$1.5 million to the biennial debt.

The Task Force concluded that it would be best to discontinue bond financing, primarily because the debt could continue to mount for the foreseeable future. Task Force members also recognized, however, that it could be difficult to identify sufficient funding for both the existing debt service and current operational costs. The recommendation, therefore was to decrease reliance on bond funding to the extent possible.

Task Force recommendations provided criteria for identifying and evaluating potential funding sources. DEQ also incorporated the bond financing recommendation into the evaluation process. For each option, the impact of generating revenue was assessed at two levels: (1) the \$ 6 million per year needed to fund both existing debt and operational costs and (2) a \$ 1 million “building block”, to allow consideration of various alternatives. The second figure assists consideration of partial bond funding, as well as combining multiple funding sources.

(2) Research of Potential Sources

Both before and during the policy phase of funding review, DEQ staff communicated extensively with states around the country to identify how they fund their orphan site programs; how they fund other cleanup programs; what unusual or atypical funding mechanisms have been either examined or employed; and how other states evaluate their own programs. The information gathered helped DEQ develop a list of specific funding sources worth considering and a plan for how to analyze each fee.

After a list of specific funding sources was generated, DEQ worked with other State and local government agencies to gather statistics and data necessary for determining the appropriate fee structure; calculating the necessary fee amounts; evaluating the impact on individual fee payers; and assessing the long-term viability of the source.

(3) Review of Sources

Using the framework provided by the Task Force and the research results, DEQ developed the list of actual funding mechanisms to be considered as alternative funding sources for orphan site cleanups. Each of these funding mechanisms (summarized in the Chart on page 16) were presented to the Review Committee for Orphan Site Funding Alternatives, for their input and feedback. The Review Committee was comprised of stakeholders who were asked to provide DEQ with specific information about how the fee might be received by the community most directly impacted by the proposal. Because each member represented specific interests, distinct from the other members, it was agreed that the Committee was not to reach consensus on issues, or provide collective recommendations to DEQ. Rather, this forum provided the opportunity for Committee members to share their perspectives with DEQ and critique each funding source. The

perspectives communicated by members of the Review Committee have been incorporated into DEQ's analysis of each funding source.

While the Committee did not speak with one voice, DEQ observed some recurring themes which developed over the course of the Committee's four meetings. These few points are based on DEQ's observations and review of comments made by various committee members during the course of the meetings. They do not represent the group's perspective, nor are they recommendations. However, they are consistent with many of the larger policy issues identified by the Task Force and represent some of the inherent challenges in funding this type of program:

- ◆ General agreement with Task Force's conclusion that while a nexus is preferred, there does not seem to be a sufficiently equitable nexus available, therefore, a broad-based approach may be necessary;
- ◆ Frequently voiced discomfort with fees which have a strong nexus but are narrow, and fees which are very broad-based with virtually no nexus:
 - ⇒ Issues raised regarding funding sources with a tight nexus included:
 - it captures a small group of feepayers and therefore the burden is too great on this one group, who would be paying for cleanups which benefit many
 - there may be a nexus between *hazardous substances* and contamination, however the *individuals* paying the fees aren't those who have or will cause contamination:
 - Current products and companies pay for the result of past practices
 - Today, most use hazardous substances responsibly and won't cause orphans
 - Basing the fee on volume of substances usually means the largest – and perhaps most environmentally responsible – companies pay the most
 - ⇒ Issues raised regarding broad-based funding sources:
 - there is no connection between this large group and the cause of contamination, therefore no defensible basis for selecting this segment of the population to pay for this type of problem
- ◆ Remote nexus may be better than none
 - ⇒ While it may not seem fair to assess substances today for contamination caused in the past, it makes more sense than allocating the cost to those who are harmed by the contamination– e.g., the population whose water supply needs protection, or residents near a contaminated site
- ◆ Orphan sites do present a serious problem and need to be cleaned up
- ◆ Funding sources linked to public services provided by or through local governments may be an effective way to establish a broad-based fee, however they are also a popular mechanism
 - ◆ Therefore, citizen tolerance is low for increasing fees on items such as water and sewer use, property transaction fees, and the like.

DEQ's Conclusions on Orphan Site Funding Alternatives

None of the alternate funding sources shine through as clearly the most equitable, viable solution for funding orphan site cleanups. However, at a minimum, there are a handful of funding mechanisms with significant merit based on either a strong nexus or broad-based allocation, or a combination thereof. Throughout the policy, research and review process, DEQ has conducted an ongoing evaluation and analysis of each funding source considered. The analysis has been ever-changing, as new information is discovered through research efforts; new perspectives learned through the committee process; and as the comparison of sources to each other exposes different attributes of each fee. Section II of this report provides DEQ's analysis of the alternative funding sources. This analysis incorporates perspectives represented by members of the Review Committee, and reflects many of the values identified by the Task Force as crucial for achieving a stable funding source.

Selection of an appropriate fee(s) is directly influenced by the funding source characteristics that are given the most weight. It may be that minimal impact on individual fee-payers is critical. This can be achieved through a funding scheme which includes several different fee sources, or through a single broad-based funding mechanism which is equitable. A nexus may be the most important factor, however there are serious equity issues associated with many of the nexus based fees, as indicated by both the Task Force and members of the Review Committee.

There are other key considerations included in the review of funding alternatives. In addition to consideration of funding source characteristics, there are a few program-specific issues to be factored into the equation as well:

- ⇒ Orphan site cleanups currently require funding for (1) ongoing cleanup costs *plus* (2) continuing debt service from three previous bond sales
 - ◆ Suggestions have been made to DEQ that different funding sources be used to finance these two different types of costs
 - ◆ A portion of the debt service is currently paid by the Hazardous Substance Possession Fee
- ⇒ Continued reliance on bond sales extends significantly the length of time into the future for which orphan site funding will be necessary; revenue needs increase each biennium
 - ◆ The Orphan Site Funding Task Force recommended DEQ decrease reliance on bond sales *if* adequate funding sources could be instituted
 - ◆ Bond sales may be a part of the mix for funding orphan site cleanups, if it is judged appropriate to treat cleanup costs as long-term investments in returning a negative asset to potential economic use
- ⇒ There is no vehicle through which DEQ can estimate the number of orphan sites to be declared in the future, nor is there a method for determining how they will be created and with what hazardous substances
 - ◆ DEQ operates under the assumption that we will continue to identify orphan sites at the current rate

The following five pages, preceding Section II, provide a summary of all funding sources evaluated, along with some of their key characteristics and the impact on feepayers.

DEQ's ORPHAN SITE FUNDING ALTERNATIVES

Revenue generating capability is stated in terms of fee amount per year needed to fund the program: Without continued reliance on long-term bonds, funding sources must generate \$6 million/year (short-hand reference in the chart is: "sole source"). When not practical as a sole source, figures are provided in terms of raising \$1 million/yr. (\$1M).

This information is shown in the "Impact on Feepayer" column, and marked with a ♦

FUNDING SOURCE	DESCRIPTION	IMPACT on FEEPAyer	KEY CHARACTERISTICS	OTHER CONSIDERATIONS
VIABLE SOURCES				
Broad based Business Registration Fee	Annual fee on entities registered to conduct business in Oregon. Graduated fee based on size of business.	<ul style="list-style-type: none"> • # impacted: about 230,000 entities ♦ Sole source: avg. fee \$26/year – could vary widely with business size 	<ul style="list-style-type: none"> • Broad-based with negligible nexus • Raise significant revenue • Minimal impact on feepayer • Avoids some equity concerns that exist for income tax surcharge (see below) 	<ul style="list-style-type: none"> • Lack of sufficient nexus may result in feepayer opposition – equity issues ⇒ But, broad-based concept of all benefit from cleanups • Large number of feePAYERS, compliance may be difficult to ensure
Nexus based Business Registration Fee	Annual fee on entities registered to conduct business in Oregon that deal with substances which can cause contamination. Graduated fee based business size.	<ul style="list-style-type: none"> • # impacted: approx. 8,000 entities • Subset of broad-based business registration feePAYERS • Probably not feasible as sole source ♦ Avg. fee to raise \$1M: \$125/year 	<ul style="list-style-type: none"> • Nexus with cause • Broad-based within subset • One of few funding sources that is both broad-based and has nexus • Minimal impact on individual feePAYERS 	<ul style="list-style-type: none"> • Not based on quantity or hazard level, so no correlation between fee & risk ⇒ However, this group contributes to risk of creating contamination • Feepayer universe could be identified by data reported to State Fire Marshal
First Possession Fee	Modeled on WA State funding source which: <ul style="list-style-type: none"> • Bases fee on wholesale value of listed substances • Uses EPA's substance list ⇒ Petroleum probably excluded in OR • First possessor in State pays – not transporters 	<ul style="list-style-type: none"> ♦ Up to \$14 per \$1000 of wholesale value as sole source • Double Washington rate primarily because of inability to include petroleum products <ul style="list-style-type: none"> • 85% of WA revenue is from petroleum 	<ul style="list-style-type: none"> • Strong nexus • Stable source of revenue • Fee relatively low & proportionate to value • Moderate revenue generating capability • Cost more readily passed through, minimizing impact on individual • Administrative costs potentially significant at outset; but ongoing costs lower & stable 	<ul style="list-style-type: none"> • FeePAYERS not accustomed to fees based on product value • Potential that some products/businesses cannot pass through or absorb cost • Competition issues if fee substantially higher than Washington's
Solid Waste Disposal Fee	Per ton fee assessed on domestic solid waste disposed of or generated in Oregon.	<ul style="list-style-type: none"> • Minimal impact on most Oregonians despite significant increase in fees • Current fee 94 cents, including 13 cents for landfill orphans ♦ \$1.74/ton increase as sole source ♦ \$.29/ton increase to raise \$1M 	<ul style="list-style-type: none"> • Broad-based with minimal impact <ul style="list-style-type: none"> • many Oregonians contribute & each pay negligible amount • Administrative ease – mechanism currently exists 	<ul style="list-style-type: none"> • A portion of tipping fees already dedicated to solid waste orphan sites • Citizens may oppose as another increase in government-provided services • Little nexus

FUNDING SOURCE	DESCRIPTION	IMPACT on FEEPAVER	KEY CHARACTERISTICS	OTHER CONSIDERATIONS
OTHER SOURCES				
Modified Hazardous Substance Possession Fee (HSPF)	<p>Could modify existing HSPF, including:</p> <ul style="list-style-type: none"> • Base on use or possession • Charge only contaminating substances • Assess <i>all</i> contaminating substances • Base on relative risk of contamination • Reduce threshold quantity required for fee 	<ul style="list-style-type: none"> • Similar # impacted as under current SFM fee (about 4,000) • Lower threshold changes universe • Impact varies with quantities possessed/used • Substantial impact on fee payers if sole source ◆ To raise \$1M: avg. fee is \$250/yr. ⇒ range could be broad – current fees range from \$60 - \$5,500 	<ul style="list-style-type: none"> • Stronger nexus with risk than current fee because eliminate substances not capable of causing contamination ⇒ Tied to volume & risk ⇒ Constitutional restriction excludes some potential contaminants • Probably not a sole source • Mechanism exists • Admin. costs not significantly higher than current fee, after startup costs • Revenue may decline over time 	<ul style="list-style-type: none"> • Impact on some fee payers increases if pay on all listed substances, rather than single greatest quantity possessed • Fee payers view current fee as inequitable; proposed changes address most equity concerns ⇒ Although compliant handlers of hazardous substances still pay fee
Environmental Income Tax Surcharge	<p>Three options considered – surcharge on:</p> <ul style="list-style-type: none"> • corporate income tax • all business income taxes • personal & all business <p>Equity issues make corporate income tax surcharge the least preferable option.</p>	<ul style="list-style-type: none"> • Very small increase generates significant revenue ◆ All business tax, as sole source: average rate approx. 80 cents per \$1000 of taxable income • Could assess surcharge on both personal and all business income – use for broader environmental purposes 	<ul style="list-style-type: none"> • Strongly broad-based for business and personal income tax; less so for corporate income tax only • Nexus: ⇒ Many businesses connected to contaminants ⇒ Citizens use products containing or made with contaminants ⇒ All benefit from clean environment, more developable property, increased property values • Large revenue potential – negligible impact 	<ul style="list-style-type: none"> • Increase of income taxes not popular • One of the broadest based options • Significant start-up costs – potentially changing all tax forms and instructions • Based on income and/or business classification – rather than a “blind” business fee such as the Business Registration Fees above
Real Estate Transaction Fee	<p>Three variations of a real estate transaction fee:</p> <ul style="list-style-type: none"> • flat per transaction fee on property sales • percentage of sale price • mortgage origination fee – percent of amount borrowed 	<p>Sole source – for commercial transactions only:</p> <ul style="list-style-type: none"> ◆ flat fee: \$200 per transaction ◆ % of value: approx. \$192 per \$100,000 ◆ mortgage based fee: \$250 per \$100,000 borrowed • impact significantly less if assessed on <i>all</i> real estate transactions: \$40 per trans. or \$48 per \$100,000 	<ul style="list-style-type: none"> • Nexus with beneficiaries of cleanups • Because of cleanups: <ul style="list-style-type: none"> • More properties available for use • Blight reduced • Surrounding property values restored • All scenarios generate significant revenue • Much broader, less impact if include <i>residential</i> property transactions. 	<ul style="list-style-type: none"> • Strength is beneficiary side of nexus • Probably unsatisfactory to financing industry unless also provides adequate funding for affordable housing and preempts similar local fees • More equitable to assess all transactions, rather than just commercial

FUNDING SOURCE	DESCRIPTION	IMPACT on FEEPAyer	KEY CHARACTERISTICS	OTHER CONSIDERATIONS
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OTHER SOURCES – continued				
Petroleum Gross Operating Revenue (GOR) Fee	Annual fee on petroleum suppliers in Oregon. Based on individual supplier's share of total industry GOR, excluding revenue from motor & jet fuel. Similar fee assessed by ODOE.	<ul style="list-style-type: none"> • # impacted: About 12 suppliers • Fee depends on feepayer's share of total industry GOR for year ◆ To raise \$1M, based on recent figures, range is: ◆ \$3,000 (\$1M GOR) to \$148,000 (\$50 M GOR) 	<ul style="list-style-type: none"> • Nexus (cause-based) to petroleum companies ⇒ petroleum common contaminant, but only a subset of all contaminants • Easy to administer – existing mechanism • Probably not a sole source 	<ul style="list-style-type: none"> • Based on total revenue, not directly linked to the petroleum product • Significant portion of GOR could be from products that don't contaminate • Largest companies pay greatest share of fee
Petroleum Distillate Fee	Per gallon fee on petroleum distillate products sold in Oregon, excluding products used for propulsion of motor vehicles.	<ul style="list-style-type: none"> ◆ 1.1 cents per gallon as a sole source • Minimal impact on feepayers 	<ul style="list-style-type: none"> • Nexus to petroleum products ⇒ a common contaminant, but only a subset of all contaminants • Assessed on product directly – quantity based • Significant revenue source • Excludes some petroleum products 	<ul style="list-style-type: none"> • Administrative challenge to ensure only motor vehicle fuel escapes fee • May have disproportionate impact on home heating oil users • Declining use of home heating oil may reduce revenue over time
Replacement Tire Fee	Per tire fee assessed on retail sales of replacement tires (not on tires purchased with the vehicle).	<ul style="list-style-type: none"> ◆ About \$2.50 per tire as sole source ◆ About 50 cents a tire to raise \$1M • Retailers keep portion of fee for collection costs 	<ul style="list-style-type: none"> • Broad-based – over time, many Oregonians purchase tires • Easy to administer • Capable of raising sufficient revenue • Minimal impact on feepayer • Relatively stable source 	<ul style="list-style-type: none"> • Small nexus ⇒ arguably, auto operators contribute to contamination by creating demand for hazardous substances (e.g., anti-freeze, paint, petroleum, etc.) • Only automobile owners/operators pay
Water Use Fee	Fee assessed on water users through public water suppliers. <ul style="list-style-type: none"> • Either a per gallon use fee or flat fee per connection 	As a sole source: <ul style="list-style-type: none"> ◆ Per connection fee est. \$7/yr. ⇒ households same as large users ◆ Per gallon fee: about 4 cents per 1,000 gallons ⇒ large impact on some users, e.g. irrigation, industrial 	<ul style="list-style-type: none"> • Both broad-based and nexus • Broad-based stronger – 70% use public water • Nexus to benefits – e.g., clean water • Easy to administer • Stable source – sufficient revenue generation 	<ul style="list-style-type: none"> • Local governments and other suppliers may not be able to pass cost along to consumers because of “voter revolt” • Private wells escape fee
General Fund <i>[recommended for consideration by advisory groups]</i>	Appropriation from the Legislature for orphan site cleanups. (GF = General Fund)	<ul style="list-style-type: none"> • Competes with other programs funded through appropriations 	<ul style="list-style-type: none"> • Broadest based mechanism • Orphans can be viewed as society's problem; GF is lowest impact method for having society pay • Perceived more equitable than other broad-based fees 	<ul style="list-style-type: none"> • GF currently pays portion of debt service • Biennial allocation may be less stable than a dedicated fee source • Demand for GF already exceeds available revenue

FUNDING SOURCE	DESCRIPTION	IMPACT on FEEPAVER	KEY CHARACTERISTICS	OTHER CONSIDERATIONS
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LEAST VIABLE OPTIONS				
Property/ Casualty Insurance Premium Assessment	Fee assessed as percent of premiums for certain types of business property and casualty insurance.	<ul style="list-style-type: none"> • If assessed on subset of insurance categories: ◆ \$20 per \$1,000 of premium, as sole source ◆ \$3.33 per \$1,000 of premium to raise \$1M 	<ul style="list-style-type: none"> • Broadly distributed to all insured businesses • Nexus to risk of operating a business (majority of orphans caused by operation of a business) ⇒ But difficult to further narrow to risk of <i>contamination</i> 	<ul style="list-style-type: none"> • Administratively burdensome • Insurance industry regulations substantially complicate ability to assess this fee • Excludes self-insured and uninsured
Pesticide Registration Fee Surcharge	Surcharge on annual registration fee for pesticides.	<ul style="list-style-type: none"> • # impacted: 700 feepayers • Pay on 8,400 products ◆ Mid-range: \$120/product to raise \$1M • Probably too burdensome as sole source 	<ul style="list-style-type: none"> • Nexus to one of most common contaminants ⇒ but only represents a subset of all contaminants • Administrative ease – existing mechanism • Broad-based, assuming costs passed through 	<ul style="list-style-type: none"> • Moderate revenue generating capability – current structure raises \$700,000/year • Current fee represents primary funding source for OR Department of Agriculture’s pesticide program
Hazardous Waste Generator Fee Surcharge	Surcharge on annual fee currently assessed on generators of hazardous waste. Registration fee and a fee based on quantity of waste generated.	<ul style="list-style-type: none"> • # impacted: 700 feepayers • Current fee range: \$200 – \$15,300 ◆ Increase rate 8.5 times as sole source ◆ Increase rate 1.5 times to raise \$1M • Could broaden feepayer base: include currently exempt small generators 	<ul style="list-style-type: none"> • Nexus with some who deal with hazardous substances • Easy to administer if same universe of feepayers – mechanism exists ⇒ Costly to include exempt generators – no current reporting requirements 	<ul style="list-style-type: none"> • DEQ already seeking increase to sufficiently support Hazardous Waste program • Too burdensome to be significant source
Hazardous Waste Disposal Fee Surcharge	Surcharge on current disposal fee at State’s hazardous waste landfill.	<ul style="list-style-type: none"> ◆ As sole source, 120% increase (new fee = \$66/ton) based on current receipts • However, receipts are projected to decline 	<ul style="list-style-type: none"> • Nexus with some who deal with hazardous substances (in-state disposers only) • Administratively easy – mechanism already exists 	<ul style="list-style-type: none"> • Declining amounts disposed = decreasing revenue over time • If fees substantially increase, volume may decline further, along with revenue • Substantial portion of waste from out-of-state

FUNDING SOURCE	DESCRIPTION	IMPACT on FEEPAVER	KEY CHARACTERISTICS	OTHER CONSIDERATIONS
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LEAST VIABLE OPTIONS – continued				
Civil Penalties	Allocate a portion of civil penalties collected for violation of environmental laws to orphan site cleanups.	<ul style="list-style-type: none"> • Civil penalties assessed under existing environmental laws ◆ Impact on feepayer is unchanged • DEQ collects less than \$1 million/yr. on all civil penalties 	<ul style="list-style-type: none"> • Strong “polluter pays” nexus • Although may not be type of pollution that causes contamination (e.g. air emissions) • Simple to administer • Very small revenue generating potential 	<ul style="list-style-type: none"> • Can create perception of “bounty hunting” <ul style="list-style-type: none"> • Could reduce by allocating fixed amount to orphan cleanups • Diverts funds from General Fund
Beverage Container Excise Tax	Fee added to existing container deposits. <ul style="list-style-type: none"> • Existing deposit returned to consumer, additional fee goes to State. 	Analyzed and evaluated by the Department. Removed from final list of potential funding alternatives for orphan sites because being considered by Governor to fund other programs.		
Unrefunded Beverage Container Deposit	Distributors of beverage containers with deposits remit unclaimed deposits to the State (for unreturned containers).	Analyzed and evaluated by the Department. Removed from final list of potential funding alternatives for orphan sites because being considered by Governor to fund other programs.		



SECTION II

Funding Alternatives

This section presents an analysis of funding alternatives researched and reviewed. For each funding source, the following information is provided:

- Background information: A description of each source is provided, along with information about who or how many feepayers would be affected and an estimate of the rate needed to generate revenue at two levels:
 - \$6 million a year – sufficient to fund the entire orphan program, if bond funding is discontinued
 - \$1 million a year– to allow consideration of various options:
 - Continued bond financing or partial bond financing
 - Combining funding sources if, for example, one source cannot reasonably generate the amount needed
- Discussion: Comments and observations are provided about each funding source. The discussion includes both positive and negative attributes that the Department has learned either from its own analysis, or from the input of the Review Committee and other interested parties.
- Conclusion: The Department’s overall evaluation of the funding source, considering the facts and input gathered.

Grouping: To facilitate review, the alternatives are grouped into three categories:

- ⇒ Most viable options
- ⇒ Other potential sources
- ⇒ Least viable options

The chart preceding this Section summarizes the detailed information presented here for all the alternatives.

HOW THE SOURCES WERE EVALUATED: FUNDING SOURCE CHARACTERISTICS

Many characteristics were considered in evaluating the options; three were most critical in determining viability:

- Ability to generate sufficient revenue
- Ease of administration
- Who would be impacted and how

The first two are straightforward: The funding mechanism must be able to generate all or a portion of the up to \$6 million per year needed to fund orphans, without placing an undue burden on the feepayers, and significant additional State resources should not be needed to collect it.

The third attribute addresses the question “which segments of Oregon’s population should pay to clean up orphans?” Each funding option was examined from two perspectives:

Nexus: The cost of most government activities that protect the environment are borne by those who cause, or have the potential to cause, pollution. By definition, however, orphans are those where the people responsible for the problem either can’t be identified or can’t afford the cleanup. As a result, it has been difficult to identify a basis for funding the program – either a subset of the population or a set of substances that are most closely associated with the orphan problem. Nonetheless, the Orphan Site Funding Task Force advised that an ideal funding source would have **nexus with the cause of orphans** and it has remained an important element in evaluating the funding schemes.

From another perspective, the funding source could also have **nexus with those who benefit** from, orphan cleanups. Those who benefit, for example, from clean water or increased property values resulting from cleanup, would satisfy this type of nexus requirement.

Broad-based funding. Alternatively, if there isn’t a reasonable basis for charging any particular group, the costs should be shared by as large a population as is possible. By spreading costs broadly, the share borne by each individual can be relatively small and the sense of equity is generally improved.

MOST VIABLE OPTIONS

Broad-based Business Registration Fee

Description: Annual fee paid by all entities registered to conduct business in Oregon. The universe of entities subject to fee is those registered with Secretary of State. The fee would likely be graduated on some measure of business size, such as number of employees or revenues.

Attributes:

- Spreads cost as broadly as possible across the business community
- Generates significant revenue with minimal impact on feepayers
- Administratively easy because: (1) universe is identified and (2) mechanism is simple, although the large size of the universe could make it difficult to ensure compliance
- Avoids inequities of funding mechanisms based on income or form of business organization (e.g., corporation, partnership)

<p>Broad-based Business Registration Fee continued</p>
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Revenue generated and impact:

Estimates based on number of entities registered with Secretary of State (Business Registry) and associated revenue generated for 1994-95

Number impacted:

- At least 230,000 entities (excludes about 20,000 non-profit organizations)
- Includes any entity doing business in Oregon –whether domiciled in-state or out-of-state
- Includes all forms of organization, e.g., corporations, partnerships, etc.
(Also covers registration of “assumed names,” which may overstate number of actual operations)

Impact per feepayer:

Assume that fee would be graduated – tied to size or type of business.

The Secretary of State registration fee varies greatly with type of registration – from \$10 every two years to \$440 a year. The fee range for orphan sites would need to be decided. Figures below are average (mean).

Amount generated per year	Average Fee
\$ 1 million	\$4.35
\$ 6 million	\$26.00

Discussion:

- This option is not based on nexus with cause, and relies primarily on being very broad-based
 - No effective way to identify businesses with risk of contaminating, so this method charges all
 - Comes close to having “society” pay for orphans – much like General Fund option
 - Shifts focus from those who potentially caused, or will cause, orphans to the benefits to society
 - As a result, it can be perceived as abandoning the concept that individuals should be held responsible for causing pollution
- May be more equitable to have all businesses pay – either equally, or on some progressive scale – than to use a more arbitrary factor such as:
 - form of business organization (e.g., only taxing corporations)
 - profit – less profitable companies as likely, if not more so, to create orphans
- Need to consider whether not-for-profit organizations, which register with the Secretary of State, should be exempt
- Large number of feepayers
 - May be difficult to ensure compliance
 - Cost of collection may be disproportionately large relative to small individual fees

Broad-based Business Registration Fee
continued

Conclusion

This alternative acknowledges the difficulty of justifying an orphan funding source based on nexus. It assesses only the business community but does not then attempt to apportion cost relative to either the causes or benefits of cleanups. The size of the universe allows the fee to be relatively low, and therefore unlikely to unduly burden any particular business. The option envisions varying the fee with the size of business, recognizing that large businesses normally have a greater ability to pay. On the other hand, size does not necessarily relate to the businesses which are the causes of the contamination. An equitable, but simple, measurement of size would need to be determined.

The members of the Department's Review Committee, while not endorsing the business fee, did seem to find fewer drawbacks than with other alternatives. With this fee, no groups are identified as those who "should" pay for orphans, so particular interest groups should not feel treated unfairly. Recognizing that some new revenue source might be needed, the sentiment seemed to be that this option met the criteria of spreading the cost broadly and fairly. Although it only distributes the cost to businesses, and not all Oregonians, the fee is still based on the concept that cleaning up orphans is everyone's responsibility.

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**Nexus-based Business Registration Fee**

**Description:**

Annual fee paid by certain entities registered to conduct business in Oregon.

- Assesses only those that deal with substances that can cause contamination
- Like broad-based fee, would most likely be graduated based on size
- List of relevant substances to be determined – likely to include substances listed by EPA under statutes governing Superfund cleanups, pesticides and petroleum

**Attributes:**

- Incorporates both broad-based and nexus attributes
  - Universe of feepayers determined by association with contaminants
  - Otherwise does not rely on nexus – fee amount not based on risk of causing contamination
- Varying fee based on business size attempts to address equity, ability to pay
- Moderate to good revenue generation without significant impact on feepayers
- One of few funding mechanisms identified that relates to all major types of contaminants
- Mechanism to identify feepayer group already exists
  - Anticipate that information could be generated from State Fire Marshal hazardous substance survey, with some modifications

Nexus-based Business Registration Fee  
continued

**Revenue generated and impact:**

**Number impacted:**

Estimate roughly 8,000 entities (figure includes entities with some forms of petroleum; may be higher if all petroleum products included).

**Impact per feepayer:**

Approximate average fee provided. Fee proposed to vary with size of business – range not determined.

| Amount generated per year | Average Fee |
|---------------------------|-------------|
| \$ 1 million              | \$125       |
| \$ 6 million              | \$750       |

**Discussion:**

In the course of the Review Committee's deliberations, it was suggested that the Department add to the list of alternatives a facility registration fee, to be charged to all entities responding to the State Fire Marshal's (SFM) annual hazardous substance survey. This concept surfaced in earlier efforts to address concerns about the existing hazardous substance possession fee. Although the proposal would spread the cost more broadly, lessening the impact on individual feepayers, it would also continue to assess entities that have little or no relationship to contaminating substances. This is because the SFM survey requires employers to report substances that are deemed hazardous for a variety of reasons – including, for example, because of risk of explosion– and not necessarily because of toxicity.

To address this deficiency, the alternative presented assesses only employers reporting substances that could cause contamination, most likely those listed by EPA under regulations governing cleanup (CERCLA), pesticides (FIFRA) and petroleum products. DEQ estimates that about 8,000 employers would be assessed, or about half of the approximately 16,500 that reported hazardous substance possession in the SFM 1995 survey. (A total of 35,500 employers within certain standard industrial classifications were surveyed.)

**Conclusion**

This alternative maintains some nexus to the cause of the problem, without attempting to assign responsibility. It is based on an acceptance that businesses associated with contaminants do still have more risk of contaminating a site than those which don't deal directly with the substances. Having determined that this is the appropriate group to bear at least a portion of the cost, the cost is then spread broadly and impartially, without regard to risk. Although the universe is much smaller than the business registration fee, a fee could still be established at a level that would keep the impact on individual businesses relatively low. The smaller number of feepayers may, however, prevent its use as a sole funding source.



Nexus-based Business Registration Fee  
continued

***Conclusion – continued***

This fee option has perhaps the strongest nexus to contaminating substances, because it is possible that possessors of all types of hazardous substances – including all petroleum– could be included in the universe of fee payers. This question has not yet received a formal legal review.



**First Possession Fee**

***Description:*** Fee based on wholesale value of substances with the potential to cause site contamination. Assessed on the first entity to possess the substance in the State, excluding transporters. Similar to cleanup funding source in the State of Washington, which taxes substances listed by EPA under cleanup, pesticide and petroleum statutes. Oregon constitution likely to preclude assessing most petroleum products, which accounts for 85% of Washington’s revenue.

***Attributes:***

- Strong nexus with contaminating substances
- Good revenue generating capability
- Based on value, rather than quantity possessed
- Addresses some of concerns about Oregon’s possession fee
- Addresses some competitive issues by being similar to Washington’s assessment
- Stable source – tends to increase with inflation

***Revenue generated and impact:***

Number impacted: Unknown

Impact on fee payer:

**Washington data:**

- Rate: \$7 per \$1,000 of wholesale value
- Excluding petroleum products, generated about \$5.9 million in 1994

**Oregon estimated rates, adjusting for difference in economies:**

| Amount generated per year | Rate per \$1,000<br>(estimated range) |
|---------------------------|---------------------------------------|
| \$ 1 million              | \$1.80 – \$2.40                       |
| \$ 6 million              | \$10.80 – \$14.40                     |

The \$7 per \$1,000 rate would generate an estimated \$3 to \$4 million per year in Oregon.

**Discussion:**

- Better nexus than existing possession fee
  - Only charges products with risk of contamination
  - Assesses all products, not just one of greatest quantity – better relationship to risk
    - ⇒ But charges more to larger businesses, which are arguably more likely to have better environmental management practices
- Not very broad-based
  - Like other fees based on possession of substances, assesses only a subset of businesses
  - Directly assesses fewer entities than Oregon's possession fee
    - ⇒ but cost may be more readily passed on to successive purchasers of product and end products, because fee based on product value
- Different economic impact than current possession fee
  - Only assessed on first possessor – eliminates potential to duplicate charges as substance moves through economy
  - Based on wholesale value, so avoids problem of fee being out of proportion to value of substance
  - Likely to affect different businesses
- Administrative cost issues
  - No existing mechanism for substance possessors to report wholesale value
  - Significant initial cost to communicate to feepayers, e.g., definition of “first possessor” and what substances are included; ongoing costs to update list
- Reliance on self-reporting creates risk of noncompliance
  - ⇒ Similar risk under current hazardous substance possession fee
- Another alternative is to tax end-users of products utilizing hazardous substances
  - Builds cost in for those creating demand, receiving benefit of product
  - ⇒ Option not evaluated – appears too complex to measure risk at product end-point

**Conclusion**

Of those alternatives based on nexus with the orphan issue, this alternative best meets the viability characteristics. It improves upon the existing hazardous substance possession fee by assessing only those substances that can cause a contaminated site. It is less burdensome to many because it is based on the product's value and is therefore easier to share the cost with end users who also share some of the responsibility. Competitive issues are alleviated because the same fee is assessed in Washington State. The fee can generate a significant portion of the revenue required, although it cannot be a sole source without setting the fee at a higher rate than Washington's.

**Solid Waste Disposal Fee**

**Description:**

Increase existing fee assessed per ton of solid waste generated or disposed of in Oregon.

**Why considered and attributes:**

- Used in other states to fund cleanups; endorsed as an equitable source
- Good revenue generating capability
- Very broad-based – assuming that cost is passed on, most Oregonians will contribute
- Minimal impact on most “end-users”
- Virtually no administrative cost to State – increase in amount already collected from landfill operators and transporters

**Revenue generated and impact:**

**Number impacted:**

About 60 waste handlers now pay this fee.

If passed on, affects all consumers billed for waste generation.

**Impact on rate:**

Current 81 cent per ton fee for solid waste programs generates \$2.8 million a year.

Total fee is 94 cents, including 13 cents to fund solid waste orphan sites (municipal landfills).

| Amount generated per year | Additional Orphan Fee |
|---------------------------|-----------------------|
| \$ 1 million              | \$ .29/ton            |
| \$ 6 million              | \$ 1.74/ton           |

**Discussion:**

- Orphans can occur in any community – this mechanism could allocate cost statewide
- Potential that haulers will not be able to pass costs on to customers
  - Examples of “voter revolt” forbidding municipalities to increase rates
  - Local government concern – hauler rates already an issue
- If increase is significant, consumers may dispose illegally
- Significance of increase may be more perception than reality
  - ⇒ Maximum increase is about 9 cents per 100 pounds
  - ⇒ Unlikely to adversely affect the typical consumer
- Lack of nexus with industrial orphan sites – best nexus is with orphan sites that are landfills
  - Solid waste is already assessed for this purpose
  - Municipalities are required to fund a portion of landfill cleanups before solid waste orphan site funds are made available

Solid Waste Disposal Fee  
continued

**Conclusion**

Of the alternatives based on the concept that orphan site cleanups are the responsibility of all Oregonians and the cost should be borne by all Oregonians, this one meets the viability characteristics. The fee distributes the cost very broadly, and the impact on individual consumers is not unduly burdensome. It avoids the additional costs of establishing a new funding mechanism and the fee is a simple one for DEQ to collect. It is important to note that this mechanism cannot be justified on its relationship to orphans, but is rather a vehicle for distributing the cost of an important environmental objective.

**OTHER POTENTIAL SOURCES**

**Modified Hazardous Substance Possession Fee**

**Description:** Existing Oregon hazardous substance possession fee, adjusted to address some of the reasons this fee has been criticized as an orphan site cleanup revenue source. A number of different scenarios were considered, altering a number of components.

The primary change, for all options, is to assess only substances with a risk of contamination. Additional work is required to define the list of substances subject to the fee, but an appropriate starting point would be those substances identified under federal environmental regulations governing pesticides, petroleum and Superfund cleanups. Other changes considered are:

- Tie fee to total quantity of substances used during a year, rather than the greatest amount possessed
- Charge for all substances possessed or used, rather than single largest quantity
- Include non-motor vehicle petroleum products (current fee excludes all petroleum)
- Scale fee to toxicity, instead of current hazard ranking
- Reduce threshold quantity of substance possessed or used to compensate for smaller number of substances possessed:
  - prevents unduly burdening remaining smaller universe of fee payers
  - assesses more of potential universe, capturing others who run risk of contamination

Modified Hazardous Substance Possession Fee  
continued

**Attributes:**

- Better nexus than current possession fee as an orphan site source
- Mechanism exists, although modifications required (varies with option selected)
  - Little change in information required of feepayer
  - Moderate increase in administrative costs
- Adequate revenue generated to partially fund program

**Revenue generated and impact:**

Due to number of variables considered for modification, no single fee amount is provided.

**Number impacted:**

- Estimate that number of facilities impacted would be similar to the number paying the existing possession fee – about 4,000
  - ⇒ Number decreases because assessing contaminating substances only
  - ⇒ But, offsetting increase from reducing threshold quantities and including petroleum substances (where permitted by constitution), which is now excluded

**Impact on feepayer:**

- Fees would vary greatly among facilities, based on substances possessed, as is currently true. (Existing fee ranges from \$60 to \$5,500 a year.)
- The average fee per facility would be \$250 a year to raise \$1 million and \$1,500 for \$6 million.

**Discussion:**

- Nexus improved by better relating fee to risk of contamination:
  - Charging only contaminating substances – eliminates inequity of charging those possessing only substances that pose fire risk
  - Assessing all substances, rather than single largest – recognizes all risks
  - Changing hazard ranking and/or charging on amount used – reflects risk of substance to environment
  - ⇒ However, risk of substance causing contamination does not necessarily correlate with risk of user causing contamination or causing an orphan site
- Should improve perception of fairness for those currently assessed on substances not associated with contamination
  - ⇒ May still have to pay fee on a different substance(s), but fee will be based only on those that could cause contamination
- If fee is correlated directly with quantity possessed or used, it would concentrate burden on a few companies using large quantities
  - ⇒ A mechanism to vary fee with volume, but not directly, is necessary to avoid this problem – similar to existing SFM volume ranges

Modified Hazardous Substance Possession Fee  
continued

**Discussion – continued:**

- Administrative cost increase
  - SFM survey provides most of the information required for these changes
  - Changes (e.g., multiple substances, or use, rather than possession) would require additional quality assurance on much more data
  - Additional work to calculate this fee on a different basis than existing SFM fee
- Members of the industrial community prefer removing orphans from SFM fee structure

**Conclusion**

This option is worth consideration. It addresses many of the criticisms of the existing fee and could therefore enjoy greater acceptance. It also provides a way to include some petroleum products in the revenue base, allowing for partial replacement of the petroleum industry's "share," which was lost when the load fee was invalidated. Because the feepayer universe is relatively small, the fee can probably not be expected to generate sufficient revenue for the program's needs. If the fee can be kept somewhat low, fee payers are less likely to feel the fee is inequitable.



**Environmental Income Tax Surcharge**

**Description:** Surcharge on income tax rates dedicated to orphan cleanups. Three scenarios considered:

- Corporate excise (in-state companies) and income (out-of state) taxes
- All business income (on all forms of business, not simply corporations)
- Both all business and personal income

**Attributes:**

- Federal Superfund program partly funded by a corporate environmental income tax
- Strongest rationale for all three scenarios is that they are broad-based
- All scenarios generate significant revenue with minimal impact on taxpayer
- Corporate and personal taxes very easy to administer; all business income more complex
- Some nexus to both causes and benefits:
  - the whole economy benefits from clean environment, more usable properties
  - for business tax – all orphan sites have been caused by business activity

|                                                 |
|-------------------------------------------------|
| Environmental Income Tax Surcharge<br>continued |
|-------------------------------------------------|

**Revenue generated and impact:**

**Corporate income/excise tax:**

- Based on 1993 data, to generate \$6 million: \$1.60 per \$1,000 of net income:

| Amount generated<br>per year | Current<br>Rate | Percent<br>Increase | New<br>rate |
|------------------------------|-----------------|---------------------|-------------|
| \$ 1 million                 | 6.6%            | .03%                | 6.63%       |
| \$ 6 million                 | 6.6%            | .16%                | 6.76%       |

**All business income tax:**

- Different rates for different forms of ownership
- Tax revenue currently generated by other business sources exceeds corporate/excise revenue – estimate that corporate rate increase above would be halved

**All income taxes:**

Not estimated. However, personal income taxes typically contribute to the state’s General Fund about 10 times the amount generated by corporate income taxes. This would imply that the impact to raise \$6 million would be about 15 cents per \$1,000 of income.

Only the corporate and all business tax options were evaluated by the Review Committee. To further strengthen the broad-based attribute, the Department also considered adding a surcharge to all income taxes, including personal.

**Discussion:**

- All three scenarios are broad-based
  - ⇒ Although both individuals without income and businesses without profit escape tax
- For either the all business or all income tax scenarios, the rate increase required is extremely small and would raise more than required for orphans annually
  - ⇒ Alternatives:
    - Broaden purpose and supplant other revenue sources
    - Limit period of collection and create an orphan trust fund
- For all three scenarios, some nexus to benefits of cleanups, but:
  - Some businesses, such as those relying on a clean water supply or those adjacent to contaminated sites, will benefit more directly than others
  - Similarly, some individuals benefit more than others – such as those relying on threatened groundwater for drinking water

Environmental Income Tax Surcharge  
continued

**Discussion – continued:**

- Nexus of either business tax scenario to causes of orphans is not strong:
  - An across-the-board surcharge would tax businesses associated with contaminating substances the same as those that aren't
    - ⇒ Could consider taxing only the subset of businesses associated with hazardous substances
    - ⇒ But income tax mechanism does not lend itself to differentiating among categories of companies
  - Size of income not well correlated with risk of contamination
  - Out-of-state companies are taxed even if they don't have physical operations in Oregon – and therefore pose less risk of contaminating
- Corporate excise/income tax excludes income from other forms of business (e.g., partnerships)
  - arbitrary delineation based on how business is structured
  - more equitable to tax all business types
- All business tax is more complex to administer– affects more processes; greater effort to determine equitable rates across forms of business organization
- Revenue not subject to long-term decline – which can be a problem with sources based on activities discouraged by environmental regulation
  - ⇒ But income taxes, especially business taxes, fluctuate with economic cycles

**Conclusion**

This option is a broad-based way for all Oregonians to share the obligations and benefits of cleaning up orphan sites, without placing a drain on existing General Funds. The impact on individuals, especially if all taxpayers are included, is negligible. In fact, the increase required to fund orphans alone is so small for the two broader options (all business or all income taxes) that it is not practical to implement this solely as an orphan funding source. The corporate tax is not preferred because of its arbitrary distinction between corporations and other types of business organization.



**Real Estate Transaction Fee**

**Description:** Fee assessed upon sale of property, either on all property transactions or limited to commercial and industrial sales. Three alternatives considered: a per transaction fee; a fee assessed as a percent of sales value; a fee assessed as a percent of amount mortgaged to purchase property.



Real Estate Transaction Fee  
continued

**Why considered and attributes:**

- Nexus is with benefits of orphan cleanups:
  - Property values are increased in vicinity
  - Makes more property available for development
- All options easily generate sufficient funds for orphans with minimal impact on feepayer
- Low administrative costs
- Other states have considered as a cleanup funding source

**Revenue generated and impact:**

**Number impacted:**

30,000 commercial/industrial transactions per year

150,000 total real estate transactions per year

**Impact on feepayer:**

Per transaction rate estimated from existing fee assessed to fund Dept. of Revenue programs.  
 % of sales estimated from statewide sales estimates from Dept. of Revenue figures.  
 Mortgage-based assessment not shown – percentages are similar to the percent of total sale estimates.

| <b>Commercial/Industrial Transactions</b> |                        |                                      |
|-------------------------------------------|------------------------|--------------------------------------|
| <b>Amount generated per year</b>          | <b>Per transaction</b> | <b>% of sales (\$ per \$100,000)</b> |
| \$ 1 million                              | \$ 33                  | .03% (\$ 32)                         |
| \$ 6 million                              | \$200                  | .20% (\$192)                         |

| <b>All Transactions</b>          |                        |                         |
|----------------------------------|------------------------|-------------------------|
| <b>Amount generated per year</b> | <b>Per transaction</b> | <b>\$ per \$100,000</b> |
| \$ 1 million                     | \$ 6.65                | \$8                     |
| \$ 6 million                     | \$40.00                | \$48                    |

**Discussion:**

- Excellent revenue generating capability, with minimal impact on feepayer
  - Typical levy in other states is 1% of sales
  - As with income tax options, generates far more than needed for orphans alone
- Impacts a large universe if assessed on all transactions, and a fairly large percentage of business community over time

Real Estate Transaction Fee  
continued

**Discussion – continued:**

- Nexus is with benefits of cleanup program
  - Averts need to connect cause of orphans with current business activities
    - ⇒ But few properties benefit directly from orphan cleanups
  - More closely related to concept that orphans are society's problem – need to invest in future, rather than look to past causes of the problem
- Percent of sales value option is more equitable – in general, the larger the transaction, the greater the potential to gain from cleanup
- Per transaction fee easier to administer – not always easy to identify dollar value of property in commercial sales transactions
- Fee more equitable if broadly assessed to all transactions – benefit or connection is not much stronger for commercial properties
- History of opposition to this type of fee, especially for local government funding
  - Potential opposition from banking and real estate industry
  - May prefer other uses of real estate fee, if one imposed

**Conclusion**

The connection between this fee payer group and the benefits of orphan cleanups appears to be more difficult to establish than the nexus with hazardous substances, although it is related to the redevelopment purpose of many of the cleanups. The fee is an acceptable mechanism to distribute cost across either the business community or the general population. It is not, however, the most preferred broad-based method, because it somewhat arbitrarily assesses those engaging in real estate transactions. It easily raises the amount of revenue needed for orphans and therefore remains a potential alternative.

**Petroleum Gross Operating Revenue Fee**

**Description:** Annual fee assessed on petroleum suppliers. Each supplier's annual fee is determined by a formula that allocates the total revenue to be generated based on the supplier's proportionate share of all suppliers' gross operating revenue (GOR) from certain products and services. In order to comply with Oregon's constitutional restrictions, the GOR used for the calculation excludes revenue from products used for motor vehicle propulsion. This mechanism currently provides limited revenue for the Oregon Department of Energy; the ODOE formula excludes jet fuel from GOR, in addition to the motor vehicle exclusion.

Petroleum Gross Operating Revenue Fee  
continued

**Why considered and attributes:**

- This fee was one of the sources included in the 1989 orphan legislation as an alternative to the petroleum load fee<sup>1</sup>
- Taxes on petroleum are a common cleanup funding source nationally because petroleum products are a frequent cause of contamination
- Nexus to suppliers of petroleum
  - ⇒ Although nexus is not, for the most part, to the product itself
  - ⇒ And petroleum products are a subset of all contaminants
- Narrowly based in terms of feepayers directly assessed

**Revenue generated and impact:**

**Number impacted:**

12 petroleum suppliers

**Impact on feepayers:**

Based on ODOE figures

(GOR definition excludes both motor vehicle jet fuel revenues)

| Range of Fees             |                                       |                                         |
|---------------------------|---------------------------------------|-----------------------------------------|
| Amount generated per year | Company with lowest GOR (\$1 million) | Company with highest GOR (\$50 million) |
| \$ 1 million              | \$ 3,000                              | \$148,000                               |
| \$ 6 million              | \$18,000                              | \$888,000                               |

**Discussion:**

- Assesses the very small universe of suppliers that import petroleum into Oregon
- Many of the products assessed bear no relationship to contamination – e.g. food products sold at convenience markets operated by petroleum suppliers
  - Inequitable for companies that have a higher percentage of non-petroleum sales
  - In many cases, cost will not be passed on to end users of petroleum products – where much of risk can exist
- Inconsistent treatment of petroleum products
  - ⇒ Revenue from some petroleum products (e.g. heating oil) is assessed
  - ⇒ But petroleum used for motor vehicle propulsion isn't, although risk of contamination is similar

<sup>1</sup> Replacement funding options were to be activated if the Oregon Supreme Court declared the petroleum load fee unconstitutional, but the question did not reach the Supreme Court.

Petroleum Gross Operating Revenue Fee  
continued

**Discussion – continued:**

- Constitutional restriction makes it difficult to equitably assess petroleum in relationship to potential for contamination
  - This is one of few ways to assess the petroleum industry without violating Oregon's constitution
- Prevalence of petroleum contamination in relationship to orphan sites:
  - Other groups of substances generate similar, if not higher, cleanup bills
  - ⇒ Petroleum products are prime contaminants at two of the most costly orphan cleanups to date
- Assessing fee retrospectively, rather than by unit of product, also makes it more difficult to pass cost to end user

**Conclusion**

This option, although flawed, remains viable because it is one of the few mechanisms by which the petroleum industry can share the cost of cleanup within the bounds of the State constitution. There are two reasons why it is practical only as a partial source. One is the size of the burden on a few companies; the other is that petroleum represents only a portion of contaminating substances.

**Petroleum Distillate Fee**

**Description:** A per gallon fee assessed on the sale of petroleum distillate products not used for motor vehicle propulsion (and thus protected from taxation by the constitution). Examples are diesel fuel for stationary machinery, heating oil and kerosene.

**Why considered and attributes:**

- Considered by 1993 Legislature as potential alternative to petroleum load fee
- Similar to Petroleum Gross Operating Revenue:
  - Taxes on petroleum are a common cleanup funding source nationally
  - Petroleum products are a common source of contamination
- More directly assesses petroleum products, although the largest use – for motor vehicles – escapes the fee
- Raises sufficient revenue without undue burden on feepayer or product
- Assesses a moderate-sized universe directly, but can be fairly readily passed on
  - This broadens the base of the fee
  - End user pays as well

Petroleum Distillate Fee  
continued

**Revenue generated and impact:**

- Based on 1993 industry-estimated petroleum consumption in Oregon
- Using the figure for non-transportation uses – 522 million gallons – which may exclude more than required by the constitutional restriction:

| Amount generated per year | Fee per gallon    |
|---------------------------|-------------------|
| \$ 1 million              | 2/10ths of a cent |
| \$ 6 million              | 1.1 cent          |

**Discussion:**

- Equity issues
  - Taxes only non-motor vehicle fuel, not because of relationship to risk, but because of constitutional provisions
  - A large portion of petroleum used for heating oil – especially burdensome for users of home heating oil
- As with GOR, although there is nexus with petroleum
  - Petroleum is not the only or most significant source of contamination
  - Argues against this as the sole funding vehicle
- Costly to ensure that only constitutionally protected uses escape the fee
- Cheaper to assess higher up chain of users/suppliers, but could violate other constitutional and federal restrictions
- State also lacks funding to clean up heating oil leaks – none of which have been or are likely to be high enough priority to be orphans
  - Using this funding for orphans competes with possible source for that purpose
- May be a regressive tax: many residences relying on heating oil have low incomes

**Conclusion**

Like the Petroleum Gross Operating Revenue (GOR) option, this source remains as a potential source, because it is one of the few ways permitted by the constitution to include petroleum in the funding scheme. The better connection to the petroleum product and relative ease with which the cost can be absorbed argue for this option over GOR. Consideration should be given to using this source to support non-orphan (lower priority) heating oil cleanups as well.



## Replacement Tire Fee

**Description:** Per tire fee assessed on each new tire used to replace the original equipment. Collected by retailers, who would retain a portion of fee to cover administrative costs.

### Why considered and attributes:

- Was previously successfully used to fund waste tire cleanups and to encourage reuse
- Good revenue generating capability, with minimal impact on end user or on competition
- Relatively broad-based over time, based on the preponderance of vehicle ownership
- Very little nexus to contamination, although use of vehicles does generate demand for contaminating substances

### Revenue generated and impact:

Allowing for retailer administrative charge (15 cents per tire):

| Amount generated per year | Fee per tire |
|---------------------------|--------------|
| \$ 1 million              | \$ .50       |
| \$ 6 million              | \$2.50       |

### Discussion:

- Almost no nexus between tires and contaminated sites
- Inequitable to assess tires for general cleanups
  - Tire industry participated in effort to cleanup tire piles, but that is largely complete
- Assessed only at retail level – fleets and lessors escape direct taxation
  - ⇒ No fee or tax is uniformly broad-based
- The fact that revenue generation is good and relatively painless is not sufficient
  - There should be some connection with the problem
    - ⇒ But could be a mechanism for assessing environmental costs somewhat broadly
- Difficult to explain to Oregon consumers; not accustomed to fees on retail products

### Conclusion

This option fairly broadly assesses the cost of a clean environment on the public. Like the real estate fee, it arbitrarily hits a subset – although a fairly large one – of individuals buying this product. It can, however, generate a considerable sum without excessively burdening consumers.



**Water Use Fee**

**Description:** Fee on users of public water supply. Two options considered: a fee per connection or per gallon of water used.

**Why considered and attributes:**

- Grew out of Orphan Site Funding Task Force discussion concerning nexus – that those who benefit from cleanups can also be expected to bear the cost
  - Water users benefit from orphan site cleanups, which protect public water supplies threatened by contaminants
- Fee is broad-based:
  - 70% of Oregonians rely on public drinking water systems
  - Uses other than drinking – e.g., irrigation, industrial processes – would also be assessed
- Minimal impact on most users
- Billing mechanism exists through water suppliers

**Revenue generated and impact:**

**Number impacted:**

About 875,000 public water connections

**Effect on feepayer:**

Per connection figures based on data from Oregon Dept. of Health. Expressed as an annual figure.

Little reliable data was available on volume of water supplied through public systems. Based on one estimate of use, the fee to raise \$1 million would be less than one cent per 1,000 gal.

| Amount generated per year | Per connection |
|---------------------------|----------------|
| \$ 1 million              | \$ 1.15/year   |
| \$ 6 million              | \$ 6.85/year   |

(An alternate option, which was not evaluated, is an assessment on dams for use of water as a power source. The cost per gallon under this option is assumed to be substantially less.)

**Discussion:**

- Relationship to water use
  - Many orphans involve area-wide groundwater contamination, where those responsible may never be known – more feasible to charge for benefits of cleanup instead
  - Includes all water use – both surface water and groundwater are protected by orphan cleanups
- Per gallon fee best relates cost and benefit, but may place undue burden on large water users
- Per connection fee would be more regressive
- Inequitably charges those on public water systems; others benefiting from clean water would not pay, e.g.:
  - Drawdowns from surface water for irrigation; private wells

**Discussion – continued:**

- Concerns about voter unwillingness to pay for services
  - Incremental increases for various purposes accumulate
  - In several municipalities citizens have passed initiatives to roll back fees
  - Local governments bear brunt of serving as state's "tax collector"
- Citizens may have difficulty seeing relationship between orphans and clean water
  - Water assessment may be more appropriately assessed locally, when water is directly threatened by an orphan site
  - Example of City of Corvallis using water funds to pay its portion of a federal cleanup
- Administrative cost of assessing through large number of public water suppliers could be high

**Conclusion**

Protection of the state's water resources is probably the most frequent reason action is taken at orphan sites. A water assessment is one of the few methods identified that relates the fee to beneficiaries of orphan site cleanups. In addition, the cost would be spread broadly to many Oregonians and it is possible to keep the impact low. Attaching this fee to publicly provided services, however, risks voter backlash, especially for those whose water is not currently affected by an orphan site.

As noted above, this fee might be better suited as a local government funding option to address water pollution caused by a specific site. This notion arose during the Orphan Site Funding Task Force discussions suggesting that localities should share the responsibility for orphan cleanups with the State. Localities benefit from orphan site cleanups not only because of improved environmental quality, but also because the site can be returned to productive use, generating income and taxes. Cleaned up orphans also help to improve surrounding property values.

**General Fund**

**Description:** The Legislature would provide a biennial appropriation for orphan site cleanups.

**Why considered:**

- Review committee members requested that General Fund or Lottery be formally considered
- Members of both the Orphan Site Funding Task Force and the Review Committee supported General Fund as an appropriate source because:
  - ⇒ It is broad-based
  - ⇒ It does not attempt to assign blame or responsibility to a discrete group



**Revenue generated and impact:**

An estimated \$12 million appropriation per biennium.

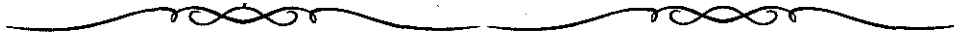
**Discussion:**

- The history of orphan funding demonstrates the difficulty of finding a strong nexus
  - Because those responsible for contamination are not available, it falls to the public to pay for cleanups
  - The general populace benefits from a clean environment
  - Groups that appear to be specific beneficiaries, such as neighboring property owners, have already been harmed by the contamination and shouldn't have to pay extra to restore a clean environment
  - This is not a new concept – General fund and Lottery dollars have been used to temporarily fund orphans since the petroleum load fee stopped being used
- ⇒ However, General Fund may not be available because of the great demand for other programs

**Conclusion**

General Fund is included in the list of potential sources because support for this option has been growing. The idea was put forward not only by potential fee payers who believe the burden should not fall to them, but also by the Orphan Site Funding Task Force, as a reasonable public policy choice. There are logical arguments supporting this concept: those most responsible are not able to pay; parties that responsibly manage hazardous substances believe it is inequitable to have to pay for actions of those who haven't; all Oregonians potentially benefit from an orphan cleanup, either directly or indirectly; orphan site cleanups are an issue we should address collectively.

The Department recognizes the many demands on General Fund and therefore does not suggest this source as a viable alternative.



## LEAST VIABLE OPTIONS

### Property/Casualty Insurance Premium Assessment

**Description:** Fee based on amount of certain categories of business property and casualty insurance.

**Why considered and attributes:**

- Broad-based – assesses most businesses
- Some nexus with risk
- Significant revenue generating ability; fee would be small relative to insurance premium
- Insurance billing could serve as vehicle for assessing the fee
- Considered as a funding source for federal Superfund and other states' cleanup programs

**Revenue generated and impact:**

Based on Oregon Insurance Division 1994 information about premiums in Oregon. Low end of range of potential billings to be assessed: \$300 million.

| Amount generated per year | Fee per \$1,000 billed |
|---------------------------|------------------------|
| \$ 1 million              | \$ 3.33                |
| \$ 6 million              | \$20.00                |

**Discussion:**

- Nexus not strong
  - Very small portion, if any, of insurance premiums relates to risk of contamination
  - Amount of premium varies for many reasons not associated with the problem
  - Assesses wrong group of businesses – more logical to assess uninsured
- Stronger as a mechanism that distributes cost broadly across businesses
  - To ensure broadness, shouldn't exclude, e.g., worker's compensation and auto insurance, as assumed in the analysis (basis of figures above)
- Inequitable method of allocating cost
  - Under-insured pay less of fee; uninsured escape altogether
  - Other methods, such as business registration fee, are more equitable ways to distribute broadly to businesses
- Insurance industry regulation makes it difficult to assess through premium billings
  - Retaliatory tax provision
  - Oregon's taxation of industry has changed recently – currently in transition
- Fee would be very complex – determination of types of insurance assessed, etc.

**Conclusion**

The nexus is not sufficiently strong to justify this mechanism as an orphan funding source and other broad-based mechanisms considered had fewer drawbacks. In particular, the insurance regulatory environment makes this proposal prohibitively complex and costly.



**Pesticide Registration Fee Surcharge**

**Description:** Surcharge on existing Oregon Department of Agriculture fee to register pesticide products for sale. Each product must be registered annually to be sold in the State.

**Attributes:**

- Strong nexus – several of the most commonly found contaminants are pesticides
- Collection mechanism already exists
- Could produce more revenue than currently generated without undue burden

**Revenue generated and impact:**

**Number impacted:**

About 700 companies currently pay fees. Number of companies is decreasing over time, while number of products is increasing.

**Impact on rates:**

Based on current Dept. of Agriculture fee structure. Fee ranges from \$75 to \$95 per product and generates about \$700,000 per year. About 8400 products are assessed.

| Amount generated per year | Annual orphan fee per product (mid-range) |
|---------------------------|-------------------------------------------|
| \$ 1 million              | \$120                                     |
| \$ 6 million              | \$725                                     |

**Discussion:**

- Small universe of about 700 direct fee payers
  - Could be broader-based, depending on ability to pass cost on to consumers
- Minimal impact in most cases
  - ⇒ Fixed annual amount per product, regardless of amount of sales
  - ⇒ Fee (approx. \$100) is very low in relation to sales for nearly all products


Pesticide Registration Fee Surcharge  
continued

**Discussion – continued:**

- Nexus is strong, because pesticides are common at cleanup, and specifically, orphan sites
  - ⇒ But pesticides are only a subset of contaminants, which argues against this fee as a sole funding source
  - ⇒ No relationship of fee to risk – not based on volume or revenue
- There are other competing uses for this fee:
  - Increasing the fee for orphans could derail support for funding the existing Dept. of Agriculture pesticide regulation program with this source
  - A case can be made that pesticide fees are more logical for addressing nonpoint source pollution problems

**Conclusion**

The other hazardous substance based fees considered would assess pesticides along with other substances and are preferred to this assessment of pesticides alone.



**Hazardous Waste Generator Fee Surcharge**

**Description:** Increase existing DEQ fees charged to certain categories of hazardous waste generators. Two part fee consists of an annual registration fee and a per ton fee on waste generated, multiplied by a factor that varies with the method of dealing with the waste.

**Why considered and attributes:**

- Nexus with some, although not all, users of hazardous substances
- Administrative ease – fee exists
- Universe of feepayers is not large
- Modest revenue generation
- Waste generation fees are a common source of cleanup revenue nationally – recognized as a reasonable source

**Revenue generated and impact:**

**Number impacted:**

Currently, about 700 large and small quantity generators pay fees  
Excludes the estimated 20,000 “conditionally exempt” generators (CEGs), who produce below the minimum amount of waste and currently pay no fee.

|                                                      |
|------------------------------------------------------|
| Hazardous Waste Generator Fee Surcharge<br>continued |
|------------------------------------------------------|

**Revenue generated and impact – continued:**

**Impact on feepayer:**

**Existing fee structure and information –**

- Registration fees: range from \$200 – \$350 annually, depending on the generator’s category (small or large quantity)
- Base per ton fee: \$60. Including the “management factor,” the effective rates varies from \$30 to \$120
- Fee is capped, so that no feepayer pays more than \$15,000 in per ton fees in any year
- Total fees paid by individual generators range from \$200 to \$15,300
- Fee currently generates about \$700,000 per year

**Orphan Fee Structure –**

To raise additional revenue, any combination of the factors could be changed, impacting individual feepayers differently. Figures below ignore the cap and assume proportional increases in all rates.

| Amount generated per<br>year | Percent increase in<br>current fee |
|------------------------------|------------------------------------|
| \$ 1 million                 | 140%                               |
| \$ 6 million                 | 850%                               |

**Discussion:**

- Nexus with a subset of those dealing with hazardous substances
  - Includes only those who generate waste, not all associated with substances and risk
  - Varies with amount of waste generated, not amount used
  - The majority of facilities (CEGs) do not pay fee
- Not broad-based as currently structured
  - Could broaden by including CEGs
  - ⇒ Additional cost to identify and assess CEGs, for which there is no current registration requirement
- Revenue is currently insufficient to support existing hazardous waste program
  - Volume of regular “process” wastes is steady, but special wastes – e.g., from cleanups – have declined
  - The Governor’s Recommended Budget includes a fee increase to support the hazardous waste program
- An excessive fee increase could encourage generators to reduce waste
  - Good for the environment
  - ⇒ But revenues might not increase as anticipated

Hazardous Waste Generator Fee Surcharge  
continued

**Conclusion**

The hazardous waste generator fee must already be increased to support existing waste management programs, which are more closely associated with this fee-paying universe. The fee-payer group is only a small portion of all those associated with hazardous substances; the increase required to generate any significant orphan funding would be excessive.



**Hazardous Waste Disposal Fee Surcharge**

**Description:** Surcharge on existing per ton fee charged for disposal at the state's hazardous waste landfill in Arlington.

**Why considered and attributes:**

- Nexus with some, although not all, users of hazardous substances
- Administrative ease –existing fee supporting two DEQ programs:
  - Cleanup program – the disposal fee, combined with cost recoveries from responsible parties, is the primary funding source for non-orphan cleanup costs
  - Hazardous waste management
- Waste disposal fees are a common source of cleanup revenue nationally

**Revenue generated and impact:**

**Number impacted:**

Fee paid by operator of landfill and normally charged back to generators disposing of waste, which includes both Oregon and out-of-state generators. Historically, the majority of waste has come from out-of-state.

**Impact on fee-payer:**

Current fee for hazardous waste is \$30/ton (lower rates for small amounts of other wastes). Figures based on revenue currently generated – less than \$5 million per year; volume disposed projected to decline significantly.

| Amount generated per year | Orphan fee amount |
|---------------------------|-------------------|
| \$ 1 million              | \$ 6              |
| \$ 6 million              | \$36              |

Hazardous Waste Disposal Fee Surcharge  
continued

**Discussion:**

- Nexus with a subset of those dealing with hazardous substances
  - Includes only those who generate waste, not all associated with substances and risk
  - Substantial portion of waste not generated in Oregon and doesn't relate to in-state risk
  - Varies with amount of waste generated, not amount of substance used
- Argument can be made that it is not sensible to charge waste being disposed of properly to fund irresponsible management of hazardous substances
- Uncertain revenue stream –recent decrease in waste disposed is projected to continue
  - Waste from cleanup activities is declining
  - Federal regulations prohibit disposal of significant categories of waste in future
- Due to strong competition in hazardous waste disposal market, a fee increase is likely to further decrease volume landfilled in Oregon
  - Decreased volume would offset revenue growth from rate increase

**Conclusion**

Declining waste volumes pose a significant issue for funding the non-orphan cleanup program. Because of the competitive climate, a rate increase is not likely to produce a net increase in revenue.



**Civil Penalties**

**Description:** Spend civil penalties collected for violation of environmental laws on orphan cleanups. Most civil penalties currently go into the State's General Fund and are not available to DEQ.

**Why considered and attributes:**

- Raised by Orphan Site Task Force in discussion of potential sources with nexus

**Revenue generated and impact:**

Civil penalties levied by DEQ and deposited in General Fund vary; average for last several years is about \$700,000.

Civil Penalties  
continued

**Discussion:**

- Embodies the “polluter pays” concept
- Potential conflict for DEQ to have power to assess penalties to generate revenues for its own use – danger of, or appearance of, “bounty hunting”
  - Could mitigate concern by limiting amount allocated to DEQ, with remainder deposited to General Fund
- Reduces General Fund revenues
  - Not much difference between appropriating General Fund and allowing DEQ to spend revenue that would otherwise go to General Fund
- Conceptual connection to polluter pays
  - But only a fraction of violations are for actions that could produce a contaminated site – may only violate, for example, air quality statutes
  - Relies on availability of DEQ inspection and enforcement resources – some violators aren’t caught

**Conclusion**

This option reduces revenue available to the General Fund and thus shares the drawbacks of that source. Further, the amount generated is small and not consistent from year to year. The small gain does not appear to warrant reversing the traditional protection against conflict of interest.

The following funding sources were evaluated and reviewed, but have been removed from the list of funding sources for consideration. These are potential sources selected by the Governor for other programs:

**Beverage Container Excise Tax**

**Description:** Fee assessed on beverage containers requiring deposit under the bottle law. Collected from distributors (along with existing deposit) who pass cost through retailers to consumers.

**Unrefunded Beverage Container Deposit**

**Description:** Requires distributors to remit to State any excess deposits received from containers not returned.





# ***ATTACHMENTS***



# OREGON DEPARTMENT of ENVIRONMENTAL QUALITY

## Orphan Site Cleanup Program

### ORPHAN SITE FUNDING TASK FORCE

JANUARY, 1996 - APRIL, 1996

### MEMBER LIST

**Patricia M. Amedeo** is a Government Relations Professional with Bogle & Gates P.L.L.C. in Portland, Oregon.

**Bill Bradbury** is the Executive Director of For the Sake of the Salmon, in Gladstone, Oregon, and a former member of the State Legislature.

**Emery Castle** served as Vice-Chair and member of the Oregon Commission on Environmental Quality from 1988 until 1995. He is currently a Professor at Oregon State University, in the University Graduate Faculty of Economics, in Corvallis, Oregon.

**Don Haagensen** is a partner with the law firm of Cable, Huston, Benedict & Haagensen, in Portland, Oregon

**Anne Pendergrass Hill** is currently the Vice President and Senior Counsel for First Interstate Bank in its Portland, Oregon Legal Services Group.

**Mike Thorne** is the Executive Director for the Port of Portland, and former member of the State Legislature.

**Charles Vars** is a Professor at Oregon State University and Chair of the University Graduate Faculty of Economics, in Corvallis, Oregon.

**Ed Whitelaw** is President of ECONorthwest and a Professor of Economics at the University of Oregon, in Eugene.

# OREGON DEPARTMENT of ENVIRONMENTAL QUALITY

## Orphan Site Cleanup Program

### REVIEW COMMITTEE ON ORPHAN SITE FUNDING ALTERNATIVES

JUNE, 1996 - SEPTEMBER, 1996

### MEMBER LIST

| <u>NAME</u>       | <u>AFFILIATION</u>                                                     |
|-------------------|------------------------------------------------------------------------|
| Dave Barrows      | Oregon League of Financial Institutions                                |
| Sandra Bishop     | Citizen                                                                |
| Frank Brawner     | Oregon Bankers Assoc.                                                  |
| Lana Butterfield  | Oregon Professional Insurance Agents; and NW Propane Gas Assoc.        |
| Paul Cosgrove     | Nationwide Insurance Companies                                         |
| Jim Craven        | American Electronics Assoc.                                            |
| Brian Doherty     | Western States Petroleum Assoc.                                        |
| Kathleen Dotten   | Oregon Metals Industry Council                                         |
| Kathi Futornick   | Port of Portland                                                       |
| Tom Gallagher     | ARCO                                                                   |
| Kevin Hanway      | Special Districts Assn. of Oregon; and Oregon Assn. of Water Utilities |
| Genoa Ingram-Read | Oregon Association of Realtors                                         |
| Joni Low          | League of Oregon Cities                                                |
| Kristin Mitchell  | Oregon Refuse & Recycling Assoc.                                       |
| Jack Munro        | Insurance industry                                                     |
| Richard Nordness  | Northwest Tire Dealers Assoc.                                          |
| Paul Romain       | Oregon Beer & Wine Distributors Assoc.                                 |
| Art Schlack       | Association of Oregon Counties                                         |
| Susan Schneider   | City of Portland                                                       |
| Randy Tucker      | OSPIRG                                                                 |
| Kathryn VanNatta  | NW Pulp & Paper Assoc.                                                 |
| Charles Vars **   | Economist; Orphan Site Funding Task Force member                       |
| Terry Witt        | Oregonians for Food & Shelter                                          |

\*\* CHAIR of the Committee

## WHY OREGON NEEDS AN ORPHAN SITE PROGRAM

### What are "Orphan Sites"?

Orphans are sites contaminated by a release of hazardous substances, where the release presents a serious public health and environmental problem and where the people responsible for the hazardous substance contamination are unknown, or are unwilling or unable to pay for cleanup.

### What's Wrong With Leaving These Sites Unaddressed?

- Not cleaning up orphan sites fails to protect public health and the environment including surface water and groundwater and municipal drinking water sources.
- Contamination sources will continue to spread, affecting water, soil, people and adjacent property.
- Costs will increase – it's more expensive to clean sites after contamination has dispersed.
- Threats are real and immediate and people near them are concerned.
- A viable orphan site and enforcement program encourages careful handling of hazardous substances, and removes any competitive advantage for businesses engaged in sloppy waste management practices.
- Contaminated property is not economically productive land. Contamination devalues building, land and water assets on the affected and neighboring properties.

### Oregon's Approach

- Address emergency situations and immediate threats to public health and the environment first.
- Polluters should pay.
- If the polluter and others who have owned or operated the property since the release are not able, the State has to clean the site.

## Examples of Orphan Sites in Oregon

### Lakewood Estates

One hundred homes were affected by chlorinated solvents in wells supplying water for Lakewood Estates. People were drinking and showering in contaminated water. DEQ conducted a search for the source of the contamination, and identified responsible parties. DEQ also installed an air stripping tower for treatment of Lakewood's water supply.

### Chambers Fuel Oil

Soils and groundwater are contaminated with heating oil and diesel to at least 12 feet below surface at a former fuel storage and distribution facility adjacent to Coos Bay. DEQ has razed unsafe structures and removed approximately 5,700 gallons of oily sludge and 323 tons of contaminated soil. Once cleanup is complete, the City of North Bend plans to use the site as a parking area for a public boat ramp.

### Lebanon Area Groundwater

Perchloroethylene (PCE), a chlorinated solvent, is present in the groundwater beneath the City of Lebanon, impacting dozens of private wells. DEQ is searching for responsible parties, and has kept Lebanon's residents informed about the extent of the contamination.

### McCormick & Baxter

Soils, groundwater and sediments in the Willamette River have been contaminated with creosote and pentachlorophenol by a former wood-treatment company, now bankrupt. DEQ conducted a number of interim measures at the site, including extraction of creosote from the groundwater, soil removal, and installation of a wastewater treatment system. The U.S. Environmental Protection Agency (EPA) added McCormick & Baxter to the National Priorities List in May 1994. EPA will pay the remaining cleanup costs.

### Rose City Plating

Owner abandoned property leaving behind 24,000 gallons of highly toxic wastes in an area surrounded by residences and commercial establishments. DEQ recycled those chemicals which could be reused and properly disposed of at an off-site facility wastes which could not be reused.

## Size of the Oregon Problem

- Approximately 1750 sites with known or suspected releases of hazardous substances
- 11 federal Superfund sites in Oregon (cleanup of other sites is up to State)
- More than 270 sites, including orphans, are currently being cleaned up by DEQ
- The average cost of State orphan site cleanups has been estimated at: \$2.4 million per site. One site, McCormick & Baxter, will cost more than \$20 million. Most orphan cleanups cost less than \$2 million.

**Key Point:** Oregon is only working on orphan sites that are high environmental and community priorities.

*November, 1996*

# Environmental Quality Commission

Rule Adoption Item

Action Item

Information Item

Agenda Item L  
January 10, 1997 Meeting

**Title:**

Report to the Legislature: Solid Waste "Budget Note" Review

**Summary:**

In a bill authorizing the Department's 1995-97 budget, the 1995 Legislature asked the DEQ to "review existing legislation and report to the 1997 Legislature on any recommended changes in waste reduction and recycling measurement, requirements and enforcement..." The Department solicited the opinion of interested persons, the general public and the Solid Waste Advisory Committee in carrying out this review during 1995-96. Out of this process the Department developed a number of recommendations for legislative and programmatic changes in order to support the state's 50% recovery goal for the year 2000, and to place increased emphasis on waste prevention. The attached "Budget Note" Report to the Legislature contains the Department's analysis and recommendations.

**Department Recommendation:**

The Department recommends that the EQC review and accept the Report.

  
Report Author

  
Mary Wenz  
Division Administrator

  
Director

# **SOLID WASTE BUDGET NOTE REVIEW**

**A Report to the 1997 Oregon Legislature**

prepared by the  
Oregon Department of Environmental Quality  
Solid Waste Policy and Program Development Section

January 1997

# Budget Note Legislative Report

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- Appendix 2. White Paper I: Enhance Waste Prevention
- Appendix 3. White Paper II: Achieve State Recovery Goal: Reaffirm State's 50% Recovery Goal
- Appendix 4. White Paper III: Achieve State Recovery Goal: Local Program Enhancement
- Appendix 5. White Paper IV: Commercial Recycling
- Appendix 6. White Paper V: Funding Mechanisms
- Appendix 7. White Paper VI: Recycling Market Development
- Appendix 8. White Paper VII: Minimum Content Regulation
- Appendix 9. White Paper VIII: Education
- Appendix 10. State of Oregon Local Government Recycling Programs Implemented Under the 1991 Recycling Act, a Review Spring, 1996
- Appendix 11. Advanced Recovery Fees, Appliances, Paint, Used Oil and Oil Filters
- Appendix 12. Executive Overview, Residential Survey and Commercial Survey



## Executive Summary Budget Note Legislative Report

An addendum to DEQ's 1995-1997 budget ("Budget Note") and directions in 1995 Senate Bill 949, directed the Department to ". . .review existing legislation and report to the Sixty-ninth Legislative Assembly on any recommended changes in waste reduction and recycling measurement, requirements and enforcement, including the department's present and potential costs of implementation. As part of the review and report, the department shall include nonregulatory alternatives to [rigid plastic container requirements] that provide for incentives for increased recycling." <sup>1</sup>

In 1983, Oregon adopted the Opportunity to Recycle Act. It established the Solid Waste Management Hierarchy (Hierarchy) which continues to guide solid waste management today. The Hierarchy sets clear public policy that waste prevention, reuse, recycling and composting should be practiced first as waste management options before turning to incineration and disposal.

The State has progressed in recovering more of its waste. However, despite the fact that Oregonians recycle more material each year, the State will not reach its year 2000 50% recovery goal with current 1995 watershed (county) recovery rates. Materials with good resource value are still being disposed in significant amounts, much of which originates from the commercial sector. The Department recommends expanding program emphasis to the commercial sector to increase recovery.

Even though Oregon's policy since 1983 has been that its citizens should first seek not to generate waste (waste prevention), none of the statutory tools in the Solid Waste Management statutes relates to waste prevention or helps further the implementation of the policy. Proposals emerging from the Budget Note review rectify this. The Department recommends statutory and programmatic tools to emphasize waste prevention, as well as to continue progress towards the State's 50% recovery goal by the year 2000.

Five strategies to enhance Oregon's recycling programs were identified, and a variety of alternatives aimed at implementing the strategies were examined, with preferred alternatives selected. The strategies, along with the preferred alternatives - - the Department's recommendations to the 1997 Legislature - - follow.

The Department believes these recommendations enhance existing law, increase emphasis on waste prevention, and move the State in the direction of meeting its 50% recovery goal by the year 2000.

**Strategy 1: Achieve the State's recovery rate of 50% by the year 2000.** The Department will:

1. Identify newspaper and cardboard, in statute, as "commodities of interest," and set target recovery rates for these materials for the year 2000. Additionally, the Environmental Quality Commission (EQC) may identify other "commodities of interest" based on criteria such as high resource value.

<sup>1</sup> (1995 SB 949, Sec. 6)

2. Set advisory wasteshed recovery rates for the year 2000. A wasteshed may either adopt the recovery rate set by the Department, or adopt its own rate. In either case, the rate cannot be lower than the wasteshed's 1995 recovery rate.
3. Require businesses of a certain size in cities with identified population thresholds to source separate various materials for recycling, depending on the type of business. This requirement would not apply if the city in which the business is located has implemented a commercial recycling program which incorporates certain elements specified in statute by January 1, 1999.
4. Work with wastesheds to obtain information concerning procurement of recycled products.
5. Add two additional program elements for recycling services to the existing "menu" of eight. The first allows wastesheds to choose a local landfill ban on selected material(s). The second allows wastesheds to require participation in recycling for selected materials(s).
6. In statute, require a recycling area in new multi-family housing in buildings with at least 10 dwelling units.

**Strategy 2: Implement the vision in the Oregon State Integrated Resource and Solid Waste Management Plan (Solid Waste Management Plan) by enhancing waste prevention and reuse through education and voluntary programs.**

1. The Department will add definition for "waste prevention" to the statute.
2. The EQC will adopt qualitative waste prevention goals for the state.
3. The EQC will adopt methods to credit wastesheds for waste prevention and reuse activities by local governments.

**Strategy 3: Fund recovery of hard-to-recycle items.**

1. The Department will request authorization from the Legislature to use interest earned on funds in the Waste Tire Recycling Account for activities associated with the management of waste tires.

**Strategy 4: Promote recycling market development. The Department will:**

1. Require contractors for public contracts for demolition to recycle construction and demolition debris, if feasible and cost-effective.
2. Require contractors for public contracts for lawn and landscaping maintenance to compost or mulch the yard debris, if feasible and cost-effective.

**Strategy 5: Maximize efficiencies for the regulated community and the Department of Environmental Quality (DEQ). The Department will:**

1. Ease reporting requirements for wastesheds. Wastesheds will report Opportunity to Recycle programs "periodically" as determined by the Department, rather than annually.
2. Consolidate Metro's required reports to DEQ into one annual report.
3. Calculate the Rigid Plastic Container Rate for compliance purposes on an "as needed" basis rather than annually.
4. Consolidate its solid waste legislative reports into one report, the biennial update of the Solid Waste Management Plan.

# Budget Note Legislative Report

## BUDGET NOTE REVIEW, 1995 - 1996

The Department took the Budget Note directive as an opportunity to review all existing state Solid Waste Management statutes, identify barriers to achieving the State's solid waste policy, and make recommendations for improvements. Changes to clarify or enhance several statutes were identified.

### Process

In the fall of 1995, DEQ solicited comments from interested persons in initially identifying issues of concern. Major issues were then selected for review. Informational papers were prepared for consideration by the Solid Waste Advisory Committee (SWAC) at meetings from April through August 1996. A number of alternatives were developed with the input of SWAC. In June 1996 DEQ held a statewide teleconferenced "public meeting" in eight different locations to solicit feedback on the alternatives, and encouraged people to submit written comments. The alternatives were refined to incorporate public comment, preferred alternatives selected, and again reviewed by SWAC.

Eight issues were selected for in-depth review:

1. Should the State's 50% recovery goal be changed?
2. Should wasteshed recovery goals be continued beyond 1995?
3. How can local government programs be enhanced to help the State meet its recovery goal?
4. How can we move up the Hierarchy to waste prevention and reuse?
5. How can emphasis be expanded to commercial recycling?
6. How can we fund recycling of hard-to-recycle items?
7. How should the State be involved in recycling market development?
8. What opportunities are there to maximize efficiencies for the regulated community and DEQ?

In March of 1996 the Department hired a contractor to conduct a public opinion telephone survey of residents and businesses to determine Oregonians' attitudes and practices regarding solid waste recycling and disposal. The information gained from these surveys helped the Department determine the level of support for recycling programs and goals such as reaching the statewide 50% recovery rate by the year 2000.

## SOLID WASTE MANAGEMENT STRATEGIES

As the eight issues were reviewed and analyzed by the Department, with input from the SWAC, local governments, collectors, and the public, recurring themes emerged from this public involvement process:

- Even though it is recognized that the State may not achieve its ambitious 50% recovery goal by the year 2000, there is very little support for postponing the date.
- It is generally agreed that the 1995 wasteshed recovery goals have been very useful in creating recycling programs and in achieving the significant progress made to date.

- There is a great deal of support for intensifying efforts in waste prevention, by DEQ as well as by other public agencies, businesses and industries.
- There is little support for new mandates either to require new waste prevention initiatives or new recycling activities.
- Still, there is a lot of support for the concept of Advanced Recycling Fees on hard-to-recycle items as long as the fees are actually used to enhance recycling of those materials.
- There is support for expanding recycling emphasis to the commercial sector.

These recurring themes guided the Department in selecting the strategies to enhance Oregon's recycling programs, and to reaffirm the public policy set forward by the Hierarchy. The strategies are to:

1. Achieve the State's recovery rate of 50% by the year 2000.
2. Implement the vision in the Solid Waste Management Plan by enhancing waste prevention and reuse through education and voluntary programs.
3. Fund recovery of hard-to-recycle items.
4. Promote recycling market development.
5. Maximize efficiencies for the regulated community and DEQ.

Specific recommendations to aid in implementing each strategy have also been identified, and are discussed in the following section.

## **RECOMMENDATIONS**

In selecting its preferred alternatives for implementing the strategies, the Department has balanced the recycling community's concern that there be no backsliding from the progress we have already made, and a general sentiment that more flexibility and cooperation - - rather than government mandates- - are what is needed to keep the momentum going.

### **Strategy 1: Achieve the State's Recovery Rate of 50% by the year 2000**

Four issues reviewed in the Budget Note Process are discussed in this section. All four issues contribute to the strategy of increasing the State's recovery rate to 50% by the year 2000. These four issues are:

1. Should the State's 50% recovery goal be changed?
2. How can emphasis be expanded to commercial recycling?
3. Should wasteshed recovery goals be continued beyond 1995?
4. How can local government programs be enhanced to help the State meet its recovery goal?

#### **Should The State's Recovery Goal Be Changed?**

Analysis shows that the State would need to recover approximately 600 thousand additional tons of material in the next five years to reach a 50% recovery rate. Some local governments,

collectors, and others expressed concern that current recovery programs would have difficulty accommodating the large amount of increased recovery necessary without substantially higher program costs. The Department therefore initially proposed changing the year 2000 recovery goal to 40%, and moving the 50% recovery goal back to the year 2005.

However, the public strongly supported keeping the recovery rate and date unchanged. Postponing the date, or lowering the recovery goal, was perceived as backsliding in support of recycling.

Taking the strong public support into account, the Department reaffirmed that the State should continue to work towards a 50% recovery rate for the year 2000. Analysis suggested two factors which may make this goal materially achievable. The State recovery rate has climbed steadily, from 27.1% in 1992 to 34.7% in 1995. If this trend continues - - although there are reasons why it may not - - there is a high probability that the State recovery rate will be between 45 and 52% by the year 2000.<sup>2</sup> Secondly, the DEQ 1994-1995 Waste Composition study shows significant amounts of potentially recoverable materials still being disposed. Focusing program efforts on expanding the collecting of materials with established, stable markets from previously under tapped sources will increase overall recovery.

#### **How Can Emphasis Be Expanded To Commercial Recycling In Order To Increase Overall Recovery?**

Increased emphasis on reduction and recovery of commercial wastes will be more cost-effective and divert greater amounts from disposal than attempts to recover even more from the residential wastestream.

One option the Department explored is to require cities over a given population threshold to design and implement a recycling program for commercial establishments as a required program element. This is discussed in more detail in the section, **How Can Local Government Programs Be Enhanced To Help The State Meet Its Recovery Goal?**

A second recommendation is for the Department to require a recycling area in new multi-family housing in buildings with at least 10 dwelling units. Only 28% of all communities in Oregon have chosen to implement the Multi-Family Recycling Collection program element. Making recycling more convenient in these dwellings potentially increases overall recovery.

Thousands of tons of materials with steady market demand and materials capable of being composted continue to be disposed each year. Making such materials subject to mandatory recycling or banning them from disposal increases their recovery. Cardboard and newspaper enjoy steady market demand and are likely to be found in most business' waste. Likewise, grass clippings and yard debris could be banned from disposal with solid waste, which decreases the overall amount disposed and encourages source reduction through on-site composting. There was strong opposition to landfill bans or mandatory recycling among many in the solid waste community.

<sup>2</sup> This assumes that trends which occurred in 1992 - 1995, for example, increased recovery, will continue unchanged. It may be that most of the easy-to-recycle material, such as newspaper, is already being recovered, and less cost-effective-to-collect material remains in the wastestream.

The Department developed a different approach which targets certain materials (called "commodities of interest") for increased recovery based on one of several factors: existing markets able to absorb more of the material; resource value that is being lost if the material is simply disposed of; and potential environmental problems if the material is improperly disposed or landfilled. Many of these materials are typically found in the commercial wastestream. Newspaper and cardboard will be identified in statute as "commodities of interest." The EQC may identify additional commodities of interest based on criteria such as high resource value, quantity of material available, and end markets; and will set target material-specific recovery rates for the year 2000 for the identified materials.

This is a sound approach because it allows generators of these materials, typically businesses, which currently dispose of these materials an opportunity to voluntarily increase recovery. They will have adequate lead time to implement a recovery program and determine the most cost-effective manner to recover them. It sets a clear goal but allows the affected parties to determine how the goal can best be met. It puts additional responsibility on the generator of the materials. DEQ staff would provide enhanced technical assistance and education to businesses and associations on how to recycle these materials.

If the year 2000 target recovery rates for any of the identified commodities are not met, required source separation for recycling would begin in 2002. The potential "stick" of requiring source separation for recycling will serve as an educational tool for the public and should stimulate increased collection.

Other alternatives explored and recommended are for the Department to:

- Work with stakeholders to develop ways to enhance commercial recycling, seeking incentives for cost-effective recycling and waste prevention.
- Implement a statewide Recycling Leadership Recognition Program for businesses and public agencies.
- Analyze the feasibility of initiating food waste composting for the residential or commercial sector.
- Implement a Recycling at Work campaign.
- Develop more specific information on commercial waste generators in its Waste Composition study.

#### **Should Wasteshed Recovery Goals be Continued Beyond 1995?**

The 1991 Recycling Act included a provision for the 1997 Legislature to review the 1995 recovery rates achieved by each wasteshed and by the State, and to "set wasteshed recovery rates, or other goals that allow measurement of each wasteshed's progress in achieving greater reduction, reuse and recycling, for the calendar year 2000."<sup>3</sup>

During the public input process, most people acknowledged that wasteshed recovery rates were necessary to get us where we are now. Without the impetus of a recovery goal to keep the issue

<sup>3</sup> Section 2a, Chapter 385, Oregon Laws 1991

highlighted, local recycling programs may not be supported at the appropriate level. However, some local governments and collectors expressed concern about the increased cost for achieving higher recovery rates.

Wasteshed recovery rates provide critical information. They are an indicator of the effectiveness of local government recycling programs. They provide in-depth information on a wasteshed's disposal, recovery, and generation patterns, which pinpoint strengths and weaknesses, and indicate where improvements can be made. They track the State's progress in meeting the 50% recovery goal, and provide feedback on the feasibility of reaching the goal. Finally, they keep recycling highlighted in the community.

Because wasteshed recovery rates are important, the Department recommends they be continued, and new rates be set in the following manner:

- DEQ will set advisory wasteshed recovery rates which together will meet the statewide rate. Individual wastesheds can either adopt the advisory rate or adopt their own rate.
- If wastesheds choose to adopt their own rate, they will include the cities in the rate setting process. DEQ will also work with them to assist with developing new rates. Having the wastesheds set their own recovery rate has a number of benefits: the rate will be based on local circumstances, and there will be community discussion on opportunities for additional recovery and the financial resources necessary to meet the rate.
- A provision will be added in statute for "no backsliding" from the 1995 achieved rates. The new rate will have to be at least as high as the higher of the statutory 1995 wasteshed recovery rate, or the rate the wasteshed actually achieved in 1995.
- DEQ will provide additional technical assistance and program scrutiny if wastesheds fail to meet their year 2000 recovery rate.

#### **How Can Local Government Programs Be Enhanced To Help The State Meet Its Recovery Goal?**

The 1983 Opportunity to Recycle Act required at least monthly curbside recycling collection in cities with a population of 4,000 or more, recycling depots at solid waste disposal sites, and recycling education and promotion programs. The 1991 Recycling Act added requirements for cities over 4,000 population to provide expanded recycling services to be selected from a "menu" of eight program elements.

All cities over 4,000 population are implementing at least the minimum number of required program elements. In 1995, 47% were doing more than the required minimum.

A number of alternatives were explored and are recommended as a means of enhancing local recycling programs with the goal of increasing recovery in the State. The Department will:

- Change the existing Expanded Education/Promotion program element to add flexibility to the timing and content for recycling education sent to current customers. This includes an option for cities to implement either the education program prescribed in statute, or to develop their own education plan. Some communities believe the program element as currently prescribed decreases the effectiveness of their recycling education and promotion. They want more flexibility in the use of their resources to encourage further recycling.

- Change the existing Garbage Rate Collection Incentive program element to allow additional flexibility for cities to provide more directly weight-based rates and thus encourage use of this program element. Open this option both to the residential and commercial sectors. Incentive rates are a non-regulatory way to use market forces to “give the right signals.” The current statutory requirements for this program element are quite prescriptive and do not provide for creative local solutions.
- Add new Local Landfill Ban program element to the current “menu” of eight program elements. Cities would be free to select this program element - or not to select it. If chosen, it could keep valuable material out of the disposal site and raise recovery rates.
- Add new Mandatory Recycling program element. Cities selecting this program element will require source separation and recycling of certain materials, which will include, at a minimum, any identified as “commodities of interest”. As with the new Local Landfill Ban program element, the city would be free to select, or not select, this menu item.
- Consult with wastesheds on procurement of recycled materials. Public agencies are required by law to give preference to purchasing supplies made with recycled materials. Many public agencies do not have formal policies to implement this requirement. The Department will work with wastesheds to obtain information on annual procurement of recycled supplies purchased by public agencies within the wasteshed.

In 1995, 56% of cities between 4,000 and 10,000 population, and 64% of cities over 10,000 include regular collection of “principal recyclable materials” from businesses as a part of their recycling programs. However, existing commercial programs vary widely in the number of materials collected and the effort given to promoting the service. The commercial collection program element needs to be more comprehensive to fulfill its potential to capture new materials from businesses.

Prior to 1995 Ballot Measure 30 (“Unfunded Mandates”), the Department had proposed a requirement for local communities over a certain population threshold, for example 10,000, to implement a commercial recycling program by January 1, 1999.

After Ballot Measure 30 passed, the Department changed this recommendation. Now, the requirement is placed on the generator of commercial solid waste. Depending on the type and size of the business, and the size of the city and part of the state in which the business is located, businesses will be required to source separate various materials for recycling by January 1, 1999.<sup>4</sup> This requirement will not apply if the city in which the business is located has implemented a commercial recycling program by January 1, 1999, that meets designated elements.<sup>5</sup>

<sup>4</sup> The commercial recycling requirement affects businesses within certain cities (all cities in Metro; cities with 15,000 population in the Willamette Valley; cities over 25,000 population elsewhere in the state). It applies to businesses with 10 or more employees and 1,000 square foot in one location. Garbage collectors would be required to inform commercial customers of this service four times a year.

<sup>5</sup> The local government commercial program will be required to contain the following elements: (1) the program is developed using public involvement, (2) it may be provided by an entity designated by the local government, (3) weekly collection of local government-specified materials to include any “commodities of interest” identified by the EQC, (4) an education and promotion program providing information at least



## **Strategy 2: Implement the vision in the Solid Waste Management Plan by enhancing waste prevention and reuse through education and voluntary programs**

Like most other states, Oregon has had, since 1983, a state policy that its citizens should seek not to generate waste in the first place. However, even though Oregon's Solid Waste statutes place waste prevention as the highest option for waste management, none of the statutory tools currently provided in ORS 459 and 459A relates to waste prevention or helps further the implementation of this policy.

The Department believes that fostering partnerships and encouraging cooperation offers more positive results than imposing new mandates in the area of waste prevention, and prefers to emphasize education, technical assistance and good models.

The following options were selected to enhance waste prevention:

- The Department will add a definition of waste prevention to statute, and add the term to the State's Solid Waste Management Policy.
- The EQC may establish **qualitative** waste prevention goals for the State, such as by a given date all Oregon businesses with a certain number of employees will have completed a waste prevention/resource efficiency assessment. State waste prevention goals will help to focus attention and effort on waste prevention activities. This option recognizes that local government may not always be the most appropriate nucleus around which to build a local waste prevention effort.
- The Department will add, in statute, the ability for it to develop a methodology to give some type of "credit" to local governments for instituting effective waste prevention and reuse programs. A measurement tool to give credit for waste prevention activities will both highlight the importance of waste prevention, and reward local governments for activities they may already be performing.

Other alternatives explored and recommended are for the Department to:

- Develop model waste prevention and resource efficiency assessments for businesses and public agencies.
- Provide technical assistance and education on waste prevention/resource efficiency.
- Implement a statewide Waste Prevention Leadership Recognition Program for businesses and public agencies.
- Complete the Waste Prevention Pilot Program, and continue to expand the Community Resource Efficiency Program.

four times a year, (5) program goals and objectives designed to meet the watershed's recovery goal, and (6) other elements contributing to effective commercial recycling.

- Change Solid Waste Planning and Recycling Grant rules to allow use of funds for waste prevention activities.

### **Strategy 3: Fund recovery of hard-to-recycle-materials (freon-containing appliances, paint, used oil and oil filters, and tires)**

The Department is recommending the following options to fund hard-to-recycle-materials.

- Direct interest from the waste tire recycling account (Account) back into the account. Fees collected by retail dealers on new replacement tires from 1988 - 1992 went to the Account, which was used for waste tire cleanups and market enhancement for recycling waste tires. Interest from the Account goes into the State General Fund. There is expected to be an ending balance of \$792,000 as of June 1997 in the Account.<sup>6</sup> If the interest were directed back into the Account and made available to DEQ, the tire program could continue longer, resulting in better management of waste tires and increased waste tire recovery.
- Investigate the feasibility of levying an Advanced Recycling Fee (ARF) on used oil and oil filters, waste paint, and freon-containing appliances such as refrigerators. An ARF is a small fee placed on an item at the time of purchase, in advance of its entering the wastestream for ultimate recycling or disposal. States have instituted fees on particularly hard-to-recycle products such as motor oil or refrigerators from which freon must be removed before recycling. The funds generated from the fees are typically used to subsidize or offset the cost to recycle or dispose of the items by funding activities such as household hazardous waste collection events, grants to local governments for providing citizens with programs to recycle the item, and education and technical assistance. These activities operate to increase recovery of the targeted commodity.
- The Department is currently undertaking a pilot waste paint return-to-retailer project. Retailers will participate on a voluntary basis. They will provide a place for households to return waste paint, bulk the paint, and sell or give the paint away. DEQ's household hazardous waste contractor will collect the remaining paint and recycle or dispose it. If the pilot project is successful, an ARF might be a good mechanism to expand the program and provide ongoing funding.

Appendix 11 provides additional details on Advanced Recycling Fees.

### **Strategy 4: Promote recycling market development**

The success of recycling ultimately depends upon markets for recyclable materials. Over time Oregon has developed a relatively stable recycling system which removes a large quantity of material from the wastestream and puts it back into the economy as useful feedstock. Oregon has mature, stable markets for some recyclable materials such as metals and paper. However, there are still large quantities of materials in the wastestream which can be collected and made available for recycling.

<sup>6</sup> The Department does not know how far the money in the Account will stretch. Depending on the number and cost of waste tire cleanups, it could last as little as one year or as many as ten.

The Department is recommending adding a requirement that public contracts for demolition include provisions for recycling construction and demolition debris if feasible and cost-effective, and public contracts for landscaping to include provisions for composting or mulching if feasible and cost-effective. Large quantities of construction and demolition materials, and organic materials in some parts of the State, are still being disposed. Many of these materials can be separated and made available for recycling or composting. However, markets for these materials need further development. The requirement for public contracts for demolition and for landscaping to include provisions for recycling construction and demolition debris and for composting or mulching the organic material could help stimulate markets for these materials.

Other recommendations are for the Department to evaluate the merits of the following:

- Change the Solid Waste Planning and Recycling Grant rules to allow use of funds for market development. Local governments may lack funding to do any local market development, whereas barriers to market development may exist on a local scale. Opening the grants to market development may encourage creative local solutions to expand markets for recycled materials.
- Convene a task force to develop a program on building recyclable electronic products. Electronic products are becoming an increasingly large part of the wastestream. These products tend to become obsolete very quickly. Oregon has a growing “high tech” manufacturing community. Bringing representatives from this community together may present an opportunity to encourage products designed for recyclability.
- Implement a Buy Recycled campaign for state and local government offices. Public agencies are large purchasers of many goods which can include recycled content. Although they are required by statute to give purchasing preference to recycled products, not all agencies have procedures to ensure this happens. A Buy Recycled campaign could add visibility to this requirement and help make it a part of standard purchasing procedures.
- Encourage and help industry groups to develop standards for compost products. Having standards will ensure a uniform product, which will help develop markets.
- Work with stakeholders to advance the cycle of collecting, manufacturing, and purchasing of products from recycled materials. A stable manufacturing base and steady markets are the key to current and increased levels of recovery.

### **Strategy 5: Maximize efficiencies for the regulated community and DEQ**

Directions in 1995 Senate Bill 949 (Section 6) instructed DEQ to review and report to the 1997 Legislature on nonregulatory alternatives to the rigid plastic container requirements found in ORS459A.650 to 459A.665 that provide incentives for increased recycling, including the Department’s present and potential costs of implementation. The Department’s cost are discussed in the following section **DEQ Fiscal Impact RPCR**.

The Department met several times with various representatives of the plastics industry soliciting their ideas for nonregulatory alternatives that would provide incentives for increased recycling. A number of options were discussed. One option was to establish a non-profit organization (perhaps with joint public/private funding) which would promote plastics recycling and educate the public, match materials supply and demand. Another option was to institute a task force modeled after the News Print Task Force also charged with education, but with particular emphasis on training businesses on how and why to use recycled content. Goals could be established, with some sort of "reward" if the goals were met, with industry's ultimate goal being a sunset of the law. Consensus was not reached on any of the alternative approaches.

DEQ calculates a recycling rate for all plastic annually. It is based on the annual Material Recovery Survey to determine wasteshed and state recovery rates, and an analysis of disposal trends done each biennium. State law mandates that a recycling rate for rigid plastic containers (RPCR) also be done annually. The disposal information for this calculation is gathered by a separate sub-task of the biennial Solid Waste Composition Study.

One way to foster administrative savings is to amend the statute so that the RPCR is not calculated annually. One approach might be to use the overall plastic recovery rate as an indicator for the RPCR rate. DEQ staff believe that if the overall plastic recycling rate remains above 5%, the RPCR rate will be well above the mandated 25%. If the overall plastic rate fell below 5%, or failed to meet other criteria, the Department would calculate the RPCR using the same methodology as previously used. This option potentially saves approximately \$105,000 each year during which there is no need to calculate the rate. This option, coming out of the Budget Note public involvement process, is recommended.

Other recommendations follow.

- Change the requirement for wastesheds to submit recycling reports annually. Wastesheds are required to submit annual Recycling Reports to DEQ on the status of local recycling programs, and provide data on the amount of materials recovered by collectors and disposal sites in the wasteshed. The Department needs the data portion of the report annually, but not the program implementation portion. This "one size fits all" approach does not recognize that wastesheds vary in the quality of recycling programs they have implemented. Some wastesheds consistently meet their recovery rates and offer good programs to their citizens. There is no reason they should have to report on program implementation annually. On the other hand, wastesheds which are not meeting their recovery rates and have marginal recycling programs may benefit from the extra oversight and technical assistance from DEQ staff, and should continue to report on program implementation annually.
- Consolidate Metro's required reports. Solid Waste statutes require Metro to prepare and submit to DEQ annual recycling program and data reports, and a biennial report on Metro's waste reduction program. DEQ proposes that Metro combine the waste reduction program report with the annual recycling program report. This will provide needed data and eliminate duplicative reporting.

Eliminate requirement for local government to report recycling participation rates for single family, multi-family, and commercial recycling programs to DEQ. Collectors do not have the means to accurately determine on-route participation rates. Therefore, participation rates do not provide meaningful data on which to base policy decisions.

## DEQ FISCAL IMPACT (RPCR)

The 1991 Oregon Legislature passed the Rigid Plastic Container Law (the Law) as part of the 1991 Oregon Recycling Act. The Law was subsequently amended requiring the Department to project recycling rates for rigid plastic containers (RPCR) by December 31 for the following calendar year. The 1995 amendments also specified that the Department may only enforce on violations occurring after January 1, 1998. In addition, the Department may not enforce provisions of the Law during the first full calendar year after the Department determines that the RPCR is less than 25%.

DEQ is the implementing agency, and there is a substantial cost to this role. Some of the work associated with implementing the Law is: provide technical assistance to affected persons on how to comply with the Law; calculate an annual RPCR aggregate recycling rate; and, if the 25% RPCR is not achieved, perform compliance and enforcement activities beginning in 1998.

Such activities would include contacting product and container manufacturers using rigid plastic containers, examining their records, and determining that their recycling rate methodologies are acceptable.

The Department has contracted to develop the RPCR, at a cost of about \$90,000 annually, plus an additional \$15,000 for a special sort in the Department's biennial Waste Composition study to determine the amount of rigid plastic containers being disposed.

The following table shows the estimated full time equivalent employees (FTE) needed to implement the program, and associated costs. (Assumes no further rulemaking needed; additional rulemaking would require another .25 to .5 FTE for the 97-99 biennium, depending on the complexity of the issues involved.)

| Fiscal Year                                                           | FTE Required <sup>7</sup> | Cost                          |
|-----------------------------------------------------------------------|---------------------------|-------------------------------|
| <b>Biennium 97-99:</b>                                                |                           |                               |
| • If 25% recycling rate met:                                          | .93                       | \$119,294                     |
| • If projected recycling rate for '98 is less than 25%:               | 1.33                      | \$170,603                     |
| <b>Biennium 99-01:</b>                                                |                           |                               |
| • If 25% recycling rate met:                                          | same as 97-99             | same as 97-99, plus inflation |
| • If projected recycling rate remains less than 25% for the biennium: | 1.93                      | \$260,000                     |

<sup>7</sup> FTE stated on biennial basis.

## **Appendix 1. Glossary**

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## Glossary

**ADVANCED RECYCLING FEE** - a fee on a product which is intended to capture the cost of recycling of that product.

**ADVANCED DISPOSAL FEE** - a fee on a product which is intended to capture the cost of waste disposal of that product.

**COMMERCIAL RECYCLING** - Commercial recycling is recycling of solid waste generated by businesses such as stores, offices, including manufacturing offices, restaurants, schools, hospitals, and other non-manufacturing activities.

**COMPOST** - the controlled biological decomposition of organic material or the product resulting from a process. Composting for the purposes of soil remediation is not included. (OAR 340-90-010). Also, discarded organic materials, such as lawn clippings, leaves, food scrap, and manure, that have decomposed in a mixture with air and water into a complex organic material called humus. Compost can be used as a soil amendment or mulch.

**COMPOSTING** - the process of controlled biological decomposition of organic or mixed solid waste. It does not include composting for the purposes of soil remediation.

**CONSTRUCTION AND DEMOLITION WASTE** - solid waste resulting from the construction, repair, or demolition of buildings, roads and other structures, and debris from the clearing of land, but does not include clean fill when separated from other construction and demolition wastes and used as fill materials or otherwise land disposed.

**ENERGY RECOVERY** - recovery in which all or a part of the solid waste materials are processed to utilize the heat content, or other forms of energy, of or from the material.

**GENERATOR** - a person who last uses a material and makes it available for disposal or recycling.

**HAULER** - interchangeable with "collector"; the person who provides disposal and recycling collection services.

**INTEGRATED SOLID WASTE MANAGEMENT** - a practice of using several waste management techniques to manage and dispose of specific components of the solid waste stream. Waste management alternatives include source reduction, composting, energy recovery, incineration and landfilling.

**INDUSTRIAL WASTE** - solid waste generated by manufacturing or industrial processes that is not a hazardous waste regulated under ORS Chapters 465 and 466 or under Subtitle C of the federal Resource Conservation and Recovery Act.

**LOCAL GOVERNMENT** - the territory of a political subdivision that regulates solid waste management activities including but not limited to incorporated cities, municipalities, townships, counties, parishes, regional associations of cities and counties, Indian reservations, and metropolitan service districts, but not including sewer district, fire districts, or other political subdivisions that do not regulate solid waste.

**MATERIAL RECOVERY** - any process of obtaining from solid waste, by presegregation or otherwise, materials which still have useful physical or chemical properties after serving a specific purpose and can, therefore, be reused or recycled for the same or other purpose.

**MUNICIPAL SOLID WASTE** - Solid materials discarded by homes and businesses in or near urban settings. Includes nonhazardous solid waste generated in households, commercial and business establishments, institutions and light industrial wastes. It excludes industrial process waste, agricultural wastes, mining wastes, construction and demolition wastes, and sewage sludge.

**MINIMUM CONTENT STANDARDS** - standards or requirements which dictate what percentage of a product or manufactured material must be made of secondary post-consumer

resources. A regulatory mechanism used to increase or enhance the demand for recyclable material.

**OREGON BENCHMARKS** - measurable indicators that Oregon uses at the statewide level to assess its progress towards broad strategic goals. The Oregon Benchmark concept sets targets for the state's progress by the year 2010.

**OREGON PROGRESS BOARD** - nine member board, created in 1989, developed a strategic plan, *Oregon Shines*, which defined directions the state should follow to achieve its goals. The benchmarks proposed in the plan were mandated by the 1991 Legislature. The Progress Board monitors progress toward the benchmark goals and reports biennially to the Legislature.

**PER CAPITA DISPOSAL RATE** - total weight of solid waste disposed by residents of a state in a calendar year, divided by the total population of the state for the same calendar year.

**POST CONSUMER WASTE** - a discarded material generated by a business or residence that has fulfilled its useful life. Post-consumer waste does not include discards from industrial and manufacturing processes.

**PRINCIPAL RECYCLABLE MATERIAL** - material which is a recyclable material at some place where the opportunity to recycle is required in a watershed and is identified by the Commission in OAR 340-90-070.

**RECOVERY RATE** - a percentage which indicates the volume of solid waste that is being recovered from the municipal solid waste stream. (Total tons of municipal solid waste recovered, divided by total tons of municipal solid waste disposed plus total tons of municipal solid waste recovered.)

**RECYCLABLE MATERIAL** - any material or group of materials that can be collected and sold for recycling at a net cost equal to or less than the cost of collection and disposal of the same material. Also refers to discarded materials that can be collected, sorted, processed, and then used as raw materials in the production of new products. "New products" do not include materials that are used as fuel substitutes or for energy recovery. Consists mostly of materials derived from post-consumer waste, industrial scrap and agricultural wastes.

**RECYCLE/RECYCLING** - the series of activities by which discarded materials are collected, sorted, processed, and converted into raw materials and used in the production of new products. Recycling does not include the use of these materials as a fuel substitute or energy recovery.

**RECYCLING MARKET DEVELOPMENT** - any private or public action or set of actions taken with the intention of improving the viability, profitability, stability, and/or long-term health of the recycling industry and particular operations or functions that exist with it. The actions may be directed towards improvement of material supply qualities and quantities in separation, collection, processing, and transporting activities, or towards the manufacture and purchase of, or increased demand for, products made by secondary material end users.

**RESOURCE EFFICIENCY** - Use, management, and protection of natural resources to ensure they are not wasted, degraded, or deplete so that resources are available to the present and future generations. Methods may include conservation, waste prevention, balanced multiple use, efficient use and reduced consumption.

**RESOURCE RECOVERY** - the extraction and use of economically usable materials or energy from the solid waste stream. The term is sometimes used to denote solid waste incineration with energy recovery, also called waste-to-energy incineration.

**REUSE** - the recovery or reapplication of a package or used product or material in a manner that retains its original form or identity. Unlike recycling, reuse does not involve processes that significantly alter the original condition of the package or product.

**SOURCE REDUCTION** - See **WASTE PREVENTION**.

**SOURCE SEPARATE** - the person who last uses recyclable material separates the recyclable material from solid waste that is destined for disposal.



**VARIABLE RATE** - a charge for solid waste services based on the volume or weight of waste generated measured by the number of containers or weight of waste set out for collection.

**WASTE** -discarded materials and products that are landfilled or incinerated, rather than reused, recycled, or composted.

**WASTE DIVERSION** - Waste materials diverted from traditional disposal such as landfilling and incineration to be recycled, composted, burned for energy recovery, or reused.

**WASTE GENERATION** - total of the waste recycled/recovered plus the waste that is disposed.

**WASTE PREVENTION** -decreasing the amount of material or resources used or solid waste generated, without increasing toxicity, in the design, manufacture, purchase or use of products or packaging. Waste prevention does not include reuse, recycling, or composting.

**WASTE REDUCTION** - decreasing the quantity of materials and/or products that are landfilled or incinerated. This may be by a combined result of waste prevention (source reduction), reuse, composting, and recycling practices.

**WASTESHED** - areas of the state, usually counties, having a common solid waste disposal system, or an area designated by the EQC as appropriate for developing a recycling program. Also, areas of the state of Oregon as defined in ORS 459A.010 and OAR 340-90-050.

**Appendix 2. White Paper I: Enhance Waste  
Prevention**

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## DEQ TELECONFERENCE BACKGROUND PAPER I: ENHANCE WASTE PREVENTION

*Waste prevention is seeking not to generate waste in the first place. It is using resources and materials as efficiently as possible in the manufacture of products and delivery of services. It is buying only what you need, and buying durable and repairable products.*

### I. Statutory Requirements

*State policy:* In the interest of public health, safety and welfare and in order to conserve energy and natural resources, the state of Oregon establishes a comprehensive program which seeks first to reduce the amount of solid waste generated and secondly to reuse material for the purpose for which it was originally intended before it is recycled, composted, energy recovered or disposed. (ORS 459.015)

Promote research, surveys and demonstration projects to aid in developing markets for reusable material first and then for recyclable material. (ORS 459.015)

Promote means of preventing or reducing at the source, materials which otherwise would constitute solid waste. (ORS 459.015)

*for DEQ:* Promote and enhance waste reduction statewide, including data collection, performance measurement, education and promotion, market development, and demonstration projects. (ORS 459A.120)

### II. Background

Since 1983 Oregon's policy has been that waste generators should first seek not to generate waste in the first place (source reduction = waste prevention). When they cannot do that, they should reuse materials and products as much as possible before turning to recycling as the third priority in waste management options. However in practice Oregonians have put most of their resources and efforts into establishing successful recycling programs and safe disposal options for solid waste. None of the statutory tools currently provided relates to waste prevention.

Our non-renewable resources are becoming more and more scarce. Our economic base has to compete in a global economy. Preventing waste helps us do that more efficiently while reducing the pressure on natural resource consumption and the amount of waste that must be managed through recycling, composting and disposal.

### III. Current Status

The amount of waste generated per capita in Oregon continues to rise (from 5.7 pounds per person per day in 1992 to 6.1 pounds per person per day in 1994). The more waste generated, the more natural resources are consumed.

DEQ's Resource-Efficient Model City Program is founded on the concept of a community-based program led by a local public-private partnership. It includes resource efficiency assessments for participating businesses and agencies, implementation of cost-effective measures, and providing community education. It has resulted in considerable cost savings and waste reduction through increased efficiencies.

#### IV. Issues

Waste prevention is concerned with how we use raw materials, make products, deliver services and use products and services in order to generate less. It is important to establish policies that focus on all steps. Key issues include:

- Knowing and motivating your audience. The industrial/commercial sector will be motivated by different concerns than private consumers. The business sector is more likely to learn from its peers than from government.
- Educating for behavior change. Successful recycling programs changed people's behavior in managing waste. Many people do not understand how waste prevention differs from recycling. With successful waste prevention, people's behavior in making and using products would be changed -- upstream in the economy before materials have been identified as waste. Educating for behavior change will require a long-term educational investment.
- Measurement. Waste prevention should have its own goals and measurements to motivate progress and evaluate success. Quantitative measurement is difficult, other than at the micro (individual business) level. Qualitative measurements might be useful, such as percentage of Oregon businesses over a certain size which had conducted a waste prevention assessment.

#### V. Strategies

The Department is considering proposing the following strategies to the Legislature as a "package" to enhance waste prevention activities in the State.

*Do you support the strategies, not support the strategies, or support them with conditions?*

- Add a waste prevention/reuse program menu component to local government programs. Local governments would choose among the following types of activities and implement them by a date certain (e.g. 2003):
  - Waste prevention consumer education for the community.
  - Provide technical and monetary support to encourage public-private partnerships in waste prevention at the community level.
  - Waste prevention assessments and implement programs to achieve 10% reduction in all city agencies.
  - Backyard composting program for residences.
  - Reuse program: divert reusable goods at transfer station or landfill.
- Change the recycling grant statute to allow use of grant funds for waste prevention and reuse activities.
- A statewide waste prevention leadership recognition program instituted by DEQ.
- Require self-assessments by public agencies on waste prevention/ resource efficiency (after DEQ pilot program).

**Appendix 3. White Paper II: Achieve State  
Recovery Goal: Reaffirm State's 50% Recovery  
Goal**

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DEQ TELECONFERENCE BACKGROUND PAPER II:  
**ACHIEVE STATE RECOVERY GOAL:  
REAFFIRM STATE'S 50% RECOVERY GOAL**

*The goal of the State is to recover as least 50% from the waste stream by the year 2000.  
Individual wastesheds have interim recovery rates to be met for calendar year 1995. The State  
now has four years of experience working towards that goal.*

**I. Statutory Requirements**

- for Local Gov't:* "Wastesheds" (usually counties) are responsible for achieving specific material recovery rates (from 7 to 40 percent) for calendar year 1995. (ORS 459A.010(6))
- Cities with over 4,000 population must provide an "opportunity to recycle", including at least monthly curbside collection of recyclables and a choice of several other recycling "program elements." (ORS 459A.005 and .010)
- If a wasteshed fails to achieve its 1995 rate, cities over 4,000 within the wasteshed must provide two additional program elements by January 1, 1988. (ORS 459A.010(8))
- for DEQ:* Report biennially to the Legislature on waste disposed of per capita, the annual recovery rate achieved by each wasteshed and the statewide recovery rate, and the amount of each type of material recycled statewide. (ORS 459A.040 and ORS 459A.050(9))

**II. Background**

In 1991 Senate Bill 66, the Legislature adopted the statewide 50% recovery goal for the year 2000, and set 1995 wasteshed recovery rates to measure each wasteshed's progress towards achieving the statewide goal. Cities are responsible for most of the programmatic activities contributing towards achieving the recovery rate. The consequence of cities having to provide more recycling program elements if the 1995 wasteshed rate is not met gives cities an incentive for the rate to be achieved.

State policy is clearly to achieve greater reduction, reuse and recycling. However, the recovery rates reflect only recycling and composting (and some energy recovery) activities and not waste prevention or reuse..

**III. Current Status**

**Waste Generation and Recovery.** The state recovery rate for municipal solid waste (MSW) has climbed steadily since it was first calculated in 1992, to 32.5% in 1994:

**Oregon State Recovery Rates  
and Per Capita MSW Generation, Disposal & Recovery**

| Year | State Recovery Rate | Per capita Waste Generation (lbs/yr) | Per Capita Waste Disposal (lbs/yr) | Per Capita Waste Recovery (lbs/yr) |
|------|---------------------|--------------------------------------|------------------------------------|------------------------------------|
| 1992 | 27.1%               | 2098                                 | 1519                               | 579                                |
| 1993 | 29.9%               | 2143                                 | 1501                               | 642                                |
| 1994 | 32.5%               | 2230                                 | 1504                               | 726                                |

Per capita recovery has also increased. However, the amount of MSW generated has also increased steadily, both in absolute and in per capita terms. Solid waste generation is closely linked to economic activity.

**Getting to 50%.** At the 1994 level of waste generation, nearly 600,000 more tons would need to be recovered to reach the 50% goal. This represents an increase of nearly 54% over the tonnage of materials actually recovered in 1994. In 1994 there were still significant amounts of potentially recyclable materials being disposed of. Following are the eight largest categories of those materials:

**Est. Amount of Materials Disposed (1994)  
(Potentially Available for Recovery)**

| Material        | 000's tons    |
|-----------------|---------------|
| food            | 530.9         |
| wood            | 295.7         |
| low-grade paper | 261.3         |
| cardboard       | 217.5         |
| other metal     | 193.3         |
| yard debris     | 185.4         |
| textiles        | 92.6          |
| newspaper       | 93.4          |
| <b>TOTAL</b>    | <b>1870.1</b> |

The above materials are good candidates to target to increase recovery rates. However they are available in different proportions in different garbage collection substreams. Commercial garbage haulers, drop boxes, and self-haul dispose of 75% of these materials, with only 25% being collected on residential routes. To be effective, recovery efforts would have to be expanded beyond the traditional residential curbside programs which only impact the residential collection stream.

**IV. Issues**

- What purpose should a state recovery goal serve?  
Oregon no longer has a shortage of landfill space; however it still makes sense to use existing landfill space wisely. Diversion of potentially useful materials from disposal -- i.e. using resources efficiently -- makes sense from an economic, environmental and energy-efficiency standpoint. Capturing organic materials for composting has environmental benefits (use in restoring topsoil and avoiding methane generation in landfills) as well as landfill management benefits.

A state recovery goal is necessary to keep public attention focused on the importance of continuing to recover materials from the wastestream, and as a shared vision to work

towards. Having an ambitious goal "out ahead of us" is more important than attaining (or not attaining) -- and then forgetting -- a goal.

- Is the 50% goal reasonable and achievable by the year 2000?  
There are recyclable and compostable materials in the wastestream which could likely be recovered to reach the 50%. But program focus would have to be changed from residential to other sectors to capture them, or other actions put into place. The level of effort necessary to attain 50% by the year 2000 may not be reasonable or feasible. Keeping the goal but changing the implementation date would allow more time to reach sectors not now well targeted (e.g. commercial).
- Does the recovery rate as currently defined in statute capture the effects of activities toward which the State should be directing its solid waste management efforts?  
The recovery rate does not measure waste prevention or reuse. It may be appropriate to consider other measurement tools which recognize advances made in waste prevention and reuse.
- Would measurement of waste generation or disposal on a per capita basis be a better way to track the State's progress?  
Per capita disposal could be determined without calculating a recovery rate. However, a per capita MSW disposal measurement would not provide information on the State's progress in supporting the solid waste management hierarchy. As shown in the first table above, per capita disposal can decrease while waste generation rises if recovery also rises.

A per capita MSW generation measurement could indicate progress in waste prevention, but in and of itself does not provide information on recovery. It would be important to have a companion recovery goal to track progress on recovering materials from the wastestream. Generation measurements would need to be adjusted for changes in economic activity, and perhaps natural disasters, etc.

Another approach could be a per capita disposal goal for major recyclable materials: no more than \_\_\_ pounds of, e.g., cardboard or newspaper per capita per year.

## V. Strategies

The Department is considering the following strategies to reaffirm the state recovery goal and add a measurement tool for waste prevention.

*Do you support the strategies or not support the strategies?*

- Keep the statewide recovery goal, but change the achievement date:
  - 50% recovery by the year 2005  
*(nearly a 54% increase in materials recovered over 1994)*
  - 40% recovery by the year 2000 (add this interim goal to statute)  
*(a 23% increase in materials recovered over 1994)*
- Change statute to allow DEQ to develop a tool, through rulemaking, which can be used to give credit to local governments for instituting waste prevention and reuse programs.
  - DEQ will work with local governments to devise a measurement tool which recognizes advances made in waste prevention and reuse.



**Appendix 4. White Paper III: Achieve State  
Recovery Goal: Local Program Enhancement**

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DEQ TELECONFERENCE BACKGROUND PAPER III:  
ACHIEVE STATE RECOVERY GOAL:  
LOCAL PROGRAM ENHANCEMENT

## I. Statutory Requirements

*for Local Gov't:* "Wastesheds" (usually counties) are responsible for achieving specific material recovery rates for calendar year 1995. (ORS 459A.010(6))

Cities with over 4,000 population must provide an "opportunity to recycle", including at least monthly curbside collection of recyclables. (ORS 459A.005)

Wastesheds (generally counties) must submit an annual report to DEQ on the opportunity to recycle programs within the county. (ORS 459A.050)

*for DEQ:* Responsible for "certifying" that local government programs meet opportunity-to-recycle requirements. (ORS 459.305)

Must conduct an annual survey of collectors, processors and end users of secondary materials. The survey collects information on the type and weight of each recyclable material collected from each wasteshed. (ORS 459A.050)

Must conduct a waste composition study every two years. (ORS 459A.035)

## II. Background

**Recovery rates.** The 1991 Oregon Recycling Act (SB 66) established five categories of recovery rates (from 7 to 40 percent) for 1995 for individual wastesheds. This grouping corresponds generally to the degree of urban or rural nature of the county and to the distance from recycling markets and major population centers.

**Community programs.** The 1983 Opportunity to Recycle Act required at least monthly curbside recycling collection in cities of 4,000 or more; recycling depots at solid waste disposal sites; and recycling education and promotion programs. SB 66 added requirements for cities and counties to choose several additional recycling options from eight "menu items," including providing:

- Recycling containers to residential garbage service customers
- On-route recycling collection weekly on the same day as garbage service
- An expanded recycling education and promotion program
- Recycling collection at multifamily housing units
- A yard debris recycling program
- More frequent recycling collection from businesses
- Incentive garbage collection rates to encourage waste reduction

## III. Current Status

### Wasteshed Recovery Rates:

- For 1994, 25 of the 35 wastesheds were already meeting their 1995 recovery rate.

- Even if all wastesheds met (but did not exceed) their 1995 rate, it would result in a statewide recovery rate of only 32%. Levels of recovery higher than the 1995 wasteshed rates are needed to reach the statewide 50% goal.
- There are differences in waste generation, disposal and recovery between large and small wastesheds. Small wastesheds both generate and recover much less waste per capita than do large wastesheds. The six largest wastesheds<sup>1</sup> generate nearly 80% of the state's municipal solid waste (MSW), while the 12 smallest wastesheds generate less than 2% of its MSW.

Actual 1994: Thousands of Tons of MSW Generated, Disposed, Recovered  
Grouped by Size of Wasteshed<sup>2</sup>

| Size of Wasteshed  | No. of wastesheds | 1994 Tons generated (000) | Tons disposed (000) | Tons recovered (000) | Tonnage gen. as % of State total | Tonnage recov. % of St total | Per capita generation (lbs/yr) | Per capita recovery (lbs/yr) |
|--------------------|-------------------|---------------------------|---------------------|----------------------|----------------------------------|------------------------------|--------------------------------|------------------------------|
| Very small         | 12                | 66.9                      | 56.9                | 10.1                 | 1.9%                             | 0.9%                         | 1,388                          | 209                          |
| Small              | 11                | 286.0                     | 220.0               | 66.0                 | 8.3%                             | 5.9%                         | 1,524                          | 352                          |
| Medium             | 6                 | 410.3                     | 309.6               | 100.6                | 12.0%                            | 9.0%                         | 1,926                          | 473                          |
| Large              | 6                 | 2,668.5                   | 1,726.3             | 942.2                | 77.8%                            | 84.2%                        | 2,443                          | 863                          |
| <b>State Total</b> | <b>35</b>         | <b>3,431.6</b>            | <b>2,312.7</b>      | <b>1,118.9</b>       | <b>100%</b>                      | <b>100%</b>                  | <b>2,230</b>                   | <b>726</b>                   |

#### Community Recycling Programs:

- All cities over 4,000 population are implementing at least the minimum number of required menu items.
- Many are doing more than the minimum.
- 95% were offering residential curbside collection. The amount of materials collected curbside per household varies a lot from wasteshed to wasteshed.
- 24% had yard debris programs (all on the westside of the state). Yard debris programs have made a difference in the amount of yard debris disposed of. But yard debris remains a major component of waste being landfilled.
- Less than 10% offered, as a menu item "program measure," garbage rates designed as a waste reduction incentive.

#### IV. Issues

- What purpose should local wasteshed recovery rates serve?  
Recovery rates are meant to serve as wasteshed goals and allow measurement of progress towards achieving the State's goal. Even if not mandatory, local goals may serve a useful purpose as an end toward which effort is directed. The exercise of setting a recovery goal at the local level has value in itself.
- Are individual wasteshed recovery rates still necessary?  
Without the impetus of a recovery goal to keep the issue highlighted, local programs may not be supported at appropriate levels. Wasteshed recovery rates are necessary to help maintain high quality programs. It is appropriate to set wasteshed recovery goals that would result in achievement of a statewide goal.
- If local rates are necessary, do they need to be changed?

<sup>1</sup> Wastesheds generating over 100,000 tons of MSW/yr: Douglas, Deschutes, Jackson, Marion and Lane Counties and Metro (the three counties in the Portland metropolitan region).

<sup>2</sup> Wastesheds grouped by tons of MSW generated annually: very small = <10,000 tons; small = 10-50,000; medium = 50-100,000; large = >100,000 tons.

For a "goal" to have meaning, it needs to exceed current performance; 70% of the watershed had already met their 1995 rate in 1994. Higher watershed rates will be necessary to reach the statewide 50% recovery goal.

- Should local program measures be changed or other measures added to encourage further progress in recovery?

The most successful local programs tend to collect more categories of materials in both their residential and commercial programs, and to provide a variety of community education and promotional activities. In addition, the city government tends to provide active leadership in implementing the program. Program refocus to enhance those program aspects might enhance program performance.

Procurement. Public agencies are required to give preference to purchasing supplies made with recycled materials. Many public agencies do not have formal policies to implement this requirement. A reporting requirement on procurement could result in more compliance with existing law, and enhance markets for recycled materials.

Mandatory recycling and landfill bans. Thousands of tons of materials with steady market demand and materials capable of being composted continue to be landfilled every year. Making such materials subject to mandatory recycling or banning them from landfills can serve an educational function, and make them more available for recycling. This would also spread the responsibility for achieving higher recovery rates throughout the watershed and the state. See Commercial Recycling Enhancement Background Paper IV for further discussion.

Incentive garbage collection rates. Could consider requiring incentive garbage collection rates for watersheds not reaching their 1995 recovery rate. Incentive rates are often in place where curbside recovery rates are high. Incentive rates are a non-regulatory way to use market forces to "give the right signals."

## V. Strategies

The Department is considering the following strategies to enhance local programs.

*Do you support the strategies, not support the strategies, or support them with conditions?*

- Set watershed rates for the year 2000. DEQ could set advisory recovery rates which would meet the statewide goal. Individual watersheds could either adopt the advisory rates or another rate (in any case the rate must be at least as high as the higher of: a) the statutory 1995 recovery rate, or b) the rate the watershed actually achieved in 1995). Cities and counties would cooperate in setting the local rate.
- Require reporting on procurement of recycled supplies. Watershed data reporting to DEQ could include amounts of materials and supplies with recycled content purchased by public agencies in the watershed.

**Appendix 5. White Paper IV: Commercial  
Recycling**

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## DEQ TELECONFERENCE BACKGROUND PAPER IV: COMMERCIAL RECYCLING ENHANCEMENT

*Commercial recycling is recycling of solid waste generated by businesses such as stores, offices, including manufacturing and industry offices, restaurants, schools, hospitals, and other non-manufacturing activities, but does not include solid waste from manufacturing activities.*

*Commercial recycling enhancement refers to increasing the quantity of materials recycled by commercial establishments*

### I. Statutory Requirements

*for Local Gov't:* Cities with over 4,000 population must provide an "opportunity to recycle," including "collection at least once a month of source separated recyclable material from collection service customers." (ORS 459A.005(1)) In addition, one recycling "program element" a city may choose is regular onsite collection of source separated principal recyclable materials from commercial solid waste generators. (ORS 459A.010(2)(f)). The "expanded education" program element includes educational requirements for commercial customers. (ORS 459A.010(2)(c)(A))

*for Citizens:* No person shall dispose of, and no Disposal Site operator shall knowingly accept for disposal the following materials: discarded or abandoned vehicles, discarded large home or industrial appliances; used oil, tires, or lead-acid batteries. (ORS 459.247)

### II. Background

Basic "Opportunity to Recycle" legislation includes monthly on-site collection for all "collection service customers." In practice, however, the residential sector has tended to receive more programmatic attention than the commercial sector. For example, all but two of the eight recycling "program elements" (on the menu from which communities choose) address residential recycling. The recycling laws principally address collection of the materials most likely to be recycled from households. The Waste Prevention and Material Recovery objectives and strategies proposed in the state's Integrated Resource & Solid Waste Management Plan for 1995 - 2005 recognize the importance of business and industry contributions to reaching state goals.

Oregon has statewide landfill disposal bans on five materials: discarded or abandoned vehicles, discarded large appliances, used oil, tires and lead acid batteries.

### III. Current Status

Material from a broader portion of the waste stream than just the residential sector will need to be recovered if the state is to reach its 50% recovery goal. An increased

emphasis on reduction and proper management of commercial wastes will be more cost-effective and likely more successful in achieving overall statewide goals than attempts to recover even more from the residential wastestream.

DEQ estimates that about 50% of municipal solid waste comes from commercial sources. There are still very significant quantities of materials potentially available for recovery in the commercial wastestream:

**Selected Recyclable Materials: Tons Disposed in 1994, from:**

|               | (1) Residential Routes | (2) Commercial Routes | (3) Drop Boxes | (2+3)          |
|---------------|------------------------|-----------------------|----------------|----------------|
| Cardboard     | 31,200                 | 27,700                | 51,300         | 79,000         |
| Newspaper     | 22,100                 | 13,400                | 7,700          | 21,100         |
| Yard Debris   | 60,900                 | 6,200                 | 17,100         | 23,300         |
| Food Waste    | 101,100                | 93,700                | 56,900         | 150,500        |
| <b>Total:</b> | <b>215,300</b>         | <b>141,000</b>        | <b>133,000</b> | <b>273,900</b> |

There is also considerable potential for increased recovery and reuse of construction and demolition (C&D) wastes such as wood, gypsum wallboard and asphalt shingles.

A number of local governments are looking to increase their commercial-recycling program efforts, in order to reach higher watershed recovery rates.

#### IV. Issues

**1. Waste Self-Assessments.** Should waste self-assessments of recycling needs be required of commercial businesses and government agencies? The waste self-assessments would be done at the local level, but DEQ could provide information and technical assistance. If a waste audit shows a need for new equipment in order to facilitate substantial waste reduction, information on available tax incentives would be offered.

Issues include:

- Require of all businesses, or only larger ones?
- Cost to businesses to do audit (time and staffing)
- Amount of technical assistance offered to business on how to conduct a waste audit
- Once businesses identify potentially recyclable materials, will they be required to implement recycling?

**2. Mandatory Recycling/Disposal Bans.** Should some of the largest components of the waste stream (such as cardboard, newspaper and yard debris) be required to be recycled and/or banned from disposal sites? Either of these actions could motivate more source-separation of these materials, which enjoy steady market demand and are commonly recyclable from businesses. Grass clippings and yard debris could likewise be banned from disposal with solid waste, which would encourage waste prevention (through home composting, "grasscycling", and lawn alternatives) as well as source separation.

Issues associated with mandatory recycling or disposal bans include:

- Public education

- Length of advance notice before implementing
- Enforcement - hard, soft, or none?
- Markets for subject materials (existing, or need to be put in place)
- Collection system for materials (existing, or need to be put in place)
- At what point(s) should ban occur (generator, hauler, landfill)
- Mandatory recycling or ban apply statewide, or to certain regions or counties
- Quality of materials collected

## V. Strategies

The Department is considering proposing the following strategies to the Legislature to increase commercial recycling in the State.

*Do you support the strategies, not support the strategies, or support them with conditions?*

**1. Require self-assessments in commercial and government establishments to identify recycling opportunities.**

- Implement a recycling program for three recyclable materials.

**2. Mandatory Recycling/Disposal Site Bans**

- Ban commercially-generated newspaper and cardboard from disposal sites statewide by January 1, 1998. Commercial and government establishments would be prohibited from disposing of these materials, haulers would be prohibited from collecting them for disposal, and disposal sites would be prohibited from accepting them for disposal.
- Ban yard debris (for residents and commercial/government establishments) from disposal sites on the west side of the state by January 1, 2000.
- Ban C&D waste from disposal sites in the six largest wastesheds (Deschutes, Douglas, Jackson, Lane, Marion, & Metro) by January 1, 1999.
- Ban commercial food waste (after feasibility study by DEQ) from disposal sites in the six largest wastesheds by January 1, 1999.



## **Appendix 6. White Paper V: Funding Mechanisms**

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## DEQ TELECONFERENCE BACKGROUND PAPER V: FUNDING MECHANISMS

### I. Statutory Requirements

*State policy:* Per ton fees on actual tonnage received at a disposal site shall be sufficient to assist in the funding of programs to reduce the amount of domestic solid waste generated in Oregon and to reduce environmental risks at domestic waste disposal sites. (ORS 459A.110)

*for DEQ:* Moneys in the Waste Tire Recycling Account are to be used by DEQ for programs and activities related to waste tire storage, removal or disposal. (ORS 459.775)

### II. Background

The proposals presented in the budget note package will require the Department to either shift resources from current activities or to increase revenues in some manner. Likely, depending of how many and which of the proposals are adopted into law, the Department's workplan will be affected and a combination of the resource alternatives will be necessary.

The funding strategies include increasing the existing funding source (per-ton solid waste disposal fee), or tapping new resources to cover legislative and programmatic changes. The strategies have not been entirely fleshed out, and are presented in concept at this time in order to solicit input.

### III. Current Status

- *Solid waste disposal fee.* The Department currently collects a \$0.81 per-ton solid waste disposal fee on all municipal solid waste. This fee was reduced from \$0.85 per ton on January 1, 1994. The fee is to fund household hazardous waste programs, activities to enhance waste reduction and recycling statewide, including data collection, performance measurement, education and promotion, market development and demonstration projects; groundwater monitoring and enforcement of groundwater protection at municipal solid waste disposal sites; solid waste planning activities by counties; and grants to local governments for recycling and solid waste planning. During the 1995-97 biennium it is anticipated that about \$5.7 million will be generated from this fee.
- *Unredeemed bottle deposits.* The Oregon bottle bill requires that consumers pay, at retail, a \$.05 deposit upon purchase of beer and carbonated beverages. The deposit is refunded to consumers when they return the empty containers to a retailer. Distributors charge this same fee to retailers, and refund it when retailers return the bottles to them. The containers are then sold for recycling. Over 90% of the bottles with deposits are returned to retailers. The remaining 7 to 10% are not returned and their deposits are not redeemed, amounting to about \$4.5 to 6.5 million annually which is retained by distributors. This amount may be reduced by out-of-state bottles (which didn't pay Oregon deposits) which are redeemed in Oregon. Currently there is no way to determine the amount of unredeemed deposits, as beverage

distributors are not required to report this information. In some states unclaimed bottle-deposits escheat to the state. For example, in Massachusetts \$12 million was returned to the state in 1995.

- *Waste Tire Recycling Account.* Retail tire dealers collected a \$1 fee on new replacement tires from 1988 through September 1992. Most of the fee went to the Waste Tire Recycling Account, used for waste tire cleanups and market enhancement for recycling waste tires. Currently there is about \$1.5 million in the Account, but no new funds are being generated. Interest from the Account goes into the State General Fund. There is an ongoing need for funds to help with cleanup of illegally stored waste tires. Markets to recycle scrap tires are still limited. If the interest on the Account were directed to the waste tire Account, waste tire activities could be carried out longer.
- *Advanced Recycling Fees.* An advanced recycling fee is an offshoot of another concept used in several states around the country called an "advanced disposal fee." Regardless of the name, it operates the same: essentially, it is a small fee placed on an item at the time of purchase, in advance of its entering the waste stream for ultimate recycling or disposal. The funds generated are typically used to recycle the items with the fee, which are either difficult to recycle or are not being recycled at a sufficient rate. Excess moneys are often used to expand recycling programs such as household hazardous waste collection, grants to local governments, education and technical assistance.

States have instituted fees on particular hard-to-recycle products such as motor oil or white goods, or on packaging. Florida's one cent per item packaging fee, for example, applied to containers not being recycled at a rate of at least 50%. Fees have also been applied to tires, often to fund cleanup of illegal tire dumps.

#### IV. Issues

The per-ton solid waste disposal fees currently assessed are sufficient for DEQ to carry on existing workload. Several items remain difficult to recycle in parts of Oregon, for example appliances and paint. An advanced fee on these products could be used to develop more consistent and reliable recycling programs.

#### V. Strategies

The Department is considering proposing the following strategies to the Legislature if additional resources are necessary to fund activities being considered as part of the Budget Note.

*Do you support the strategies, not support the strategies, or support them with conditions?*

- *Increased solid waste disposal fee:* A minor increase in the solid waste disposal fee (not more than \$0.04/ton) could provide additional revenue for solid waste recycling and waste prevention programs. If 3.5 million tons of municipal solid waste are disposed of annually, this fee increase would generate an additional \$140,000 a year.
- *Unredeemed Bottle Deposits:* Capturing unredeemed deposits might result in \$2 to 4 million a year. It would be appropriate that such funds be used to support recycling and waste prevention programs.

- Waste Tire Recycling Account interest: Currently moneys in the General Fund accrue interest at about 5% annually. The \$1.5 million in the Account generates about \$75,000 annually; this will decline over time as the principal is used. If this interest were made available to DEQ, the tire program could continue longer.
- Advanced recycling fees: Advanced recycling fees should be considered to collect funds to further recycling of the following difficult-to-recycle materials and/or items creating solid waste management problems:

| Item, Material                              | Fee used for:                                                      |
|---------------------------------------------|--------------------------------------------------------------------|
| appliances (refrigerators, washers, dryers) | recycling appliances (freon removal, etc)                          |
| household pesticides & fertilizers          | local household hazardous waste (HHW) events, yard debris programs |
| paints                                      | local HHW events or collection programs                            |
| shrubs/trees                                | yard debris programs                                               |
| oil filters                                 | used oil & used oil filter recycling                               |
| green glass                                 | local market development                                           |
| tires                                       | market development for waste tires                                 |
| polystyrene                                 | polystyrene recycling programs                                     |
| non-bottle rigid plastic containers         | recycling programs for these plastics                              |

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## **Appendix 7. White Paper VI: Recycling Market Development**

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TELECONFERENCE BACKGROUND PAPER VI:  
RECYCLING MARKET DEVELOPMENT

*Recycling market development is any private or public action or set of actions taken with the intention of improving the viability, profitability, stability, and/or long term health of the recycling industry and particular operations or functions that exist within it, either through the improvement of material supply qualities and quantities in separation, collection, processing, and transporting activities, or in the manufacture and purchasing of, or demand for, products made by secondary material end users.*

**I. Statutory Requirements**

*State Policy:* In the interest of public health, safety and welfare and in order to conserve energy and natural resources, the state of Oregon establishes a comprehensive program which seeks first to reduce the amount of solid waste generated and secondly to reuse material for the purpose for which it was originally intended before it is recycled, composted, energy recovered or disposed. (ORS 459.015)

Promote research, surveys and demonstration projects to aid in developing markets for reusable material first and then for recyclable material. (ORS 459.015)

*for DEQ:* Promote and enhance waste reduction statewide, including... market development,...(ORS 459A.120) .

**II. Background**

The success of recycling ultimately depends upon markets for recyclable materials diverted from the waste disposal stream. Collection, transportation and end-use manufacturing are all part of a complete recycling system. Over time Oregon has developed an elaborate and relatively stable recycling system which removes a large quantity of formerly useless material from the solid waste stream and puts it back into the economy as useful feedstock. The markets for recyclable material in Oregon have grown along with the recycling collection systems. The Department has been involved with recycling for over twenty years, including assistance in recycling market development. The Department has been actively involved in the collection and sharing of information on availability of markets for recyclable materials and the specifications for marketable material. The Department has surveyed recyclable material supply and end-use market demand. In the past the Department has published a recycling markets newsletter and individual recyclable material market fact sheets. The Department was also a leader in the development of legislation to improve recycling markets by deregulating the transportation of recyclable materials and by including recycling in the pollution control facility tax credit program.

**III. Current Status**

Oregon has mature, stable, markets for some recyclable materials such as metals and paper. However, there are still large quantities of material in the solid waste stream which can be separated and made available for recycling. Markets for some other recyclable commodities are not yet mature or adequate; they need further development before they can adequately serve Oregon needs. For example, glass does not have an adequate market place statewide, plastic does not have a stable local market for all common resin types, and the Oregon market for tires is not large enough to be either adequate or stable. Markets for

some other recyclable materials such as organic wastes are very immature and are substantially lacking in necessary infrastructure or end-use product markets.

Currently the Department is only indirectly involved with recycling market development. Since the passage of Senate Bill 66 in 1991 the Department has deferred market development planning and evaluation to the Oregon Recycling Market Development Council. The Council's focus is limited by law to markets for paper, glass and plastic which they have reviewed and evaluated during the last five years. The Council sunsets in December 1997.

The US Environmental Protection Agency, the Council, Metro, DEQ and the Economic Development Department (EDD) jointly sponsored a recycling economic development advocate position at EDD. This program was similar to the successful recycling market development program operated by Metro in the Portland area. The 18-month EDD project demonstrated a strong demand from recyclers statewide for economic development assistance. Startup and expansion of recycling markets are limited by:

- Limited capital investment and operating funds;
- Limited access to supplies of recyclable material;
- Undeveloped markets for recycled products;
- Limited business startup and operating experience; and
- A lack of end-use markets for many recyclable materials.

In May 1996 market development service providers and other stakeholders met at an Oregon Recycling Market Development Summit to discuss and recommend future directions for recycling market development in Oregon. Some of the major issues discussed at that summit meeting are listed below.

#### IV. Issues

How much could an organized market development effort improve recycling collection and waste reduction efforts in Oregon ?

Should the State discontinue, continue or expand its recycling market development efforts? Should resources be redirected from other programs to recycling market development?

What are the appropriate roles for the different agencies involved in recycling market development?

How should market development tools such as grants, loans, tax credits, procurement standards, minimum recycled content requirements, disposal bans, and advanced disposal fees be used?

What local and statewide market development programs should be implemented? Should the Recycling Economic Development Advocate Program be continued? Should the role and focus of the Council be continued or expanded?

Should market development programs be focused on specific commodities?

## V. Strategies

Based on the discussions from the Department's strategic planning process, the Summit and follow-up meetings, the following general strategies for recycling market development are being considered. The findings and recommendations of the Summit are not yet complete. When they are complete, DEQ's recommendations could be affected. For the present, the following strategies are put forward for comment.

*Do you support the strategies, not support the strategies, or support them with conditions?*

- The Council should continue its activities as an independent forum for policy review and information exchange. The Council should be allowed to add commodity divisions as needed.
- The Department should expand its involvement in recycling market development activities and prepare a legislative proposal for an expanded level of activities with additional staff and resources emphasizing materials with a limited commercial market.
- A two-year short term and five-year medium term "Oregon Recycling Market Development Workplan" should be developed by major stakeholders. The short term plan should include:

Characterize recycling markets including industry demand, utilization, and capacity.

Establish an information clearinghouse function to collect and disseminate recycling market development information within Oregon and the Pacific Northwest region.

Identify available resources which can be focused on helping establish or expand recycling markets and feedstock supply systems for new/emerging recyclable commodities.

Institute programs to develop or improve the recycling markets infrastructure: collection, processing, transportation, manufacturing and distribution systems for recyclable materials and products made from recyclable materials.

Actively promote and participate in "Buy Recycled" programs to increase use of products made with recyclable materials.



## **Appendix 8. White Paper VII: Minimum Content Regulation**

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# DRAFT

## WHITE PAPER IV MINIMUM CONTENT REGULATION 3/19/96

This paper deals exclusively with the minimum content regulation in existing statute. These regulations are viewed as one of many tools for stimulating market development. A forthcoming paper will look broadly at other market development tools such as purchasing requirements, buy recycled campaigns or enterprise zones.

### I. ISSUE:

The intent of the minimum content section of existing statute was to stimulate markets for materials that are required to be collected. The issues at hand include:

- a. Has minimum content accomplished the goal of market development?
- b. Should minimum content be applied to other materials?
- c. Should the existing law be changed in any way?
- d. What can industry do differently, in lieu of mandated rates, to be a partner in recycling and market development?

### II. Background/Current Status:

Minimum recycled content requirements for products sold in the state have been viewed as an important tool for developing markets for recycled materials. While this goal is important, a correlation is difficult to establish. It can be said from experience that minimum content regulation gets the Board of Directors' attention and gets industry to the table to be a player in recycling. One of the landmarks of the 1991 Oregon Recycling Act was that it included regulation on both the collection and market side of the recycling program equation. Minimum content standards were set on:

Container Glass: 35% content by January 1, 1995 and  
50% content by January 1, 2000

The law was amended in 1995 to delay enforcing the provisions pertaining to minimum percentages of recycled content until January, 1998.

#### Status:

| Tons Recycled |             |             |
|---------------|-------------|-------------|
| <u>1992</u>   | <u>1993</u> | <u>1994</u> |
| 64,284        | 93,857      | 84,996      |

Manufacturers of glass containers sold in Oregon are required to report annually on the tons of recycled material consumed in the production of their product. The cost of doing the annual survey is about .01 FTE. The rate for 1994 is 25.29% which is up from a rate of 23.9% in 1993. This represents the aggregate use of all the companies that responded to our survey. For 1994, fourteen glass manufacturers reported their use of recycled content. Of the fourteen, three manufacturers used more than the required 35%.

Newsprint: 7.5% aggregate content by January 1, 1995

A Governor-appointed Newsprint Task Force was required by the law as well. This Task Force has been meeting since 1991 and statutorily ends on December 31, 1996. The Task Force can and did accept a voluntary agreement from the Oregon Newsprint Association and the Oregon Printers Association whereby the member companies meet a collective goal of 25% recycled fiber content in order to comply with the law. The Department surveys Oregon newsprint consumers annually to calculate the overall recycled content rate at a cost of about .01 FTE

Status:

| Tons Recycled |             |             |
|---------------|-------------|-------------|
| <u>1992</u>   | <u>1993</u> | <u>1994</u> |
| 130,181       | 142,821     | 196,922     |

1993 32.6% aggregate content  
1994 33.03% aggregate content

Directories: 25% content by January 1, 1995

A mix of newsprint, magazines and directories makes up the recycled content fiber for directories. In 1992, Diashowa America in Washington started incorporating directory fiber into their recycled mix.. The amount of old directory fiber used in the mix is related to the success of annual directory collection activities.

The requirements of the law are placed on users of this paper. The Department annually surveys Sprint, GTE and US West for information on use of recycled fiber in their directories at a cost of about .005 FTE.

Status:

| Tons Recycled<br>(mixed waste paper) |             |             |
|--------------------------------------|-------------|-------------|
| <u>1992</u>                          | <u>1993</u> | <u>1994</u> |
| 24,012                               | 58,084      | 61,032      |

1993 One company used less than 25% content, two used 25% or more  
1994 All three companies used at least 25% recycled content

- Rigid Plastic Containers
- 25% recycled content by January 1, 1995; or
  - made of plastic recycled in Oregon at a 25% rate by the same date; or
  - a package used five times or more

Status:

| Tons Recycled<br>(all plastic) |             |             |
|--------------------------------|-------------|-------------|
| <u>1992</u>                    | <u>1993</u> | <u>1994</u> |
| 9,520                          | 11,146      | 15,049      |

The Rigid Plastic Container Recycling Rate for Compliance Purposes exceeded 25% for 1995 and 1996.

|      |       |
|------|-------|
| 1995 | 31.9% |
| 1996 | 33.3% |

The Rigid Plastic Container Recycling Rate for Compliance is accomplished by an annual study which costs the Department \$45,000. Information from the biennial waste characterization study costs an additional \$15,000 a biennium plus about .02 FTE each year.

The rigid plastic container portion of the law is the only portion that required rule development. This process took almost two years. A plastic recovery facility was built and partially funded by the American Plastics Council about the same time the rule writing process was concluding. What effect this law and the rule development had on the addition of this important processing center can only be surmised.

III. Public Input:

Most of the public input was related to other market development tools; none were recorded for minimum content specifically. There were differing opinions on whether there are non-regulatory approaches which work to achieve recycling goals.

- Several noted that industry investment in plastics recovery would not have happened if the plastic content law were not in place.
- Others felt that cooperative action, not mandates, is what is needed to take us to the next level of material recovery.
- Some felt that good performance should be recognized and the Newsprint Task Force was not needed anymore.
- A comment was made to work with manufacturers to engineer waste reduction or recycling into products.

IV. Options/Discussion:

Note: Market development has historically been a major consideration for the sustainability of recycling programs. Few options or recommendations are presented here for consideration. Those that are presented are very draft, have had very little review by industry and are intended to stimulate thought about both regulatory and non-regulatory approaches to accomplishing our recycling and market development goals.

Glass:

The amount of recycled glass used by glass container manufacturers during 1995 was not available at the time of this report. The data available, as well as the 1995 amendment delaying enforcement, suggest that the mandated 35% content rate will not be attained before 1998. Reasons contributing to this may be that glass containers have lost some market share to plastic and aluminum since 1991, and the cost of getting recycled cullet to a primary market is prohibitive in many areas. The latter issue prompted the 1995 Legislature to require the Recycled Markets Development Council to investigate secondary markets for cullet that would increase glass use locally and thereby increase the overall recycling rate.

Given current market conditions, it would not be productive to increase the mandated rate. A modification on the date of compliance should be discussed.

Newsprint:

The Newsprint Task Force was specifically charged with reporting to the 1997 Legislature regarding whether changes are appropriate to the established aggregate content goal of 7.5 percent for newsprint. The Newsprint Task Force is scheduled to meet in April and further discussion on if and how to change this portion of the law should be delayed until the May meeting.

Directories:

This legislation is aimed at telephone directories. Perhaps consideration should be given to other types of directories or catalogs that should utilize recycled content as well .

Plastic:

Of all the commodities that have mandates for recycled content, plastic is the most recent addition to curbside activity in the state. Milk jugs have been recycled in some areas for some time, but over 21 programs to collect plastic containers (largely those with a neck) have been started in Oregon since 1991. While the existing law has faced many challenges, and modifications have occurred, it is the Department's belief that it was a critical factor in the development of both plastic recycling collection and processing in the state. Its effectiveness lies not in the increased use of plastic as recycled content, but in increasing the opportunity for recycling plastic and development of sorting technology to enhance the marketability of those collected materials. This statement should be tempered by also stating that the plastic recycling infrastructure is still young, and not yet self-sufficient.

For the last two years, compliance with the law has fallen on the option "made of plastic that is recycled in Oregon at a rate of 25% ". A recycling rate for *all* plastic is calculated annually. It is the result of the annual survey of all plastic recycled in the state and an analysis of disposal trends done each biennium. A recycling rate for rigid plastic containers is done annually as well. The disposal information is gathered by a separate sub-task of the biennial waste characterization study. To differentiate between the two rates, the later is called the Rigid Plastic Container Recycling Rate for Compliance Purposes (RPCR).

|      | "All Plastic" Recycling Rate | RPCR  |
|------|------------------------------|-------|
| 1992 | 5.15%                        | N/A   |
| 1994 | 6.99%                        | N/A   |
| 1995 | calculating now              | 31.9% |
| 1996 | N/A                          | 33.3% |

The RPCR is so named because unlike other recycling rate calculations, it is projected. This came about during development of the rule with a concern voiced by the regulated community that a rate calculated 9

months to one year AFTER the effective compliance date left them in a position of being out of compliance during that time without their knowledge. They wanted know that the containers being sold in the state met the requirements of the law.

Some rigid plastic containers are statutorily exempt from the requirements of the law. These include:

- a) containers which contain drugs, medical devices, medical food or infant formula
- b) packaging necessary to provide tamper-resistant seals
- c) packages associated with products destined for shipment outside the state
- e) packages that are reduced by 10%
- f) packages that contain food except drinkable liquids (1995 amendment)

It is important to understand that while these containers are exempt from the law, they are INCLUDED in the RPCR calculation. That is, any of these containers that are disposed or recycled are included in the total disposed and recycled tonnages of rigid plastic containers.

It is the explicit purpose of this review to determine ways the Department can foster administrative savings in the implementation of the law. The area of measuring success of rigid plastic container recycling is worth review in terms of improvement and administrative savings. Rather than create a survey methodology that seeks to differentiate between the regulated and non-regulated containers, here is an alternative to consider: amend the statute so that the RPCR is not done annually. The assumption is that if the overall plastic recycling rate remains above 5%, in all likelihood the RPCR rate is well above the mandated 25%. If the overall plastic rate falls below 5% (or failed to meet any other criteria deemed necessary), the Department would calculate the RPCR using the same methodology as previously used. The benefit is a cost saving of approximately \$90,000 per biennium to do the RPCR, and a savings of \$15,000 per biennium in sub-task 2 of the waste characterization study.

Some other options to consider for this review include:

*Fees:* Fees on all containers with a rebate to those that utilize recycled content; advanced disposal fees on all containers that are not rebated could be used by the state to enhance markets. While variations of fees look attractive, the mechanism to collect them is not in place and could be very burdensome.

*Make the law a recycling rate requirement only, and increase the required rate:* This sends a signal to community leaders responsible for providing the opportunity to recycle that more must be done. It does very little to generate any interest on the part of manufacturing industry to be a player in increased recycling.

*Leave the law alone:* Regulated industry in compliance, the infrastructure needs more time to stabilize, should look at collection end now.

*A more carrot less stick approach:* Various entities in the plastic container industry have various interests or concerns related to the existing law. Included are:

- recycled content unreasonably jeopardizes the quality of the product the container holds;
- much has been done in the area of reduction and credit should be given for past efforts;
- industry has no control over recycling efforts yet could be penalized if rate not met.

This is not an exhaustive list of concerns by any means, but it points to some perceived inherent problems with the law. Many of those involved in developing rules for the existing law would appreciate a more straightforward approach that focuses resources on results rather than rule writing. The following option is intended to head in that direction, recognizing that any *carrot* approach must have a fall back *stick*.

- do not change the requirements currently in place on RPC's.
- change the requirement for annual rate calculation: if the overall plastic recycling rate falls below 5%, then a RPCR calculation is done using existing methodology.
- institute a task force, modeled after News Print Task force that is charged with:
  - a) implementing department-approved public education programs about plastic recycling;
  - b) evaluating and developing recommendations on how to increase recyclability of "brown goods" (appliances, computers etc.) and promoting the strides made to date by industry in this area; and
  - c) working with the Department to develop and distribute information and training for businesses on how/why to utilize recycled content to build for reuse/recycling etc.
- if Task Force adequately implements requirements, the law changes in some manner to a less prescriptive law, effective January 2000.
- if the Task Force does not adequately implement requirements, the option for a recycling rate is removed as of a certain date (and product and container manufacturers would have to use the other compliance options in the law such as recycled content).

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## **Appendix 9. White Paper VIII: Education**

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**DRAFT  
WHITE PAPER V:  
EDUCATION**

3/20/96

**I. Issue**

This portion of the Budget Note Review will evaluate how well the educational components of state and local recycling programs are supporting the goals of the 1983 Recycling Opportunity Act and the 1991 Oregon Recycling Act. The progress of DEQ and local governments toward meeting the statutory and regulatory requirements for education will be evaluated in this paper in order to make recommendations for necessary statutory or regulatory changes.

**II. Background/Current Status**

In the last quarter of the twentieth century, solid waste management is making a fundamental shift away from waste disposal toward resource efficiency. This ongoing shift requires behavioral changes by all sectors of society including consumers, businesses, government and industry. Government should have a major role in facilitating this positive societal shift by providing relevant and effective education. Education has been recognized as a basic need in solid waste management and is required by statute and rule. Additionally, education is emphasized in the Oregon State Integrated Resource & Solid Waste Management Plan (Plan).

Statutory language requiring solid waste education focuses primarily in three areas that include:

- providing technical assistance to local governments;
- educating generators of solid waste on waste reduction and recycling opportunities; and
- providing educational resources for schools, teachers, and the general public.

These statutory requirements can be found in Oregon Revised Statutes Chapters 459 (Solid Waste Management) and 459A (Reuse and Recycling).

DEQ is directed by statute to provide advisory technical assistance to local governments in the planning, development and implementation of solid waste management programs [ORS 459.015(2)(c), 459.035, and 459A.030]. The city, county, or metropolitan service district responsible for solid waste management is required to provide a public education and promotion program providing notification of the opportunity to recycle and encouraging source separation of recyclable material [ORS 459A.005(2)(a) &(b)]. In addition the solid waste management authority may choose an expanded education and promotion program informing citizens of the manner and benefits of reducing, reusing, and recycling material [ORS 459A.010(2)(c)] as part of its opportunity to recycle program. Finally, the DEQ is directed to produce recycling and waste reduction components of required K-12 curriculum, a teachers guide and other informational resource materials [459A.750].

Supporting the statutory language, there are specific regulatory requirements (rules) providing more specific direction on the education and promotion program requirements for the city, county, or metropolitan service district responsible for solid waste management. The rules require an expanded education and promotion program that utilizes a variety of materials and media formats to disseminate recycling information in order to reach the maximum number of collection service customers and residential and commercial generators of solid waste. [OAR 350-90-030 and 040].

In addition to the statutory and regulatory language, the Plan, which provides overall guidance and direction for solid waste policy in Oregon from 1995 to 2005, recognizes the significance of education through the Plan Vision for the year 2005. The vision reads "Education, not regulation, is the primary means of affecting citizen's environmental stewardship and promoting conservation of resources." The Plan outlines objectives and strategies for achieving the Vision. The three education objectives include:

1. Develop education programs and materials that promote an understanding of the environmental impact of the manufacture and use of products and packaging and the true cost of disposal.
2. Expand curricula in primary and secondary levels of education that include waste prevention and reuse.
3. Make it a priority to develop a strong environmental post-secondary education program with an emphasis on solid waste resource management in publicly funded institutions. Oregon will be recognized nationally and internationally as having one the best college and university level environmental education programs available.

Finally, education reform and changes in staff levels at DEQ have affected implementation of recycling education programs. In 1991 Oregon's Educational Act for the 21st Century was passed by the legislature setting into motion the most extensive restructuring of a public school system to occur this century. It will take 10 years to fully implement. Its goals are to produce the best educated citizens in the nation by the year 2000 and a work force equal to any in the world by the year 2010. These reforms must be considered in providing educational materials to schools.

In the last biennium a limited duration position was funded to develop and distribute the recycling and waste reduction curriculum. The curriculum was successful completed and the position was not extended to the present biennium. At that time however, DEQ did not foresee the popularity of the materials and the corresponding need to continually update and support the program or the need to provide input to the new programs established by education reform. In addition, demands from local governments for education tools has increased.

### III. Public Input-Summary of Public Meetings

The following is a summary of the comments regarding education from the meetings held around the state in November and December 1995. The comments do not represent a consensus, but show the range of comments expressed. These comments were used as a guide in this review process.

- DEQ should work through the existing recycling education structure, rather than directly with "clients."
- Key DEQ role should be to provide forums, share information, facilitate networking, work with trade associations.
- Good to have a specific contact person at DEQ whom local governments can call for help.
- DEQ should provide generic and "big picture" recycling and waste prevention materials.
- Education is the key to getting people to reduce and reuse, but this is very difficult to get across.
- The public needs to understand its importance for resource and energy efficiency.
- The statutory recycling education requirements for local governments should be reviewed.
- Should add an education requirement for waste prevention.
- The state waste composition study helps in targeting materials still available to be recovered.
- DEQ should do pilot projects (especially for new programs) and provide "best practices" information.
- Curriculum: Plug into statewide Education 2000 (1991 Oregon Education Act) program; it requires activities.

## IV. Discussion

The review of existing statutes, rules and programs combined with the public input suggests several issues that merit further discussion regarding education about and promotion of recycling. These include the promotion education requirements for local government, educational materials production requirements for DEQ, and finally a need for strategic planning. These issues will be discussed below along with options for resolving the issues raised.

### Local Government Education Requirements

Recycling education and promotion requirements for local governments appear in two sections of the Reuse and Recycling statutes (459A). The first requirement, from the 1983 Recycling Opportunity Act, is a mandatory notice to each person of the opportunity to recycle and encouragement of source separation. This straightforward language has successfully been implemented widely in the state and requires no further discussion in this paper. The second statutory reference from the 1991 Recycling Act, is one program element from a list of menu options to be selected by local governments to support recycling programs. The prescriptive language of the expanded education and promotion program option has caused significant public comment and invites discussion here.

Successful education programs are critical to the success of local governments meeting the recovery rate goals specified in the 1991 Recycling Act. The expanded education and promotion element is one of three options that have been shown to be the most successful in increasing recycling participation and recovered material tonnages. This group of three options are the most commonly chosen method used to work toward the statewide goal of 50% solid waste recovery by January 1, 2000. This menu option requires: new customer information, quarterly promotion, annual recycling information, community/media event promotion and disposal site information. The intent of this portion of the statute was to require broad education of all customers including residential, commercial and institutional customers and to require regular contact.

The need for education to reach the recycling goal is not in question, however many local governments consider the specific requirements to be too prescriptive and unnecessarily burdensome. In part this may be due to the misinterpretation of the requirements by a number of local programs. For example, many the programs have focused their education programs on residential customers. This results in a missed opportunity in the commercial and institutional sectors for recycling education that represents an equally large source of materials. Finally, many programs have interpreted the quarterly information requirement to mean a mailing with a general program overview to all customers and they have not utilized the variety of formats as described in the rules (340-90-040(3)(c)). This has resulted in repetitive and expensive mailings of brochures to all customers every quarter and missed the statutory intent of a more varied program.

In response to these issues, several options could be utilized to address this problem. The statute and rule language could be left unchanged and DEQ could take a more active role in assisting the local governments to provide education and promotion programs that are more consistent with the intent of the statute. For example, DEQ would provide direction on addressing all customers, provide input on using a variety of formats, and generally focus programs to the individual needs of the community. Retaining the status quo, however, keeps the prescriptive format of the statute and leaves less room for flexibility. Another option would be to retain the structure of the statute and rule but to soften the prescriptive language and allow more flexibility on the local level.

Alternatively, the language in statute could be changed to allow programs greater flexibility in meeting the demands of the community. The statute could require an expanded education and

promotion plan to be submitted to DEQ along with the recycling reports. The plan should consider the elements currently required in this option but allow flexibility to direct efforts based on community needs. The plan would be implemented and reviewed on a regular basis allowing for review and input on the local programs from the DEQ technical assistance staff. Individual plans would allow flexibility to tailor programs to the needs of individual communities.

## Educational Resources

The passage of education reform in 1991 and the adoption of the Oregon State Integrated Resource and Solid Waste Management Plan (Plan) changes the outlook for environmental education. This section will evaluate how this affects statutory requirements and educational needs for waste reduction and recycling.

### a. Curriculum Requirements

DEQ is currently required to integrate a recycling and waste reduction component into a required curriculum for all Oregon students in grades K-12<sup>1</sup>. Education reform eliminates the required curriculum for K-12 students in Oregon that is specifically addressed in the Reuse and Recycling statute (ORS 459A.750(1)). In place of a required curriculum, students are required to earn Certificates of Mastery based on ability to meet specific standards.

Two options exist to respond to this change. Leaving the language as is, DEQ could provide input to the new standards that replace the curriculum, and meet the statutory intent of providing a waste reduction and recycling component to the curriculum. Alternately, the language could be changed to meet the new demands of education reform and more explicitly describe the role of DEQ in providing input. Revisions to ORS 459A.750(1) might read "By January 1, [1995] 1998, the Department of Education, in cooperation with the Department of Environmental Quality, shall integrate a [recycling and waste reduction component into a required curriculum] resource efficiency, waste reduction, materials reuse, and recycling component into Oregon's Common Curriculum Goals and into standards for the Certificates of Mastery." The 1998 deadline would provide DEQ input in the first year that the Certificate of mastery program is available in Oregon schools. Education reform will not affect DEQ's remaining statutory educational requirements such as producing audio-visual materials and other educational resources.

### b. Plan Strategies

The Plan is designed to give direction on solid waste management and was not specifically incorporated into statute or rule. Overall, existing authority under current statutory language is sufficient to conduct all the work described in the Plan. However, one of the objectives (see #1 above) might benefit from tools provided by legislation. The overall intent of objective #1 is to educate consumers about the full environmental impact of purchasing decisions and true cost of disposal. Strategies described in the Plan that might benefit from statutory support to meet this objective include:

1. Develop consumer guides for "environmentally sound" purchasing choices.
2. Develop "material specific" public education campaigns to target specific materials and or markets and other activities that promote waste prevention and recycling.
3. Establish a local recognition and award program for businesses, manufacturers, institutions, and government agencies that incorporate waste prevention into their operating practices.

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<sup>1</sup> DEQ is also required to produce a teacher's guide, professionally produced informational materials, and audio-visual materials. These statutory requirements are in line with needs and will not be addressed in this paper.

Broader than recycling education these "pollution prevention" strategies include recycling and should be part of an overall resource efficiency education program. At present, no mandate exists to complete these portions of the plan and statutory language would support their implementation.

### Education Strategy

One of the most consistent comments heard in the public meetings was a demand for DEQ to fill the role as facilitator or coordinator to provide both the tools for recycling education and networking opportunities for all involved parties. This suggests a need which is not being met. This request for tools and facilitation may be in part a response to the lack of a DEQ resource efficiency education strategy. The authority for this role for DEQ exists in statute (ORS 459.015) and does not need expansion to allow DEQ to broaden its efforts in filling this role. Currently, DEQ educational resources are so limited that there are many more demands for assistance than can be met. Development of an education strategy could help direct existing resources focus on highest needs.

Some activities that might arise from DEQ's strengthened role as facilitator might include: workshops on resource efficiency and recycling, quarterly meetings of local government officials, newsletters, Internet resources, and the development of partnerships with other agencies, businesses and industry groups.

## V. Options

### Local Government Requirements

- Retain recycling education and promotion statutory and rule language with a more active DEQ role in assisting local governments with programs.
- Modify statute and rule to make recycling education and promotion program requirements less prescriptive
- Change the expanded education and promotion option to require that a recycling education plan be submitted annually to DEQ along with the recycling reports.

### Educational Resources-curriculum

- DEQ provide input to education reform under existing authority.
- Change statutory language to take Education 2000 reforms into account.

### Educational Resources-plan strategies

- Add statutory language to support Objective #1 of Plan. (Objective #1-- Develop education programs and materials that promote an understanding of the environmental impact of the manufacture and use of products and packaging and the true cost of disposal.)

### Education Strategy

- Develop DEQ education strategy with no legislative changes needed.
- Request position to support education programs.

**Appendix 10. State of Oregon Local Government  
Recycling Programs Implemented Under the 1991  
Recycling Act, A Review, Spring 1996**

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**STATE OF OREGON  
LOCAL GOVERNMENT RECYCLING PROGRAMS  
IMPLEMENTED UNDER THE 1991 RECYCLING ACT**

**A REVIEW  
SPRING, 1996**

Prepared by the Oregon  
Department of Environmental Quality  
Solid Waste Program

*in response to the 1995 legislative directive to the Department to review Oregon statutes,  
regulations and programs related to solid waste management and recommend any needed  
legislative changes to the 1997 Oregon Legislature.*

October, 1996

# OREGON'S LOCAL GOVERNMENT RECYCLING PROGRAMS A REVIEW

## I. PURPOSE AND SCOPE

The 1995 Oregon Legislature requested the Department of Environmental Quality to review existing state solid waste management statutes and make recommendations for improvements or change. Part of the review includes the state recycling laws. This report of background information on local recycling programs implemented under the 1991 Recycling Act is designed to illustrate what we can learn from our experience to date. What works well, and what does not work as well for successful recycling programs.

The information gathered for this report focuses on programs in cities of over 4,000 population. The information relates to five primary aspects of local programs:

- Program Elements
- Materials
- Education/Promotion
- Rates
- Political Will, Community Interest

## II. FINDINGS AND CONCLUSIONS

### **Characteristics of successful community recycling programs:**

- Implement more than four program elements from the statutory menu of choices.
- Offer weekly curbside residential collection.
- Provide containers for residential collection.
- Implement a strong commercial collection program which collects at least six different materials.
- More actively provide waste audit services to commercial generators.
- Provide a variety (at least seven types) of community educational and promotional outreach activities.
- Include more frequent promotion and education activities customized for target audiences.
- City government and the solid waste service provider use a team approach to implement recycling programs. City actively provides the leadership for the program and participates in its implementation.
- Occur where there is a high level of community commitment to recycling.
- Occur where local elected officials and schools provide leadership for recycling.

### **Characteristics of less successful community recycling programs:**

- Implement four or less program elements from the statutory menu choices for opportunity to recycle.
- Most frequent program element chosen is expanded education and promotion.
- Are less likely to raise collection rates to fund education and promotion programs.
- Are more likely to select an "Alternative Program" to meet opportunity to recycle requirements.
- Implement a commercial collection program but likely to collect only two materials.



- Have limited education and promotion program with four or fewer types of outreach activities.
- Are less likely to customize education and promotion to target audiences, but focus on general audience and schools. Maximum frequency of outreach is more likely to be quarterly.
- Occur where there is less city and county involvement with the local solid waste provider to implement recycling program.
- Occur where there is a low level of community commitment to recycling.

### III. METHODOLOGY

The information used in this report is based on information collected on a sampling of 29 city recycling programs. The sample cities ranged in population from 4,000 to 450,000. The cities surveyed represented 19 Wastesheds from all regions of the state. The 19 wastesheds represented all levels of recovery rates, from 7% to 40%.

The local recycling program information was collected via a survey form, ATTACHMENT 1. The form was completed by Department recycling technical assistance staff and the information was verified by the appropriate local government official and/or solid waste service provider.

The per capita recovery rate data and the material-specific recovery data are based on the Department's 1994 recovery rate data collected from the annual recycling reports prepared by local haulers, private recycling companies, city governments and counties that are required to be submitted to the Department each year.

For purposes of analysis the data are grouped into three categories.

1. Highly Effective Programs: 990 - 650 lbs per capita recovery per year  
(8 out of 29 cities)
2. Moderately Effective Programs: 650 - 350 lbs per capita recovery per year  
(15 out of 29 cities)
3. Less Effective Programs: Below 350 lbs per capita recovery per year  
(6 out of 29 cities)

The report uses annual per capita recovery for the wasteshed in which the city is located as the standard for successful recycling programs. Per capita recovery was selected because it represents how much material overall is being recovered out of the municipal solid waste stream. The main purpose of recycling programs is to recover as much material/resources as possible out of waste streams that would otherwise be disposed.

A sample of the survey used is in Attachment A.

## IV. INFORMATION AND ANALYSIS

### A. Program Elements

The Oregon solid waste laws require communities over 4,000 population to select and implement a minimum number of recycling program elements from a menu options. The menu includes the following ten program elements:

- Monthly curbside collection
- Weekly residential curbside collection
- Basic education and promotion
- Expanded education and promotion
- Provision of recycling collection containers
- Multi-family collection
- Yard debris collection
- Commercial collection
- Expanded depots
- Weight based collection rates

All cities surveyed selected more than the minimum number of program elements or "menu" choices to implement. The most effective programs implemented the greatest number of menu choices on average.

| Average No. of Menu Items Implemented |   |
|---------------------------------------|---|
| Highly Effective City Programs        | 6 |
| Moderately Effective City Programs    | 5 |
| Least Effective City Programs         | 4 |

Of the 10 menu choices available, the most frequent menu choices implemented were the same for the highly effective and moderately effective city programs. The least effective city programs did not show a pattern of common menu items chosen. Only one common menu item was implemented by more than 50% of the least effective cities.

| Most Frequent Menu Items Implemented | Highly Effective Programs | Moderately Effective Programs | Least Effective Programs |
|--------------------------------------|---------------------------|-------------------------------|--------------------------|
|                                      | Weekly Curbside           | 88%                           | 53%                      |
| Exp. Educ/Promo                      | 100%                      | 87%                           | 67%                      |
| Containers                           | 100%                      | 67%                           | 50%                      |
| Commercial                           | 75%                       | 67%                           | 50%                      |

In general programs in the highly effective category collected more types of materials in their residential programs than programs in the moderately effective and least effective categories.

| Average No. of Materials Collected in Residential Programs |    |
|------------------------------------------------------------|----|
| Highly Effective Programs                                  | 10 |
| Moderate Effective Programs                                | 7  |
| Least Effective Programs                                   | 8  |

Commercial programs in the highly effective and moderately effective categories collect more types of materials on average than the least effective programs.

| Average No. of Materials Collected in Commercial Programs |   |
|-----------------------------------------------------------|---|
| Highly Effective Programs                                 | 8 |
| Moderately Effective Programs                             | 6 |
| Least Effective Programs                                  | 3 |
|                                                           |   |

In terms of additional community-wide material collection activities, there does not appear to be any differentiation or pattern among the highly effective, moderately effective, and least effective groups that would contribute to higher per capita recovery. Out of all of the cities surveyed most had recycling depots available to the community, old newsprint collection depots, and scrap metal collection programs available.

- 97% - Recycling Depots
- 83% - Old Newsprint Depots
- 72% - Scrap Metal Dealer

**B. Materials**

The information presented in this section is based on material-specific recovery data on the most common materials for each watershed in Oregon. The maps show how much of certain types of materials are recovered per capita in each watershed.

- Map 1: Old Corrugated Cardboard
- Map 2: Yard Debris
- Map 3: Old Newspaper
- Map 4: Glass & Tinned Cans
- Map 5: Mixed Waste Paper

Not surprisingly, the highest per capita recovery of most materials is in those watersheds that have nearby markets for the materials. In some cases recovery rates are low because there is:

- No convenient collection program for certain materials.
- Markets may be at too great a distance.
- Cost effective programs have not been developed.
- There is simply not enough interest or "political will" to establish effective recovery programs for certain materials.

**C. Education and Promotion**

In general, the survey showed that local education and promotion programs play a critical role in increasing the amount of material recovered from the solid waste stream. Programs in the Highly Effective category used a wider variety of education techniques and targeted their audiences rather than always focusing on general education and promotion. They also attempted to reach their audiences more frequently. Many of their efforts happened on a daily, weekly, and monthly basis rather than quarterly and annually. Higher frequency, more variety and target audiences are distinguishing characteristics of education efforts among the highly effective programs.

## Variety and Frequency of Education & Promotion Techniques Used

| Technique       | Highly Effective Programs | Moderately Effective Programs | Least Effective Programs |
|-----------------|---------------------------|-------------------------------|--------------------------|
| Printed on Bill | 88%                       | 93%                           | 100%                     |
| Gen. Brochure   | 100%                      | 93%                           | 83%                      |
| Newsletter      | 88%                       | 40%                           | 50%                      |
| Radio           | 100%                      | 73%                           | 17%                      |
| TV              | 50%                       | 33%                           | 17%                      |
| Video           | 25%                       | 27%                           | 0%                       |
| Workshops       | 63%                       | 27%                           | 0%                       |
| Booklet         | 13%                       | 0%                            | 0%                       |
| Spec. Events    | 63%                       | 93%                           | 67%                      |

Other unique or outstanding education and promotion ideas mentioned by one or more communities in are:

### HIGHLY EFFECTIVE PROGRAMS:

- Professional contractor to design materials and approaches
- Classes on composting
- Tours of recycling depots and landfills
- Classroom presentations at local schools
- Costumed character for parades and events
- Phone book ads
- Presentations at school assemblies
- Interviews on radio and TV talk shows
- TV stories

### MODERATELY EFFECTIVE PROGRAMS:

- Ads at cinema (beginning of movies)
- Newspaper articles
- Community Recycler of the Year award
- Art/calendar contest
- Stickers
- Phone book ads
- Presentations to schools
- Presentations to senior citizens
- Telephone "call holding" message on recycling
- Ads in high school newspaper

### LEAST EFFECTIVE PROGRAMS

- Tours of recycling center
- Newspaper ads
- School class at landfill

Twenty-five of the 29 cities selected the expanded education and promotion menu option. However a lower percentage of cities in moderate and low categories were willing to increase fees to support recycling education and promotion efforts.

| Percent of Cities Willing to Increase Fees for Education/Promotion Programs |      |
|-----------------------------------------------------------------------------|------|
| Highly Effective Programs                                                   | 100% |
| Moderately Effective Programs                                               | 40%  |
| Least Effective Programs                                                    | 50%  |

Targeting special community groups and developing education and promotional materials specifically for those groups seems to be a more common characteristic of the high and moderate programs. The less successful programs tend to focus most of their information on a general audience and schools only.

In general, where the city and county take a more active role in implementing the education and promotion program, or where there is a team approach with the hauler, the per capita recovery rate is higher. The following table shows the survey results.

| Who Implements the Education/Promotion Program | Highly Effective Programs | Moderately Effective Programs | Least Effective Programs |
|------------------------------------------------|---------------------------|-------------------------------|--------------------------|
| Hauler                                         | 75%                       | 87%                           | 100%                     |
| City                                           | 38%                       | 33%                           | 0%                       |
| County                                         | 25%                       | 40%                           | 17%                      |
| Contractor/Group                               | 38%                       | 7%                            | 0%                       |

#### **D. Rates**

Of the 29 cities surveyed 27 have franchise agreements for residential collection and 26 for commercial collection.

In the Highly Effective Programs category, cities were more likely to play an active role in the rate setting process. These cities reviewed back-up analysis for proposed rate structures and/or independently analyzed and researched their rate structures. The cities in this category had a higher level of knowledge of how to determine costs and profitability. The cities in the moderately and least effective programs categories tended to take a less active role in developing the rates, instead relying more heavily on what was provided by the hauler and requesting approval by the city council.

| Cities Who Actively Participate, Review, and Develop Rates |     |
|------------------------------------------------------------|-----|
| Highly Effective Programs                                  | 75% |
| Moderately Effective Programs                              | 30% |
| Least Effective Programs                                   | 50% |

#### **E. Political Will and Community Interest**

The survey collected information about who played key roles in achieving successful recycling programs in each community. In general, the highly effective communities had a broader range of groups and people who played key roles in recycling program implementation. Specifically the significant difference between the highly effective communities and the moderately and less effective communities was the active role played by schools and elected officials in the highly effective communities.

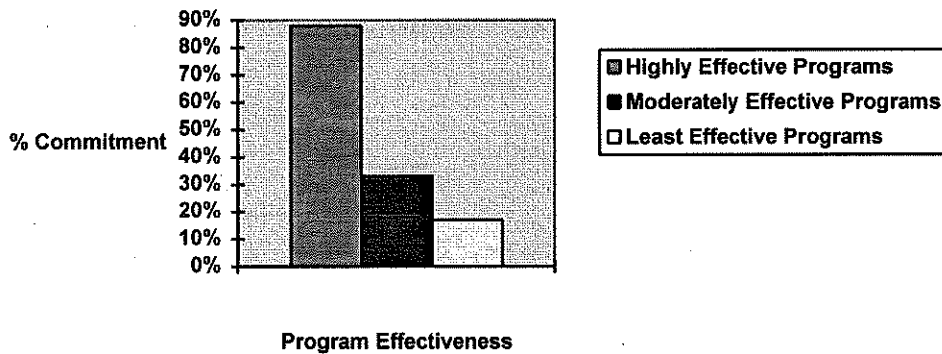
The following chart shows the percent of communities in each group who play a key role in implementing local programs.

**Key Roles Implementing Community Recycling Programs**

| Key Role             | Percent in Highly Effective Programs | Percent in Moderately Effective Programs | Percent in Least Effective Programs |
|----------------------|--------------------------------------|------------------------------------------|-------------------------------------|
| Citizen              | 50%                                  | 20%                                      | 67%                                 |
| School               | 63%                                  | 33%                                      | 17%                                 |
| Community Leader     | 50%                                  | 13%                                      | 17%                                 |
| Elected Official     | 63%                                  | 20%                                      | 17%                                 |
| Local Interest Group | 38%                                  | 27%                                      | 0%                                  |
| City Ordinance       | 13%                                  | 0%                                       | 0%                                  |
| Hauler               | 13%                                  | 7%                                       | 17%                                 |
| County               | 0%                                   | 13%                                      | 0%                                  |

As part of examining the role that community interest and local political will play in community recycling programs in general, the survey also sought to get an idea of what the local commitment was to recycling. The survey asked on a scale of 1 to 5, (1 being extremely committed, 5 being no interest), what is the extent of the community's commitment to recycling. Of the communities with highly effective programs, 88% rated local commitment at 2 or above. By contrast, well over 50% of the communities with moderately and least effective programs rated the level of commitment at 3 or below. The chart below shows the percent of communities in each group who rated the level of commitment to be a 1 or 2 on a scale of 5.

**Communities with High Level of Commitment to Recycling**



**Appendix 11. Advanced Recovery Fees,  
Appliances, Paint, Used Oil and Oil Filters**

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**ADVANCED RECYCLING FEES  
APPLIANCES, PAINT, USED OIL AND OIL FILTERS  
12/17/96**

An Advanced Recycling (ARF) is a small fee placed on an item at the time of purchase, in advance of its entering the waste stream for ultimate recycling or disposal. States have instituted fees on particularly hard-to-recycle products such as motor oil or refrigerators containing freon. The funds generated from the fees are typically used to subsidize or offset the cost to recycle or dispose of the items by funding activities such as household hazardous waste collection events, grants to local governments for providing citizens with programs to recycle the item, and for education and technical assistance.

Some commodities are good candidates for ARFs because they are difficult to recycle and costly to dispose. They typically end up in landfills - - or are illegally disposed on private or public lands, or in storm drains - - more often than commodities with good markets, such as cardboard and newspaper. Some exhibit hazardous properties and cause environmental damage when released into the atmosphere or disposed in municipal landfills.

During the Budget Note review, used oil and oil filters, appliances containing freon, and paints were identified as commodities that are particularly hard to recycle or dispose.

There was a fair amount of public support for levying ARFs on these commodities. Nonetheless, additional work is needed before the Department recommends ARFs. For example, the extent of the problem for each commodity needs to be determined. The appropriate industries and associations need to be advised of the potential ARFs and invited to join the discussion. The level of fee, and the fee collection mechanism, need to be explored.

During the fall of 1996 preliminary information was collected for each commodity on the current system for recovery and disposal, the extent of the problem, barriers to recovery, other states with ARFs on the commodities, and ways to use fees.

### **Advanced Recycling Fees - Used Oil and Oil Filters**

Senate Bill 1014, passed by the 1993 Oregon Legislature, set goals of 50% recovery of household-generated used oil by the year 1995, and 70% recovery by the year 2000. It also established the "Used Oil Recovery Committee" (Committee), and gave the Committee the tasks of determining the effectiveness of present statutes and household used oil collection programs, and determining what additional actions and programs would be necessary to achieve the recovery goals. The Committee submitted its report of recommendations to the Senate Interim Committee on Agriculture and Natural Resources, which put forward an interim committee bill. However, the bill was not acted on by the full Legislature.

**1. Current System For Oil And Oil Filter Recovery.** Oregon appears to have one of the nation's strongest programs for recovery of household used oil. The collection network includes:

- Curbside collection programs provided in 116 Oregon cities, and available to about 1/2 of Oregonians at least once a month (weekly in most cases).
- Used oil collection tanks provided at almost all disposal sites.
- Used oil depots not required by state law are operated privately by garbage haulers, recyclers, service stations, and, most recently, retail store chains selling new oil.
- Stores selling more than 500 gallons of lubricating oil annually are required to post a sign telling people where and how to recycle their oil and the reasons for recycling.



The Committee estimated that householders generate 2.5 million gallons of used oil each year. However, only about 600,000 gallons of this (less than 25%) is presently collected. The Committee could not determine what happens to the nearly two million gallons not collected.

**2. Extent Of Problem.** Used oil changed by householders is often dumped on the ground. This can pollute water and soil with toxic and carcinogenic chemicals, and is also a waste of valuable petroleum resources. In addition, oil filters disposed of in garbage waste significant amounts of oil and recyclable scrap metal.

The Committee found that used oil collection programs presently in place will not be sufficient for the State to meet the recovery goals set by SB 1014. Even though Oregon has an extensive collection network, less than 25% (600,000 gallons) of the used oil generated is collected through these systems.

**3. Barriers To Oil And Oil Filter Recovery.**

- Many people do not know a convenient way to recycle their oil.
- People may not have a convenient container to hold their oil for recycling.
- The number of collection depots has declined.
- Oil filter recycling is not available to households in most of the state.

**4. Other States With ARFs Or Similar Programs On Used Oil Or Oil Filters.**

- New Jersey requires all service stations with active tanks and also private vehicle inspection stations to accept used oil from the public. Texas and South Carolina each charge an 8 cent per gallon fee on oil sold in the state.
- Texas spends three quarters of the \$7,100,000 raised each year on their used oil program, funding grants for 525 collection sites, a statewide toll-free recycling number, funds for disposal of contaminated loads, and positions to staff the program
- Utah collects 16 cents for each gallon of new lubricating oil sold in the state in containers of less than 55 gallons. The money is used to provide education and promotion programs, give financial incentives to used oil curbside collection programs and depots, and provide grants for the establishment of depots and collection programs in rural areas.
- California has adopted a modified deposit system for used oil, with customers being paid back 16 cents per gallon for each gallon of used oil they take to a certified collection center. California collects unredeemed deposits, and in 1993 used them to fund over \$20,000,000 in grants to help establish used oil collection and marketing programs.

**5. What Fee Could Be Used For.**

**(a) Used Oil**

- A promotion/education campaign based on a public/private partnership.
- Management standards and liability relief for registered collection programs, including payment for costs of proper management of contaminated loads if not otherwise acceptable by local used oil collectors.
- Grants to help establish/improve collection programs.
- Payment of transportation costs as necessary to transport household used oil from remote rural locations.

**(b) Oil Filters**

- Provide the public with programs to recycle their filters. The State would use the fee to pay the costs of recycling the filters, such that curbside collection programs, depots, service stations, and others could have their collected filters taken off their hands for free.

**6. Amount Of Potential Fee.** Twenty-five cents per used oil filters. Four cents per quart fee on all new lubricating oil sold in the state in containers of less than 55 gallons, or a 2 cent per quart fee on all new lubricating oil sold in the state. Funds raised would be used solely for the used oil program. Amount of funding generated by fee is estimated to be \$900,000 per year.

## Advanced Recycling Fee - Paint

**1. Current System For Paint Recovery And Disposal In Oregon.** DEQ and a few local governments collect paint. Latex paint collected at collection events is separated into usable (about 30% at DEQ events) and unusable paint. The usable paint can be reused, consolidated, or reprocessed for recycling. Unusable latex paint is solidified and disposed in a Hazardous Waste or Municipal Solid Waste (MSW) landfill. (Non-hazardous latex paint can safely be disposed in a municipal landfill.) Oil based paint is managed as a hazardous waste and burned for energy recovery.

### 2. Extent Of Problem.

**(a) Amount of paint produced/sold annually, and per capita use.** The paint industry and other sources estimate that each person uses 1.9 to 2.1 gallons of paint each year (1 gallon = 10 lbs.). Approximately 75-80% of the paint sold is latex.

**(b) Amount of waste paint generated.** A consensus on the amount of waste paint generated does not exist. Recent studies estimate that each person generates between .3 and .44 gallons of waste paint annually. This translates into an annual Oregon waste paint generation rate of roughly 4714 to 6890 tons.

**(c) How waste paint is typically managed.** According to a 1992 State of Vermont study, on average households store paint about 4.6 years before getting rid of it.

Roughly 48% - 71% of waste paint generated annually is managed by putting it in the garbage.<sup>1</sup>

The Department estimates that between 11 - 16% of waste paint generated annually in Oregon is managed by taking it to household hazardous waste (HHW) collection events.<sup>2</sup>

Roughly 13 - 41% of the paint (622 - 2798 tons) is unaccounted for in terms of its management.

The National Paint and Coatings Association (NPCA), an industry group, commissioned a study that found paint was disposed in the following manner: roughly 40% each was disposed in the garbage or taken to an authorized collection site. Only 1% of the responders said they poured it down household or storm drains. On the other hand, a study conducted by the City of Seattle Metro estimated that 40 - 50% of waste paint was disposed in the drain.

### **(d) Potential environmental hazards from paint.**

**Hazardous and Solid Waste and Water Concerns: Metals in latex and oil based paints.** Paints contain varying amounts of heavy metals, such as lead and mercury. According to one source, old paint generally contains more hazardous characteristics than new paint.

Paints that exceed the Resource Conservation Recovery Act (RCRA) specified limits of heavy metals are hazardous waste in character (though RCRA exempts HHW from being designated as a hazardous waste). Primary concerns are associated with the possible leaching of hazardous materials into ground water (if disposed in landfills or in drains).

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<sup>1</sup> This estimate was determined by using the amount of paint disposed in solid waste landfills in 1994 (roughly 3335 tons of paint, including cans), and a generation rate of .301 gallons (4714 tons) to .44 gallon (6890 tons) per capita per year.

<sup>2</sup> The HHW Program Coordinator estimated HHW events other than DEQs collect 661 tons of paint annually. Added to DEQs average collection of 96 tons a year, 757 tons of HW is managed through collection events.

Oil based paints contain solvents. A primary concern with solvents, which are flammable, is possible injury to solid waste workers. Another is the impact of hazardous materials on surface and ground water from solvents if the paint is disposed in landfills or in drains.

**Air Quality Concerns - Volatile Organic Compounds (VOC).** VOCs are an environmental problem because they "combine with" or "react with" oxides of nitrogen to create ground level ozone--the major constituent of urban smog. DEQ's Air Quality Division adopted rules effective July 1, 1996 that limit the amount of VOCs manufacturers may add to paint sold in the Portland area. Both latex and oil based paints contain VOCs, but are more of a problem with oil based paints because of the higher percentage of solvents.

**3. Barriers To Paint Recovery.** The cost to governments to collect, recycle and dispose paint is very high. Sixty-eight percent of the material collected at DEQ-sponsored HHW collection events since 1991 was (29% latex, 39% oil based). Paint represents approximately 58% of the disposal costs for DEQ-sponsored HHW collection events. Since 1991, DEQ spent an average of \$381,963 a year for HHW collection events; therefore, an average of \$221,539 a year was spent on paint collection.

Other than Rasmussen Paints in Portland, a company that accepts paint from Metro's collection events, there is no commercial paint collection/recovery infrastructure in place in Oregon. If the recycling infrastructure were in place and if there were a vigorous educational program aimed at paint consumers, most latex paint would likely get collected for recycling, and oil based paint would get collected for energy recovery.

The market for recycled paint is not developed. The NPCA estimates recycling paint costs around \$7.20 per gallon, including the costs of collecting, identifying, segregating, testing, and adding new raw materials. They also indicated the product sells for an average price of \$2.00 - \$7.00. However, DEQ's experience is that recycled paint sells for \$10.00 to \$12.00.

#### **4. Other States With ARFs Or Similar Programs On Paint.**

- The Province of British Columbia is currently implementing a Product Stewardship program for paints, based on the polluter-pay principal. Under this program, industry is required to implement permanent, province-wide paint collection programs. Regulations provide flexibility for industry to develop "creative solutions" for waste paint management. The Paint Care Association, representing the majority of the paint industry, developed a plan that provides for collecting a \$.50/gallon "Eco Fee" at the point of sale to cover local government costs for collecting and processing the paint.
- In August 1995, the Illinois Environmental Protection Agency implemented a paint take-back program. The Agency works cooperatively with paint retailers to help consumers bring usable or unusable paint products back to the point of sale (or other location) as a return for reformulating or disposal. No fees are collected from industry. Latex only and/or oil based paint may be accepted. Numbers and quantities of incoming containers may be limited. A fee per container may be imposed by the retailer. The Agency becomes and remains the generator of record and takes title to all waste paint collected.

#### **5. What Fee Could Be Used For.**

- Build/develop infrastructure to collect paint, for example, fixed collection facilities, satellite facilities and mobile collections. Latex paint needs the infrastructure to help pay for its recycling, and oil based paint needs it to help pay for its management as a hazardous waste.
- Develop education/promotion programs designed to bring about behavioral changes (for example, toxicity and waste reduction).
- Sponsor (DEQ and/or other local government) an increased number of paint collection events; this would free up funds to collect more toxic waste at HHW events.
- Reimburse dealers for costs to recycle paint.
- Reimburse haulers for collecting and managing paint.

**6. Amount Of Potential Fee.** The assumptions made to determine the potential revenue that could be generated by an ARF on paint sold follow. (1) The NPCA's estimate of paint production in the US for 1990 of 489,738,102 gallons of paint; (2) DEQ's Air Quality Division estimated that each person uses 1.975 gallons of paint annually; (3) Oregon's 1995 population (3,132,000); and (4) Industry estimate that 80% of paint sold is latex, and 20% is oil based.

Some potential fees and associated annual revenues:

- A \$.50 ARF on all paint (gallons) would generate \$3,093,000.
- A \$.50 ARF on oil paint (gallons) would generate \$618,500.
- A \$.50 ARF on oil paint (gallons), and a \$.25 ARF on latex paint would generate \$1,856,000.

## **Advanced Recycling Fee - Appliances**

### **1. Current System For Refrigerating Appliances Recovery And Disposal.**

- Appliances are banned from disposal in landfills.
- For purposes of recycling, landfills and transfer stations apparently do not have to accept appliances if freon and compressors are intact. However, many do. They generally charge a fee of \$15 to \$25 per appliance. Disposal sites typically contract with a private individual or company to reclaim the freon. Appliances are held on site until marketed to scrap metal dealers. The disposal site may directly haul the scrap to market, or pay to have a recycler handle it.
- *Trane Oregon* and *Shapler Refrigeration*, two major reclaimers of refrigerant, remove refrigerant from commercial equipment. The refrigerant may be sold back to the manufacturer, reclaimed if it meets industry standards (and presumably sold to appliance service personnel), or, if it does not meet industry standards, sent to a large commercial reclaimer to reclaim or dispose of.
- *St. Vincent de Paul* in Eugene contracts with Metro and Lane County to remove refrigerants from appliances collected at disposal sites. They also accept appliances locally at their warehouse for a \$5 fee. They sell reclaimed gasses to service people. They handle 20,000 tons of appliances a year.
- Scrap metal dealers typically do not accept refrigerators or freezers unless they are stripped (freon, compressors, and electrical wiring removed). As required by the Environmental Protection Agency (EPA), they require documentation indicating freon was legally removed. Some pay for the scrap metal, but many charge the customer a small fee to take the stripped appliance.
- Traveling EPA-certified individuals remove freon from appliances in Oregon and border states. They make service calls to homes and businesses to remove freon for a fee.
- Apparently most appliance stores are willing to take back old appliances when people buy new ones as a cost of doing business.

**2. Extent Of Problem.** Fourteen wastesheds were contacted. Wasteshed representatives did not consider illegal dumping of appliances, including refrigerators and freezers, a problem.

DEQ's regional staff were contacted. None could document the extent of the problem, but one said the Bureau of Land Management (BLM) and US Forest Service might be able to.

- It appears to be an extensive problem in parts of the Eastern Region. From visually surveying the dumps, refrigerators and freezers comprise roughly 95% of illegally disposed appliances.
- It also appears to be a problem, particularly at the coast and in Josephine County. Visual surveys indicate roughly 90% are refrigerators and freezers.
- It does not appear to be a problem in the Metro area.
- One staff person said illegal disposal of white goods does occur mostly in the form of "long-term storage" in generators' back yards; freon-containing appliances do not appear to be more of a problem than other appliances.

Other agencies and organizations were contacted.

- SOLV had statistics for the Metro area cleanups from 1993 to 1995. For the 3 years combined, municipal solid waste represented 71% of the waste collected, tires represented 21%, and scrap metal represented 9%. The category of scrap metal contained mostly appliances, but car bodies (if any were found) were included as well. SOLV did not track tonnages for individual appliances, but they appear to be pretty evenly divided between washers, dryers and refrigerators.
- Snohomish County Public Works (Washington) staff conducted an illegal dumping survey of county roads. They tracked white goods but not individual appliances. They found that yard debris comprised most of the waste (33%). Household garbage and Construction and Demolition waste followed, representing approximately 15% each. Cars made up 11% of the waste, followed by bulky furniture at 9% and appliances at 7%.
- The haulers, scrap metal dealers, thrift stores and commercial reclaimers that were contacted did not think -- or were not aware -- that illegal disposal of appliances with refrigerants was a problem.
- A BLM employee in Prineville said he picks up 3-4 dozen illegally disposed appliances annually (25-33% are refrigerators).

### **3. Barriers to Appliance Recovery.**

- Lack of information is the biggest barrier. The average citizen would find it difficult to get information on how and where to get appliances properly prepared (freon removed, electrical wiring stripped) to send to a scrap metal dealer.
- Rural Oregon communities have limited recycling options for recycling appliances.
- Fees collected at disposal sites may be a problem (there is not unanimous agreement on this).
- Sloth on the part of the generator.

### **4. Other States With ARFs (Or Similar Programs) On Appliances.**

- North Carolina established an Advanced Disposal Fee (which works the same as an ARF) on white goods in 1994 that will sunset in 1999. The Advanced Disposal Fee (ADF) issue was driven by the need to remove freon and provide local governments with a mechanism to fund recycling of white goods and illegal dumping problems. The customer is charged a fee of \$5 on appliances without freon, and \$10 on appliances with freon. Seventy-five percent of the funds go back to the counties to recycle and remove freon. In 1995, \$5.5 million in funds went to 100 counties.
- Maine established an ADF on white goods in 1990 to provide funding for the state's solid waste programs. The customer is charged a \$5 fee for each appliance. This will sunset in 1996-97.
- South Carolina established a Trust Fund in 1991 that consists of funds from several fees. The ARF on white goods is used to fund the state's solid waste programs plus grants to local governments. The customer is charged \$2 on appliances.

### **5. What Fee Could Be Used For.**

- Provide the public with programs to recycle their appliances. The State could use the fee to help pay the costs of recycling the appliances, such that curbside collection programs, depots, and disposal sites have their collected appliances taken off their hands for free or at reduced cost.
- Reimburse appliance dealers for costs to recycle appliances.
- Grants/loans to individuals to become certified freon removers.
- Develop local government resource directory of appliance recycling opportunities.

arf-pap2.doc

**OIL, PAINT, AND APPLIANCE ARF SUMMARY**

|                                                      | OIL & OIL FILTERS                                                                                                                                                                                                                                                                              | PAINT                                                                                                                                                                                                                                                                                                                                                                                                        | APPLIANCES                                                                                                                                                                                                                                                                       |
|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Collection and recovery well developed?              | OIL: Yes. Curbside collection provided in 116 OR cities. Disposal sites provide used oil collection facilities (for free).<br>OIL FILTERS: No.                                                                                                                                                 | No. HHW collected at permanent collection facilities in the Metro area, and DEQ and a few local governments sponsor collection events.                                                                                                                                                                                                                                                                       | Yes. Disposal sites provide a place to recycle appliances; however most charge a fee of \$15-25 to cover freon removal. Commercial scrap metal dealers accept appliances if freon removed.                                                                                       |
| Problems associated with not recovering the material | <ul style="list-style-type: none"> <li>• Environmental hazards: can pollute water and soil with toxic and carcinogenic chemicals if disposed by dumping on ground or in drains.</li> <li>• Waste of valuable petroleum resources and scrap metal from oil filters if not recovered.</li> </ul> | <ul style="list-style-type: none"> <li>• Environmental hazards: Paints containing heavy metals such as lead and mercury can pollute groundwater if disposed of in MSW landfills or dumped in drains. Oil based paints contain solvents that are toxic.</li> <li>• Paint contains VOCs that, in combination with other substances, create ground level ozone, the major constituent of urban smog.</li> </ul> | <ul style="list-style-type: none"> <li>• Illegal dumping results in loss of revenue and release of CFCs (freon) into the atmosphere. CFCs deplete ozone in the stratosphere, which contributes to global warming, skin cancer, etc.</li> </ul>                                   |
| How big a problem is it?                             | 75% -- nearly 2 million gallons -- of used oil does not get collected for recovery. It is unknown how this oil is managed, though at least some is being dumped on the ground or in drains.                                                                                                    | Roughly 11-16% -- 757 tons -- of the waste paint generated annually is collected at HHW events. The rest -- 3957 to 6133 tons -- is disposed of in MSW landfills or handled in an unknown manner.                                                                                                                                                                                                            | Illegal disposal does not appear to be an extensive problem, at least not one that is documented.                                                                                                                                                                                |
| Barriers to recovery                                 | <ul style="list-style-type: none"> <li>• People are not aware of a convenient way to recycle oil.</li> <li>• Lack of convenient container.</li> <li>• Oil filter recycling is not available to most households.</li> </ul>                                                                     | <ul style="list-style-type: none"> <li>• Cost to local governments. It is very expensive to collect and process paint.</li> <li>• Lack of paint recycling /recovery collection infrastructure.</li> <li>• Underdeveloped market for recycled paint.</li> </ul>                                                                                                                                               | <ul style="list-style-type: none"> <li>• Lack of information on how and where to get freon removed so appliance can be recycled.</li> <li>• Few recycling opportunities in rural Oregon.</li> <li>• Substantial fees collected at some disposal sites to remove CFCs.</li> </ul> |
| Other states with ARFs?                              | Yes                                                                                                                                                                                                                                                                                            | No                                                                                                                                                                                                                                                                                                                                                                                                           | Yes                                                                                                                                                                                                                                                                              |

**Appendix 12. Executive Overview - Residential  
Survey and Commercial Survey**

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## EXECUTIVE OVERVIEW- RESIDENTIAL SURVEY

- The three top reasons for recycling cited by Oregonians included: "good for the environment," "keeps things out of the landfills," and "preserves resources for the future."
- A relatively large percentage of Oregonians (45%) do some form of composting.
- Outdoor burning is practiced by one in four Oregonians, and one in five burn waste indoors.
- As might be expected, rural residents are more likely to dispose of their waste by burning, composting, or hauling it to a transfer station or landfill. Those inside city limits are significantly more likely to have curbside or depot recycling available.
- The most common reason for not composting yard debris was lack of room. The most common reason for not recycling corrugated cardboard or junk mail was said to be lack of awareness.
- A majority of those served at curbside stated that glass containers, junk mail, corrugated cardboard, plastic bottles, and yard debris could be recycled. Although the DEQ is not aware of any window glass recycling programs, about one in five believe it can be recycled curbside.
- A majority of those Oregonians with curbside recycling, that doesn't include plastics, said they would pay at least fifty cents a month for that service.
- Slightly less than half of the Oregonians were aware of the State's goal to recycle 50% of its waste by the year 2000. In contrast, three-quarters of the Oregonians surveyed were aware that landfills are not allowed to accept tires, appliances, automobiles, or lead acid batteries.
- 77% "strongly support" the State's goal. Most of the support for the State's goal to recycle 50% of its waste by the year 2000 comes from urbanites, plus Portland-area residents living outside the Metro Urban Growth Boundary. Women were significantly more likely than men to support the goal.
- Renters and males showed the most support for the generally-accepted mandate prohibiting landfills from accepting tires, appliances, automobiles, and lead acid batteries.
- Over half of Oregonians "strongly support" the idea of prohibiting landfills from accepting common recyclables, as well as the idea of households reducing waste by one-fourth, with especially high levels of support coming from urban areas, women, and renters.



## EXECUTIVE OVERVIEW - COMMERCIAL SURVEY

- The main reasons organizations cite for recycling are that "it's good for the environment," "it saves money on disposal" and "it's the right thing to do."
- The items that make up the largest part of a typical organization's waste stream include office paper, corrugated cardboard and other paper.
- The *type* of site has a close relationship to the amount and type of waste produced by the organization. Offices and schools/institutions are the biggest producers of office paper waste. Retail shops, food-oriented warehouses and restaurants are the biggest producers of cardboard waste.
- Items that are most commonly recycled include corrugated cardboard, scrap metals, scrap lumber, wood pallets/other wood, office paper, and rigid plastics (in order of percentage of companies that state they recycle the material).
- Items commonly disposed include non-wood building materials, food waste, plastic film or wrap, paper packaging, and non-office paper.
- A majority of the organizations which do not recycle office paper stated that they do not because "no service is available" or because of the "time and effort" required. A majority of organizations which do not recycle scrap metal or cardboard stated they do not because "no service is available." A majority of those who do not recycle scrap lumber stated they do not because it is "inconvenient."
- Items which are most commonly recycled at *no cost* to the organization include scrap lumber and other wood, pallets, office paper, plastic film or wrap, rigid plastic, corrugated cardboard, paper packaging, and non-office paper. Items for which organizations most often *pay* to recycle include building materials and food waste. Approximately half of those who recycle scrap metal *get paid* for doing so.
- Majorities of recyclers as well as non-recyclers appear unwilling to pay for additional recycling services.
- The majority of the organizations surveyed said they are aware of the state's goal to recycle 50% of the waste by the year 2000 and are also aware that landfills are not allowed to accept tires, appliances, automobiles, or lead acid batteries.

- An overwhelming majority supported the goals for recycling 50% of waste (96% strongly or somewhat supporting, with 72% strongly supporting it) as well as most of the landfill bans discussed. It should be noted that 52% do not support banning yard debris from landfills (there is less opposition in Portland and the I-5 corridor). There is strong support for a ban of recyclables in high demand.
- A large majority (78%) of food-oriented establishments agree that there is a need for recycling of food waste.
- A majority of organizations (84%) support a goal of reducing their waste by one-fourth, with 55% strongly supporting this goal.

# Environmental Quality Commission

Rule Adoption Item

Action Item

Information Item

Agenda Item M  
**January 10, 1997 Meeting**

**Title:**

Solid Waste Program Biennial Report to the 1997 Legislature

**Summary:**

A report in four parts - the first three parts provide data and information on the status of solid waste generation, waste prevention, recycling, and disposal in Oregon. Information is provided about the solid waste management activities occurring in Oregon and an update to the Integrated Resource and Solid Waste Management Plan, 1995 - 2005 that was adopted by the Commission in 1994. The fourth part of the report is a status report from the Portland Metropolitan Service District on Waste Reduction program planning and implementation that is required by statute to be reported to the Department and passed on to the Oregon Legislature. Oregon continues to increase the amount of waste that is generated per capita, it has gone up from 5.7 lbs. per person per year in 1992 to 6.3 pounds per person in 1995. The amount of material being recovered from the solid waste stream has increased from 27% in 1992 to 34.7% in 1995. The amount of waste being disposed by Oregonians has remained relatively constant over the last four years.

Please note that the actual report documents will be provided to the Commission at the January 10, 1997 meeting.

**Department Recommendation:**

Direct the Department to forward this biennial report on to the 1997 Oregon legislature as required by statute.

Report Author



Division Administrator



Director

December 23, 1996

Dear Legislator:

This is the Oregon Department of Environmental Quality's 1997 Biennial Report to the Legislature for the state Solid Waste Management Program. This information is being provided as directed by ORS 459A.040, 459A.050(9), 459A.015(3), 459.055(5), and 459.355.

The "Report" is comprised of four parts:

- Fact Sheet on Solid Waste Generation and Management in Oregon
- 1995 Oregon Recovery Rate Report
- 1996 Information Update for the Integrated Resource and Solid Waste Management Plan, 1995 - 2005.
- Metro's Report to the Department of Environmental Quality and the Environmental Quality Commission on Waste Reduction, Recycling, and Disposal for 1996.

The first three parts of this report provide information about the amount of waste that is generated, recycled and disposed in Oregon as well as information about out of state waste sent to Oregon for disposal. Information on the current solid waste management system and activities occurring in Oregon is also provided.

The fourth section of this report is a report that is required to be provided to the Department by the Portland Metropolitan Service District on the status of their Waste Reduction Program. The Department has received this report and, as required, is providing it to the 1997 Oregon Legislature.

If you have any questions regarding the information contained in this report, please contact Paul Slyman, the Department's manager for Solid Waste Policy and Program Development.

Sincerely



Langdon Marsh  
Director

Enclosures: 4

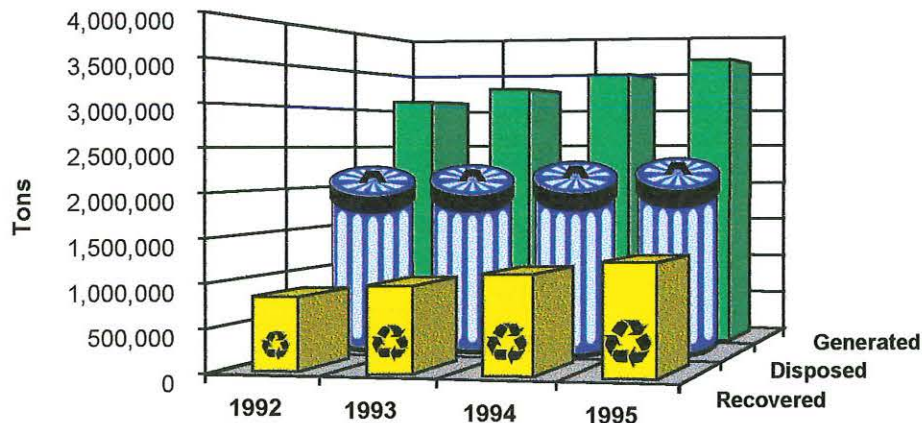


# Solid Waste in Oregon

Oregonians generated 2,315 lbs. of solid waste per person in 1995.

Oregonians Recycled 35% of solid waste in 1995.

Oregonians have set a goal to recycle 50% of their solid waste by the year 2000.



Source: Oregon Department of Environmental Quality. 1995 Oregon Material Recovery Survey, December 1996.

## Status and trends in solid waste

- x The state continues to increase the amount of waste generated per capita each year. Even though we are increasing our recovery of materials from the waste stream, we are using more and more natural resources per person. In 1995 Oregonians generated an average of 6.3 lbs. of waste per person per day, up from 5.7 lbs. in 1992.
- x Oregonians have increased the amount of material recovered from the solid waste stream. In 1992, 564 lbs. per person was recovered and in 1995 that has risen to 804 lbs. per person.
- x The Oregon statewide solid waste plan for 1995 - 2005 was adopted in 1994. The plan emphasized that the state needs to place more emphasis on the top of the solid waste management hierarchy and first work to prevent the generation of solid waste. We should also continue to implement strong recycling, composting and energy recovery programs and ensure sound waste disposal practices through implementation of the federal Resource Conservation Recovery Act Subtitle D landfill requirements.
- x Recycling programs historically emphasized the recovery of waste from residential generators. There is a new shift to emphasize recovery of waste from commercial generators in order to help achieve the state's 50% recovery goal.
- x Since more stringent federal municipal landfill requirements took effect, about 30% of the landfills that were operating in 1991 have closed. Oregon continues to have 65 municipal disposal facilities operating and enjoys adequate disposal capacity overall.

- x The amount of solid waste generated out-of-state that is being disposed in Oregon has more than doubled in the past four years. In 1991, Oregon landfills accepted 410,000 tons of waste from out-of-state; in 1994 that number had risen to 899,000 tons. The majority of that waste comes from the Northwest.

## Why is it important?

- x People in Oregon and the United States are among the highest consumers in the world; and much of what is consumed or used eventually becomes waste. We are depleting our natural resources at a very fast rate. This can have negative impact on such things as animal habitat, the ozone layer, global warming, acid rain, and water quality.
- x In the United States in the 1990's, \$225 per person per year goes toward the packaging of goods that we purchase. This packaging uses up natural resources and contributes significantly to the amount of solid waste that must be either recycled or disposed.
- x 92% of Oregon's municipal waste that is disposed is trucked to landfills. This impacts our air quality and our water quality now and for the future.
- x The remaining 8% of Oregon's municipal waste that is disposed is burned in an incinerator and energy recovery facility. Although modern waste-to-energy facilities produce relatively low levels of pollutants, they can emit acid gases, CO<sub>2</sub>, and toxic chemicals, and the ash residue must still be landfilled for disposal.

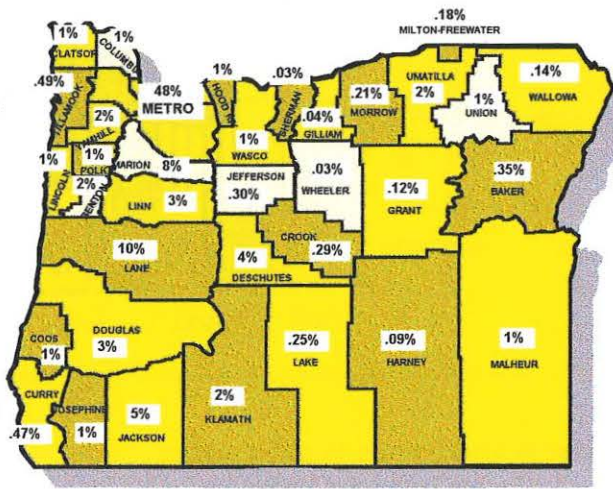


**OREGON'S VISION:** *The Citizens of Oregon are stewards of the environment. They actively PREVENT THE GENERATION OF WASTE, REUSE, AND RECYCLE materials before they dispose of them.*



### Where is municipal waste generated in Oregon?

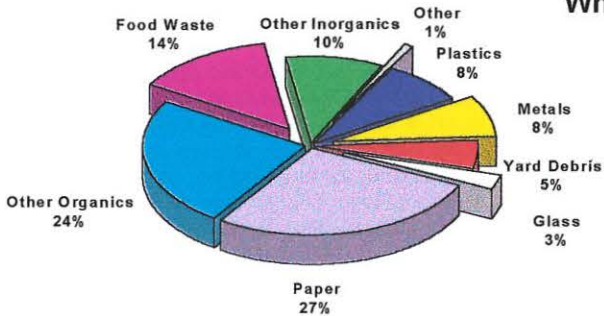
- x The majority of Oregon's municipal waste is generated in the Portland metropolitan area (48%), Lane county (10%), and Marion county (8%).
- x The next highest waste generation areas are Deschutes, Douglas, Jackson, and Linn counties.
- x The areas that have higher generation rates have established some good recycling programs to help reduce the amount of waste being disposed. These areas, along with the rest of the state, still need to place more emphasis on waste prevention - not generating the waste in the first place.
- x The per capita waste generation statewide is still increasing each year. The state's Integrated Resource and Solid Waste Management Plan, 1995 - 2005 states that Oregon wants to see a reversal in this trend of increasing generation by 1998.



Source: Oregon Department of Environmental Quality. 1995 Oregon Material Recovery Survey. December 1996

### What is the composition of Oregon's waste?

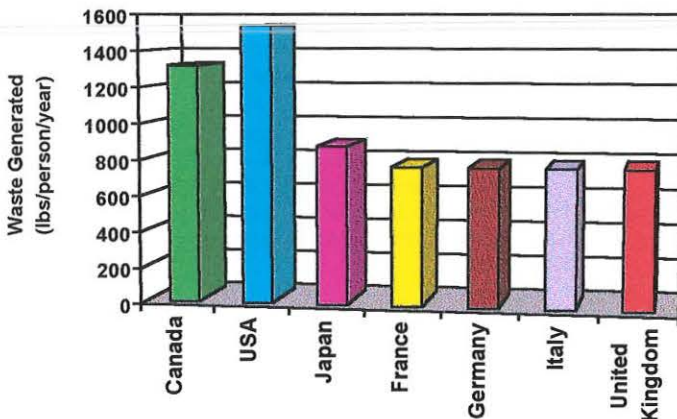
- x Paper and other organics make up 70% by weight of the municipal waste that is disposed in Oregon. Knowledge of the composition of Oregon's waste stream helps in the development of new strategies and programs to prevent the generation of waste, recycle and recover waste, and manage the residuals in an environmentally protective manner.



Source: Oregon Dept. of Environment Quality Integrated Resource and Solid Waste Management Plan 1995 - 2005, Information Update 1996. December 1996.

### How much waste is generated in other countries?

- x The United States generates about 1540 lbs. of waste/person/year; this is one of the highest per person generation rates in the industrialized world.
- x This rate reflects a high standard of living, prevailing management practices, dependence upon a resource-based economy, and low levels of awareness regarding waste generation



Source: Organization for Economic Co-operation and Development, 1994

# 1995 Oregon Material Recovery Survey



# 1995 Oregon Material Recovery Survey

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For additional copies or any information on this report, please call Judy Henderson at (503) 229-5521.



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## *Acknowledgments*

The fourth annual Oregon Material Recovery Survey was conducted for calendar year 1995 by the Department of Environmental Quality's (DEQ) Solid Waste Policy and Programs Section.

DEQ extends its appreciation to industry representatives, haulers, and landfill administrators and staff for providing recovery and disposal data for 1995 and to the Metro staff for their work on the survey. Appreciation is also extended to the DEQ staff who contributed to the accuracy and integrity of the information contained in this report:

Bob Barrows, Solid Waste Reduction, Western Region  
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 Kelly Scharbrough, Solid Waste Policy & Programs, DEQ Headquarters Office  
 Michelle Shepperd, Solid Waste Policy & Programs, DEQ Headquarters Office (Graphics)  
 Peter Spendelow, Solid Waste Policy & Programs, DEQ Headquarters Office

# State of Oregon 1995 Recovery Rates

## Introduction and Purpose

The 1991 Legislature set a 50% material recovery goal for the state for the year 2000. To measure progress toward the statewide goal, Oregon Revised Statute 459A.010 established 1995 goals for wastesheds ranging from 7% in rural areas to 40% in the Portland metropolitan area. Wastesheds are comparable to counties except for the Metro wasteshed, which includes Clackamas, Multnomah, and Washington counties, and the city of Milton-Freewater, which is its own wasteshed.

To calculate the recovery rate for the state and individual wastesheds, DEQ's Solid Waste Policy and Programs Section has surveyed Oregon's waste haulers and private recycling companies (including drop-off centers, buy-back centers, and end users of recycled materials) since 1992.

## Requirement to Report

Oregon law requires that all companies surveyed respond to the Material Recovery Survey or be subject to enforcement action. However, because of the difficulty of separating post-consumer scrap metal from commercial and industrial scrap metal, scrap metal dealers were specifically exempted from mandatory reporting.

Oregon law requires DEQ to keep the recovery rate survey information confidential, including any information that relates to customer lists or

specific amounts and types of material collected or marketed.

## Background

DEQ has completed the Material Recovery Survey, calculated recovery rates, and published the results every year since 1992. Last year's report contains a statistical analysis of the first three years' results in addition to the 1994 data. This report gives details on the 1995 statewide and wasteshed rates.

Metro, the regional government for the Portland Metropolitan area, has conducted surveys of recycling levels since 1986. In order to avoid duplicate requests from Metro and DEQ, the two agencies entered into an intergovernmental agreement. In 1995 DEQ surveyed Metro-area private recyclers and shared the information with Metro, and Metro provided DEQ with data on material collected by Portland metropolitan area garbage haulers.

## Materials Included in the Survey

By statute, Oregon's recovery rate includes only post-consumer materials collected for recycling. Waste from manufacturing and industrial processes (pre-consumer materials), reconditioned and reused materials, and out-of-state waste disposed in Oregon are excluded. Commercial scrap metal, including demolition debris, discarded vehicles or parts of vehicles, major equipment, and appliances handled by scrap metal dealers is excluded. Scrap metal

collected at disposal sites, by haulers, at community recycling depots, or through municipal-sponsored collection events counts as recovered material.

The recovery rate includes materials composted or burned for energy recovery if there is no viable market for recycling the material. A viable market is "a place within a watershed that will pay for the material or accept the material free of charge or a place outside a watershed that will pay a price for the material that, at minimum, covers the cost of transportation of the material" (ORS 459A.010(4)(b)).

The 1992 Material Recovery Survey included 24 types of materials. In 1993 and 1994, 17 more materials were added, including fluorescent tubes, animal waste, car batteries, and aerosol cans. In 1995 some collectors reported plastic bottle numbers separately from other mixed plastics, so a new material type for plastic bottles was created. Other new material types in 1995 were textiles and fiber-based fuel. (This material, made primarily from unrecyclable wax coated or food-contaminated papers, is reported by Metro under a "viable market" request.)

The major materials included in 1995 were:

- **Paper** — Newspaper, corrugated cardboard/kraft paper, high-grade paper, magazines, phone books, and mixed waste paper.
- **Plastic** — #1 PET beverage containers, #1 PET other, #2 HDPE milk jugs, #2 HDPE other, #3 PVC, #4 LDPE, #5 polypropylene, #6 polystyrene, composite plastic (such as carpet pad), mixed plastic, and plastic bottles.
- **Glass** — Container glass, such as refillable bottles and all other container glass or cullet, and other glass.

- **Metals** — Tinned cans, aluminum, and other scrap metals.
- **Organics** — Wood waste, yard debris, food waste, animal waste.
- **Other** — Tires, used motor oil, and lead acid batteries.

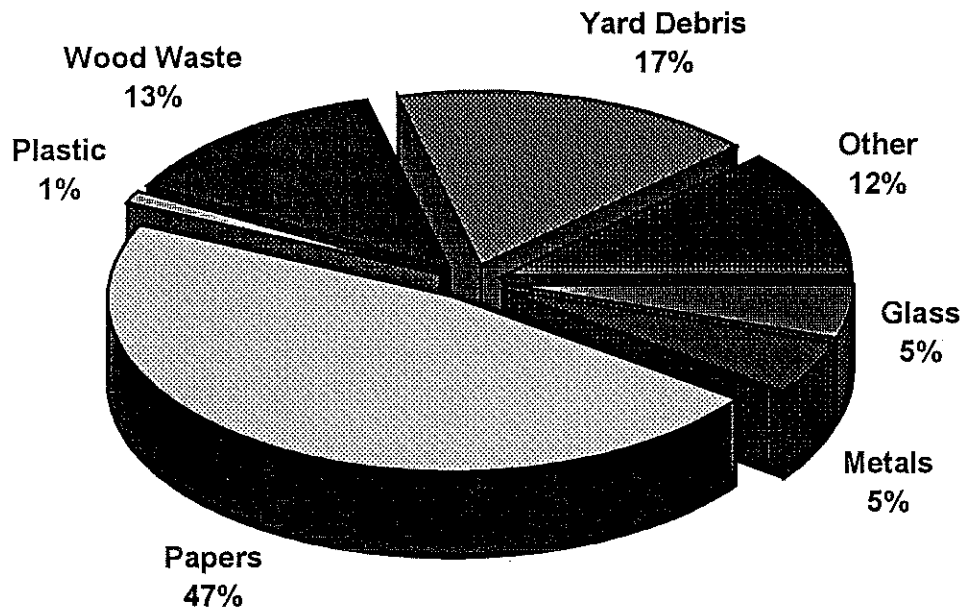
### **Data Analysis System**

In order to collect, analyze, and perform quality checks on the large amount of data generated by the survey, DEQ developed a computer system for entering and storing data, calculating the recovery rate, and generating reports. The Solid Waste Information Management System (SWIMS) is an Information Engineering Facility (IEF)-based Oracle database that:

- Holds information about recyclers that must be surveyed by law
- Tracks receipt of survey forms and follow-up actions taken by DEQ staff to maximize the response rate.
- Stores information about the collection, storage, transfer, and disposition of recovered materials by county and collection method
- Performs data validation functions and makes calculations of material recovery rates.
- Generates reports to assist DEQ in analyzing the data and responding to legislative reporting requirements, such as annual per capita weight disposed and recovered by county and statewide, annual recovery rate, and types and amount of material recovered and recycled.

In 1995 the Metro hauler data were transferred to DEQ in an Access database file, and DEQ used Access to create custom queries and reports from the SWIMS database tables.

## Types of Materials Recovered in 1995



Total 1995 Oregon State Tonnage = 1,257,225.0 tons

## Methodology

### Data Sources

In 1995 DEQ collected recycling and disposal data from:

- 259 private recycling companies, including buy-back centers, intermediate processors, yard debris composting facilities, beer and soft drink distributors, and end users (2 companies did not respond to the survey; see Appendix 1 for a list of responding and non-responding companies)
- 207 waste haulers
- 17 scrap metal dealers (37 scrap metal dealers did not respond to the survey; see Appendix 1 for a list of those responding).
- 71 disposal sites handling municipal and construction and demolition wastes.

Another 94 surveys were mailed to companies that went out of business during the year, could

not be located, or did not collect recycled materials in Oregon.

### Data Collection and Management

For most materials, the recyclers that directly collected the bulk of the material in each county were surveyed. However, it is not practical to identify and survey all persons directly collecting material in each county. By surveying the recyclers and end-users to whom the collectors sold their material, some information on their collections could be obtained.

Survey recipients were asked to return the completed surveys by Feb. 15, 1996. Most private recyclers did not do so, which necessitated sending a series of follow-up letters. In addition, hundreds of telephone calls were made, both to provide technical assistance and to round up the surveys.

With these efforts, by July 31, 1996, all but 2 of the original survey population had responded. In this instance, the population was considered to have "responded" when they provided the requested information or when DEQ staff, after discussing the business practices with the company or based on personal knowledge, determined their response was not needed to calculate wasteshed or statewide recovery rates.

As surveys were returned, staff checked the data for completeness and, in many instances, verified information by calling the survey respondent. Once approved, the data were entered into the SWIMS database.

After the data were entered into SWIMS, a number of quality control checks were performed. The two most important checks were:

- Comparing information from different sources. For example, often collectors reported sending more material to a recycler (or end user) than the recycler reported receiving. This issue was usually resolved by directly calling either the receiving recycler or both the recycler and the collectors to determine the source of the discrepancy. When a discrepancy could not be resolved by talking to the involved recyclers, the information provided by the end user was used in most cases.
- Examining per-capita recycling calculations for unlikely results. For example, occasionally more material was reported as recovered than would be expected in a county, based on estimates using population. This issue was resolved by determining which survey respondents reported collecting or handling the material for the county in question, looking for unlikely results in their reports, and calling the involved recyclers. This type of issue commonly resulted from problems in the units of measurement used for reporting.

## How Recovery Rates Are Calculated

The formula for determining recovery rates is:

$$\frac{\text{Amount Disposed}^1 + \text{Amount Recovered}}{\text{Total Generated}}$$

$$\frac{\text{Total Recovered}}{\text{Total Generated}} = \text{Recovery Rate}$$

For each county, information about the quantities of material collected from privately-operated recycling and material recovery facilities was combined with information from hauler and disposal site collections. This determined the total weight of material recovered.

Next, the total weight of material recovered was added to the total weight of material disposed. This determined the total weight of material generated. Finally, the total weight of material recovered was divided by the total weight of the material generated to give the recovery rate.

Direct collectors of materials are the primary and best source of information for the collected materials' county of origin. This information is used whenever it is available. When information from direct collectors is not available, or when a survey respondent does not know the county of origin for the collected materials, the markets' and end users' estimates for county of origin is the secondary method used to allocate material back to counties. Material is allocated back to the counties based on population only when survey respondents could not accurately estimate county of origin.

<sup>1</sup> The Amount Disposed includes municipal solid waste and excludes industrial process waste, asbestos, sludge, petroleum contaminated soil, and full loads of inert material, such as rock, if a record is kept at the disposal site.

## Avoiding Double Counting of Materials

In order to determine recovery rates for individual counties as well as the state as a whole, DEQ surveys multiple companies handling the same material. This means that the potential for double counting of materials is a major issue. For example, haulers collecting materials were surveyed. Processors who purchased the materials from the haulers, generally small- to medium-sized recycling companies, and markets or end users of materials, also are surveyed.

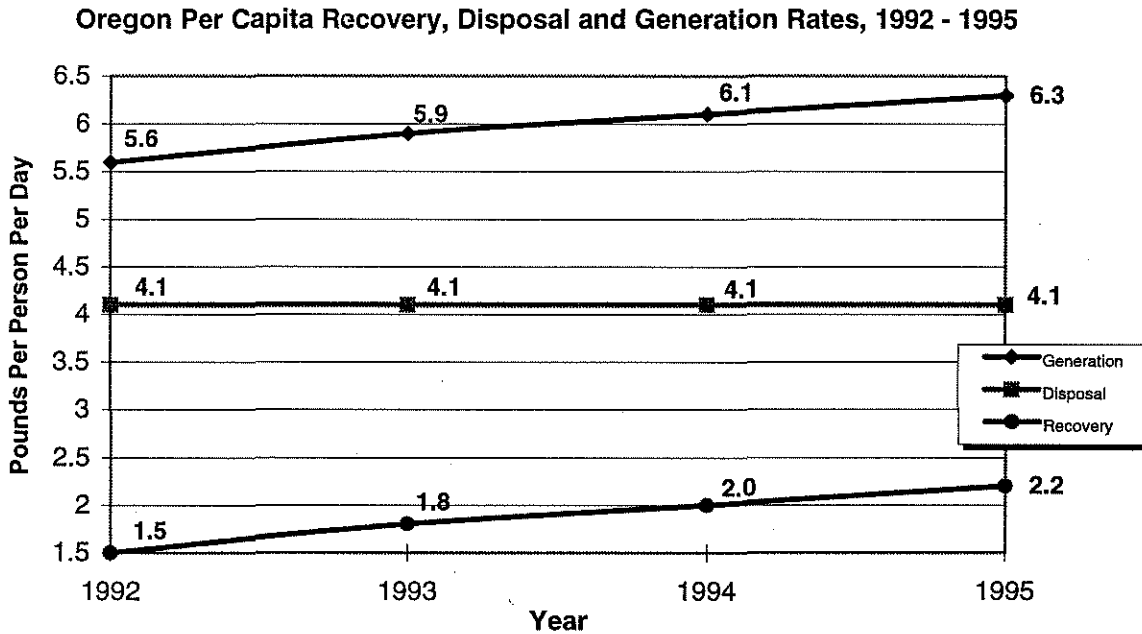
Having information on where each collector or recycler sells their material allows DEQ to eliminate the double-counting of that material. SWIMS was designed to track materials transferred from one collector to a second recycler, subtracting material which a reporting company sold to another, while at the same time keeping track of the county of origin for the material.

## 1995 Results

### 1995 Statewide Recovery Rate

The state of Oregon recovered 1,257,225 tons, or 34.7% of the total “counting” (municipal) waste stream in 1995. This is a 12% increase from 1994, when 1,118,913 tons (32.5% of the total waste stream) was recovered. The 1995 tonnage recovered translates to 803 pounds per person per year, or 2.2 pounds of material recovered per person per day.

The pounds per person per day for the amount disposed, recovered, and generated each year are shown below:



Oregon’s recovery rate and amount recovered have increased each survey year:

|      |       |                |
|------|-------|----------------|
| 1992 | 27.0% | 839,679 tons   |
| 1993 | 29.9% | 974,694 tons   |
| 1994 | 32.5% | 1,118,913 tons |
| 1995 | 34.7% | 1,257,225 tons |

However, the total amount of municipal solid waste generated (waste disposed plus materials recovered) also increased each year:

|      | MSW Generated (tons) | MSW Per Capita/Year (lbs.) | MSW Per Capita/Day (lbs.) |
|------|----------------------|----------------------------|---------------------------|
| 1992 | 3,102,778            | 2,083                      | 5.71                      |
| 1993 | 3,254,922            | 2,143                      | 5.87                      |
| 1994 | 3,437,256            | 2,230                      | 6.11                      |
| 1995 | 3,623,702            | 2,321                      | 6.35                      |

As in 1994, Oregon's 1995 statewide recovery rate increased because the total amount of recycled materials collected in 1995 increased at a greater rate than the total amount of material disposed in municipal landfills.

### Wasteshed (County) Recovery Rates

In 1995, the year the wasteshed rates "count," 30 of the 35 wastesheds met or exceeded their goals, including all the wastesheds with 7% or 15% goals. In 1994, only 25 wastesheds met or exceeded their goals. Table 1 gives a breakdown of recovery rates by wastesheds, and Table 2 gives the amount of materials recovered by wasteshed. Table 3 includes the 1995 amounts of solid waste disposed by wasteshed.

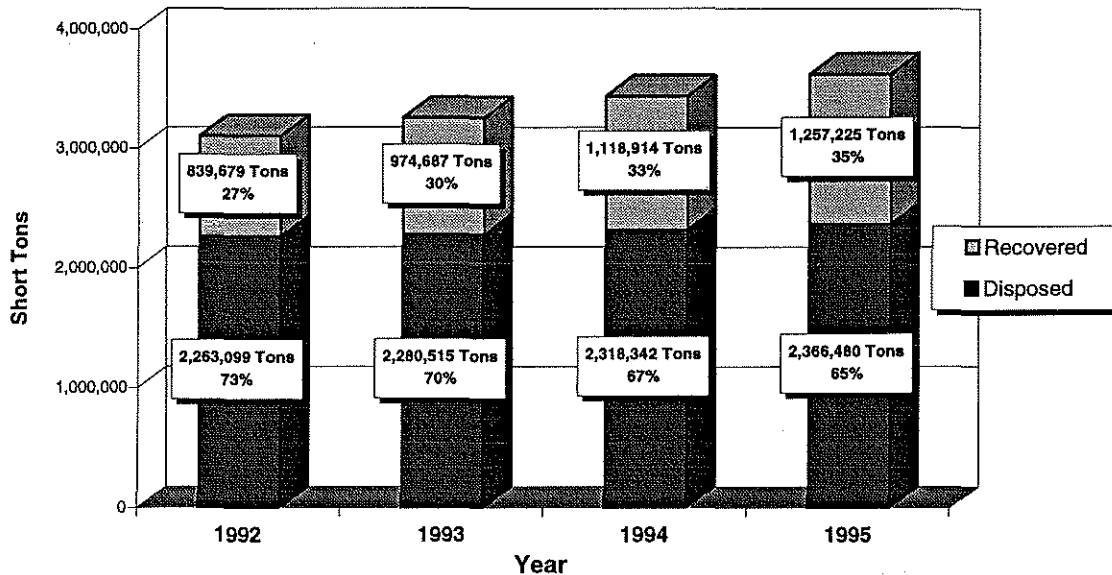
Tables 4, 5, and 6 give the recovery rates,

recovered material amounts, and disposal tonnages, respectively, by wasteshed, for 1992, 1993, 1994, and 1995.

Using the 1995 generation rate of 3,623,702 tons of solid waste, 1,811,851 tons would need to be recovered in order for the state to reach a 50% recovery rate. To meet this goal, recovery would have to increase 44% (554,626 tons) over the current level of 1,257,225 tons.

Even though most of Oregon's smaller counties are currently meeting their assigned 1995 recovery goals, the actual amount recovered in these counties, in absolute terms, is small. Assuming that recovery will be measured in the same manner in 2000 as it currently is, recovery will have to significantly increase in the larger counties if the state is to recover 50% of its waste.

Oregon Solid Waste Disposal and Recovery Totals, 1992 - 1995



### Disposal

The amount of municipal solid waste disposed in Oregon in 1995 was 2,366,480 tons (see Table 3) or 1,511 pounds per person per year, based on a statewide population of 3,132,000. This translates to 4.1 pounds of municipal solid waste disposed per person per day, the same per capita disposal rate as in 1994. Information on disposal tonnages comes from annual or quarterly reports filed with DEQ by disposal sites for fee collection purposes. Disposal sites report waste by county.



In some cases, disposal sites reported waste for 1995 which state law allows to be excluded from the amount disposed. "Non-counting waste" includes industrial waste from manufacturing processes, sludge, asbestos, petroleum contaminated soil, and inert waste (full loads only) such as rock and gravel, brick, dirt, concrete, and asphalt paving. Construction and demolition wastes such as furniture, carpeting, linoleum, and gypsum wallboard are included in "counting" waste.

**Per Capita Data**

County recovery rates alone do not always provide the type of detailed information needed to determine how waste is managed in a county. Per capita disposal and recovery rates are useful for providing this information. For example, low disposal rates may reflect a low generation rate or a difference in waste disposal methods, such as residents in rural areas being more likely to dispose of their waste by burning it in burn barrels or by putting it on the "back 40" than in hauling it to a landfill. Waste disposed outside of permitted disposal sites is not measured and thus is not counted as waste disposed for the purposes of this study.

DEQ staff use per capita data for evaluating the effectiveness of recycling programs in counties relative to their 1995 recovery goals, for providing feedback to recycling coordinators and policy makers on the strengths and weaknesses of their recycling programs, and for checking the reported data for inconsistencies and unlikely results.

**Materials Recovered**

Recovered tons of all the major commodity types increased in 1995, except for glass, which decreased by 16% from 1994 tonnages, and plastic, which remained about the same as in 1994. The largest increases were in papers (21% increase from 1994), metals (14%

increase from 1994), and wood waste (5% increase from 1994). Tire recovery increased by 74%, but the increase is primarily due to the recovery of tires that had been stockpiled for several years. The following are survey results highlights by commodity type:

- The amount of paper recovered, which includes newspaper, high-grade and mixed waste paper, magazines and corrugated/kraft, increased by 21% from 1994 to 1995, to 583,973 tons.
- Total tonnage of wood recovery increased by 5% in 1995 (165,055 tons, up from 157,881 tons in 1994).
- Glass recycling decreased by 16% in 1995 (66,618 tons, compared to 79,542 tons in 1994).
- Total other materials recovered in 1995, such as batteries, tires, and used oil, increased by 29%.
- Metal recycling increased by 14% in 1995.<sup>1</sup>

The 1995 recovery rate includes materials burned for energy recovery (tires, used oil, wood waste and some yard debris) and materials composted (yard debris and some wood waste):

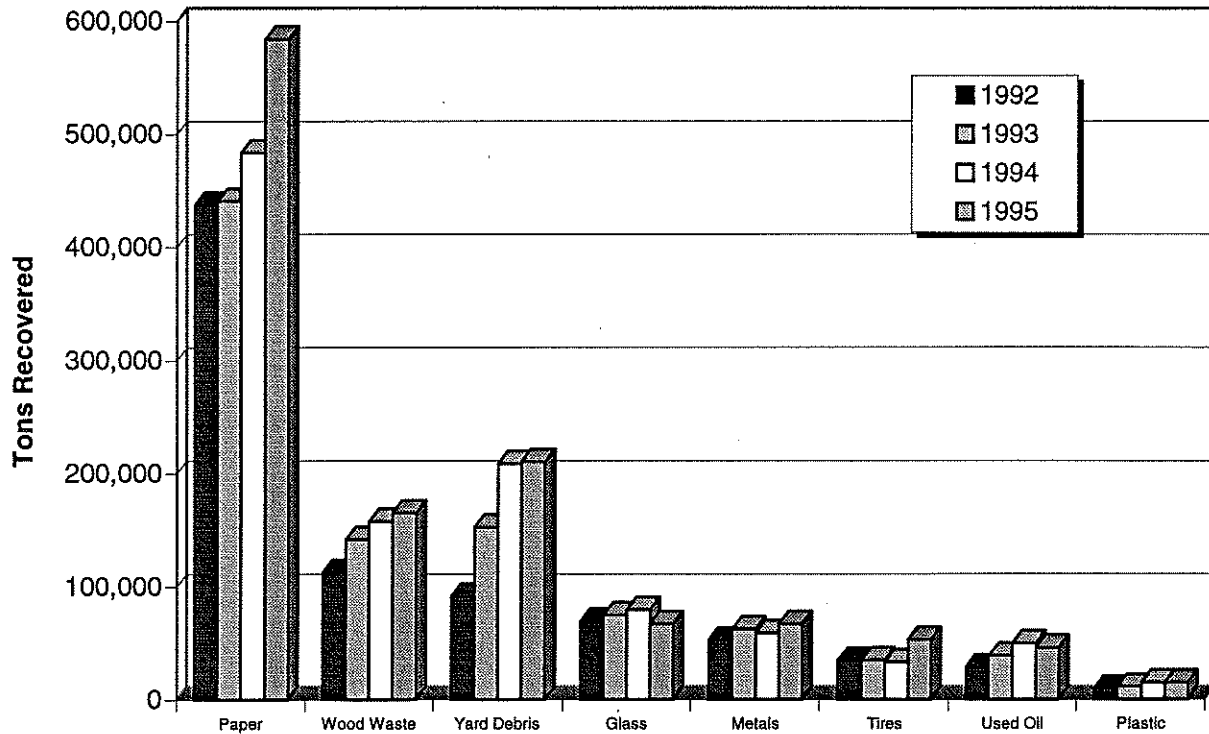
**1995 Waste Generation and Disposition**

|                       |     |
|-----------------------|-----|
| Disposed <sup>2</sup> | 65% |
| Recycled              | 24% |
| Composted             | 6%  |
| Recovered for Energy  | 5%  |

<sup>1</sup> By statute, vehicles and vehicle parts, commercial scrap metal, and home appliances such as refrigerators count toward the recovery rate only when collected by haulers, at community recycling depots or disposal sites, or through municipal sponsored collection events. The exclusion of these materials makes Oregon's recovery rate significantly lower than states that include scrap metal.

<sup>2</sup> Of the amount disposed, 8.5% is burned for energy recovery.

Materials Recovered In Oregon By Material Type, 1992 - 1995



**Conclusion**

The statewide recovery rate for 1995 was 34.7%, up from 32.5% in 1994 and 29.9% in 1993. Thirty of the 35 wastesheds met or exceeded their assigned 1995 recovery goals, including all the wastesheds with 7% and 15% goals. In order for the state to meet its 50% recovery goal, at 1995 levels of recovery, an additional 554,626 tons of waste will need to be recovered.

The information needed to determine recovery rates accurately requires a level of record keeping that stretches the resources of some recyclers who are required to report. They need to track the geographic source, amount, type, and disposition of all materials they handle. This is a difficult task for small recyclers who may not have the resources to hire office help to assist with the task.

Despite these limitations, the majority of reporting businesses are making good faith efforts to track the materials they handle during the year, and to report as accurately as they can. The result is that this study reflects a good estimate of the recovery and disposal of solid waste in Oregon in 1995.

**Recovery  
Rates**

Table 1: Annual Wasteshed Recovery Rates, 1995

| Wasteshed            | 1995<br>Tons<br>Disposed | 1995<br>Tons<br>Recovered | 1995<br>Tons<br>Generated | Recovery<br>Rate* | 1995<br>Goal |
|----------------------|--------------------------|---------------------------|---------------------------|-------------------|--------------|
| Baker                | 9,876                    | 2,768                     | 12,644                    | 22%               | 15%          |
| Benton               | 47,479                   | 25,916                    | 73,395                    | 35%               | 30%          |
| Clatsop              | 29,272                   | 7,040                     | 36,312                    | 19%               | 25%          |
| Columbia             | 18,967                   | 6,937                     | 25,904                    | 27%               | 25%          |
| Coos                 | 35,988                   | 13,873                    | 49,861                    | 28%               | 15%          |
| Crook                | 7,279                    | 3,125                     | 10,404                    | 30%               | 15%          |
| Curry                | 11,642                   | 5,328                     | 16,970                    | 31%               | 15%          |
| Deschutes            | 108,967                  | 29,856                    | 138,823                   | 22%               | 25%          |
| Douglas              | 96,429                   | 30,172                    | 126,601                   | 24%               | 25%          |
| Gilliam              | 1,166                    | 283                       | 1,449                     | 20%               | 7%           |
| Grant                | 3,558                    | 848                       | 4,406                     | 19%               | 7%           |
| Harney               | 2,192                    | 1,120                     | 3,312                     | 34%               | 7%           |
| Hood River           | 16,458                   | 3,242                     | 19,700                    | 16%               | 25%          |
| Jackson              | 111,479                  | 54,764                    | 166,243                   | 33%               | 25%          |
| Jefferson            | 8,380                    | 2,414                     | 10,794                    | 22%               | 7%           |
| Josephine            | 34,373                   | 17,648                    | 52,021                    | 34%               | 25%          |
| Klamath              | 62,501                   | 13,561                    | 76,062                    | 18%               | 15%          |
| Lake                 | 8,428                    | 715                       | 9,143                     | 8%                | 7%           |
| Lane                 | 240,106                  | 115,083                   | 355,189                   | 32%               | 30%          |
| Lincoln              | 35,371                   | 8,246                     | 43,617                    | 19%               | 15%          |
| Linn                 | 75,332                   | 31,551                    | 106,883                   | 30%               | 30%          |
| Malheur              | 16,777                   | 2,922                     | 19,699                    | 15%               | 15%          |
| Marion               | 198,041                  | 81,164                    | 279,205                   | 29%               | 25%          |
| Metro                | 995,035                  | 735,231                   | 1,730,266                 | 42%               | 40%          |
| Milton-Freewater     | 4,987                    | 1,375                     | 6,362                     | 22%               | 15%          |
| Morrow               | 6,617                    | 918                       | 7,535                     | 12%               | 7%           |
| Polk                 | 25,926                   | 7,751                     | 33,677                    | 23%               | 30%          |
| Sherman              | 884                      | 227                       | 1,111                     | 20%               | 7%           |
| Tillamook            | 13,004                   | 4,820                     | 17,824                    | 27%               | 15%          |
| Umatilla             | 46,770                   | 11,275                    | 58,045                    | 19%               | 15%          |
| Union                | 14,498                   | 6,248                     | 20,746                    | 30%               | 15%          |
| Wallowa              | 4,078                    | 905                       | 4,983                     | 18%               | 7%           |
| Wasco                | 16,106                   | 6,650                     | 22,756                    | 29%               | 25%          |
| Wheeler              | 764                      | 239                       | 1,003                     | 24%               | 7%           |
| Yamhill              | 53,418                   | 22,992                    | 76,410                    | 30%               | 30%          |
| Unspec.              | 4,335                    | 21                        | 4,356                     |                   |              |
| Rounding adj.        | -2                       | -3                        | -8                        |                   |              |
| <b>OREGON TOTALS</b> | <b>2,366,480</b>         | <b>1,257,225</b>          | <b>3,623,702</b>          | <b>34.69%</b>     |              |

\*The recovery rate is calculated using the following formula:

- 1) Tons Disposed + Tons Recovered = Total Generated
- 2) Tons Recovered / Total Generated = Recovery Rate

Table 2: Amount Recovered in 1995 by Wasteshed

| Wasteshed            | 1995 Tons<br>Recovered | 1995 Pounds<br>Per Capita | 1995<br>Population |
|----------------------|------------------------|---------------------------|--------------------|
| Baker                | 2,768                  | 336                       | 16,500             |
| Benton               | 25,916                 | 724                       | 71,600             |
| Clatsop              | 7,040                  | 410                       | 34,300             |
| Columbia             | 6,937                  | 349                       | 39,700             |
| Coos                 | 13,873                 | 447                       | 62,100             |
| Crook                | 3,125                  | 398                       | 15,700             |
| Curry                | 5,328                  | 480                       | 22,200             |
| Deschutes            | 29,856                 | 635                       | 94,100             |
| Douglas              | 30,172                 | 618                       | 97,700             |
| Gilliam              | 283                    | 323                       | 1,750              |
| Grant                | 848                    | 213                       | 7,950              |
| Harney               | 1,120                  | 318                       | 7,050              |
| Hood River           | 3,242                  | 347                       | 18,700             |
| Jackson              | 54,764                 | 666                       | 164,400            |
| Jefferson            | 2,414                  | 300                       | 16,100             |
| Josephine            | 17,648                 | 496                       | 71,100             |
| Klamath              | 13,561                 | 440                       | 61,600             |
| Lake                 | 715                    | 189                       | 7,550              |
| Lane                 | 115,083                | 762                       | 301,900            |
| Lincoln              | 8,246                  | 395                       | 41,800             |
| Linn                 | 31,551                 | 618                       | 102,154            |
| Malheur              | 2,922                  | 207                       | 28,200             |
| Marion               | 81,164                 | 630                       | 257,846            |
| Metro                | 735,231                | 1,127                     | 1,305,100          |
| Milton-Freewater     | 1,375                  | 459                       | 5,985              |
| Morrow               | 918                    | 211                       | 8,700              |
| Polk                 | 7,751                  | 283                       | 54,844             |
| Sherman              | 227                    | 239                       | 1,900              |
| Tillamook            | 4,820                  | 414                       | 23,300             |
| Umatilla             | 11,275                 | 381                       | 59,215             |
| Union                | 6,248                  | 512                       | 24,400             |
| Wallowa              | 905                    | 250                       | 7,250              |
| Wasco                | 6,650                  | 588                       | 22,600             |
| Wheeler              | 239                    | 308                       | 1,550              |
| Yamhill              | 22,992                 | 612                       | 75,156             |
| Unspec.              | 21                     |                           |                    |
| Rounding adj.        | -3                     |                           |                    |
| <b>OREGON TOTALS</b> | <b>1,257,225</b>       | <b>803</b>                | <b>3,132,000</b>   |

Source for population data is the Center for Population Research and Census,  
Portland State University, July 1, 1996 estimates.

Table 3: Solid Waste Disposed in 1995 by Wasteshed

| Wasteshed            | 1995 Tons<br>Disposed | 1995 Pounds<br>Per Capita | 1995<br>Population |
|----------------------|-----------------------|---------------------------|--------------------|
| Baker                | 9,876                 | 1,197                     | 16,500             |
| Benton               | 47,479                | 1,326                     | 71,600             |
| Clatsop              | 29,272                | 1,707                     | 34,300             |
| Columbia             | 18,967                | 956                       | 39,700             |
| Coos                 | 35,988                | 1,159                     | 62,100             |
| Crook                | 7,279                 | 927                       | 15,700             |
| Curry                | 11,642                | 1,049                     | 22,200             |
| Deschutes            | 108,967               | 2,316                     | 94,100             |
| Douglas              | 96,429                | 1,974                     | 97,700             |
| Gilliam              | 1,166                 | 1,333                     | 1,750              |
| Grant                | 3,558                 | 895                       | 7,950              |
| Hamey                | 2,192                 | 622                       | 7,050              |
| Hood River           | 16,458                | 1,760                     | 18,700             |
| Jackson              | 111,479               | 1,356                     | 164,400            |
| Jefferson            | 8,380                 | 1,041                     | 16,100             |
| Josephine            | 34,373                | 967                       | 71,100             |
| Klamath              | 62,501                | 2,029                     | 61,600             |
| Lake                 | 8,428                 | 2,233                     | 7,550              |
| Lane                 | 240,106               | 1,591                     | 301,900            |
| Lincoln              | 35,371                | 1,692                     | 41,800             |
| Linn                 | 75,332                | 1,475                     | 102,154            |
| Malheur              | 16,777                | 1,190                     | 28,200             |
| Marion               | 198,041               | 1,536                     | 257,846            |
| Metro                | 995,035               | 1,525                     | 1,305,100          |
| Milton-Freewater     | 4,987                 | 1,666                     | 5,985              |
| Morrow               | 6,617                 | 1,521                     | 8,700              |
| Polk                 | 25,926                | 945                       | 54,844             |
| Sherman              | 884                   | 931                       | 1,900              |
| Tillamook            | 13,004                | 1,116                     | 23,300             |
| Umatilla             | 46,770                | 1,580                     | 59,215             |
| Union                | 14,498                | 1,188                     | 24,400             |
| Wallowa              | 4,078                 | 1,125                     | 7,250              |
| Wasco                | 16,106                | 1,425                     | 22,600             |
| Wheeler              | 764                   | 986                       | 1,550              |
| Yamhill              | 53,418                | 1,422                     | 75,156             |
| Unspec.              | 4,335                 |                           |                    |
| Rounding adj.        | -2                    |                           |                    |
| <b>OREGON TOTALS</b> | <b>2,366,480</b>      | <b>1,511</b>              | <b>3,132,000</b>   |

Source for population data is the Center for Population Research and Census,  
Portland State University, July 1, 1996 estimates.

**Table 4: Oregon Recovery Rates by Wasteshed, 1992-1995**

| <b>Wasteshed</b>     | <b>1992<br/>Rate</b> | <b>1993<br/>Rate</b> | <b>1994<br/>Rate</b> | <b>1995<br/>Rate</b> | <b>1995<br/>Goal</b> |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Gilliam              | 17%                  | 6%                   | 15%                  | 20%                  | 7%                   |
| Grant                | 18%                  | 14%                  | 16%                  | 19%                  | 7%                   |
| Harney               | 18%                  | 21%                  | 20%                  | 34%                  | 7%                   |
| Jefferson            | 21%                  | 16%                  | 18%                  | 22%                  | 7%                   |
| Lake                 | 6%                   | 6%                   | 9%                   | 8%                   | 7%                   |
| Morrow               | 11%                  | 16%                  | 13%                  | 12%                  | 7%                   |
| Sherman              | 24%                  | 17%                  | 20%                  | 20%                  | 7%                   |
| Wallowa              | 6%                   | 8%                   | 11%                  | 18%                  | 7%                   |
| Wheeler              | 7%                   | 8%                   | 11%                  | 24%                  | 7%                   |
| Baker                | 10%                  | 14%                  | 17%                  | 22%                  | 15%                  |
| Coos                 | 21%                  | 20%                  | 23%                  | 28%                  | 15%                  |
| Crook                | 16%                  | 23%                  | 19%                  | 30%                  | 15%                  |
| Curry                | 21%                  | 25%                  | 27%                  | 31%                  | 15%                  |
| Klamath              | 13%                  | 12%                  | 17%                  | 18%                  | 15%                  |
| Lincoln              | 20%                  | 20%                  | 21%                  | 19%                  | 15%                  |
| Malheur              | 19%                  | 15%                  | 12%                  | 15%                  | 15%                  |
| Milton-Freew.        | 16%                  | 13%                  | 13%                  | 22%                  | 15%                  |
| Tillamook            | 31%                  | 27%                  | 28%                  | 27%                  | 15%                  |
| Umatilla             | 14%                  | 15%                  | 15%                  | 19%                  | 15%                  |
| Union                | 16%                  | 19%                  | 21%                  | 30%                  | 15%                  |
| Clatsop              | 19%                  | 22%                  | 20%                  | 19%                  | 25%                  |
| Columbia             | 34%                  | 28%                  | 22%                  | 27%                  | 25%                  |
| Deschutes            | 15%                  | 18%                  | 24%                  | 22%                  | 25%                  |
| Douglas              | 26%                  | 23%                  | 23%                  | 24%                  | 25%                  |
| Hood River           | 16%                  | 24%                  | 26%                  | 16%                  | 25%                  |
| Jackson              | 15%                  | 19%                  | 35%                  | 33%                  | 25%                  |
| Josephine            | 14%                  | 19%                  | 27%                  | 34%                  | 25%                  |
| Marion               | 26%                  | 27%                  | 27%                  | 29%                  | 25%                  |
| Wasco                | 25%                  | 23%                  | 26%                  | 29%                  | 25%                  |
| Benton               | 27%                  | 30%                  | 36%                  | 35%                  | 30%                  |
| Lane                 | 19%                  | 28%                  | 32%                  | 32%                  | 30%                  |
| Linn                 | 15%                  | 27%                  | 29%                  | 30%                  | 30%                  |
| Polk                 | 20%                  | 25%                  | 24%                  | 23%                  | 30%                  |
| Yamhill              | 19%                  | 22%                  | 25%                  | 30%                  | 30%                  |
| Metro                | 35%                  | 37%                  | 39%                  | 42%                  | 40%                  |
| <b>OREGON TOTALS</b> | <b>27.10%</b>        | <b>29.90%</b>        | <b>32.60%</b>        | <b>34.70%</b>        |                      |

**Recovery  
Rates**

**Table 5: Oregon Amount Recovered by Wasteshed, 1992-1995**

| Wasteshed         | 1992                |                      | 1993                |                      | 1994                |                      | 1995                |                      |
|-------------------|---------------------|----------------------|---------------------|----------------------|---------------------|----------------------|---------------------|----------------------|
|                   | Recovered<br>(tons) | Per Capita<br>(lbs.) | Recovered<br>(tons) | Per Capita<br>(lbs.) | Recovered<br>(tons) | Per Capita<br>(lbs.) | Recovered<br>(tons) | Per Capita<br>(lbs.) |
| Baker             | 982                 | 124                  | 1,228               | 153                  | 1,659               | 203                  | 2,768               | 336                  |
| Benton            | 21,480              | 622                  | 22,218              | 640                  | 24,054              | 673                  | 25,916              | 724                  |
| Clatsop           | 5,148               | 311                  | 6,987               | 415                  | 7,125               | 420                  | 7,040               | 410                  |
| Columbia          | 7,894               | 407                  | 5,907               | 304                  | 5,233               | 266                  | 6,937               | 349                  |
| Coos              | 10,035              | 323                  | 8,819               | 282                  | 11,522              | 367                  | 13,873              | 447                  |
| Crook             | 1,581               | 211                  | 1,901               | 248                  | 1,554               | 198                  | 3,125               | 398                  |
| Curry             | 2,863               | 268                  | 3,600               | 338                  | 4,212               | 383                  | 5,328               | 480                  |
| Deschutes         | 12,858              | 311                  | 22,741              | 524                  | 30,411              | 680                  | 29,856              | 635                  |
| Douglas           | 29,467              | 612                  | 26,712              | 554                  | 27,418              | 565                  | 30,172              | 618                  |
| Gilliam           | 177                 | 203                  | 155                 | 177                  | 199                 | 228                  | 283                 | 323                  |
| Grant             | 911                 | 228                  | 725                 | 184                  | 872                 | 221                  | 848                 | 213                  |
| Harney            | 600                 | 173                  | 684                 | 198                  | 648                 | 188                  | 1,120               | 318                  |
| Hood River        | 1,855               | 211                  | 3,069               | 343                  | 3,308               | 360                  | 3,242               | 347                  |
| Jackson           | 17,134              | 224                  | 23,975              | 305                  | 57,705              | 721                  | 54,764              | 666                  |
| Jefferson         | 1,269               | 174                  | 1,288               | 173                  | 1,838               | 239                  | 2,414               | 300                  |
| Josephine         | 7,826               | 239                  | 9,321               | 280                  | 12,462              | 366                  | 17,648              | 496                  |
| Klamath           | 8,827               | 297                  | 9,237               | 306                  | 11,950              | 395                  | 13,561              | 440                  |
| Lake              | 269                 | 73                   | 394                 | 107                  | 597                 | 161                  | 715                 | 189                  |
| Lane              | 72,072              | 491                  | 104,604             | 702                  | 118,788             | 792                  | 115,083             | 762                  |
| Lincoln           | 6,886               | 348                  | 7,283               | 364                  | 8,665               | 423                  | 8,246               | 395                  |
| Linn              | 17,232              | 348                  | 25,823              | 516                  | 25,213              | 503                  | 31,551              | 618                  |
| Malheur           | 3,283               | 245                  | 2,675               | 195                  | 2,142               | 152                  | 2,922               | 207                  |
| Marion            | 55,834              | 463                  | 62,542              | 506                  | 72,009              | 570                  | 81,164              | 630                  |
| Metro             | 514,747             | 831                  | 575,819             | 908                  | 635,869             | 990                  | 735,231             | 1,127                |
| Milton-Freewater  | 908                 | 323                  | 755                 | 262                  | 744                 | 254                  | 1,375               | 459                  |
| Morrow            | 930                 | 230                  | 973                 | 230                  | 822                 | 191                  | 918                 | 211                  |
| Polk              | 4,873               | 184                  | 8,218               | 310                  | 7,604               | 282                  | 7,751               | 283                  |
| Sherman           | 270                 | 300                  | 169                 | 182                  | 202                 | 213                  | 227                 | 239                  |
| Tillamook         | 4,518               | 402                  | 4,348               | 380                  | 5,157               | 450                  | 4,820               | 414                  |
| Umatilla          | 6,641               | 239                  | 7,350               | 257                  | 8,537               | 294                  | 11,275              | 381                  |
| Union             | 2,525               | 210                  | 3,341               | 275                  | 4,329               | 353                  | 6,248               | 512                  |
| Wallowa           | 433                 | 121                  | 572                 | 159                  | 841                 | 234                  | 905                 | 250                  |
| Wasco             | 5,443               | 482                  | 5,071               | 451                  | 5,751               | 511                  | 6,650               | 588                  |
| Wheeler           | 59                  | 79                   | 70                  | 93                   | 98                  | 126                  | 239                 | 308                  |
| Yamhill           | 11,850              | 342                  | 16,112              | 451                  | 19,374              | 528                  | 22,992              | 612                  |
| Unspec.           |                     | 0                    | 1                   | 0                    | 1                   | 0                    | 21                  |                      |
| Rounding adj.     |                     |                      |                     |                      |                     |                      | -3                  |                      |
| <b>OR. TOTALS</b> | <b>839,679</b>      | <b>564</b>           | <b>974,687</b>      | <b>642</b>           | <b>1,118,913</b>    | <b>726</b>           | <b>1,257,225</b>    | <b>803</b>           |

Table 6: Oregon Solid Waste Disposed by Wasteshed, 1992-1995

| Wasteshed         | 1992             |                   | 1993             |                   | 1994             |                   | 1995             |                   |
|-------------------|------------------|-------------------|------------------|-------------------|------------------|-------------------|------------------|-------------------|
|                   | Disposed (tons)  | Per Capita (lbs.) | Disposed (tons)  | Per Capita (lbs.) | Disposed (tons)  | Per Capita (lbs.) | Disposed (tons)  | Per Capita (lbs.) |
| Baker             | 8,419            | 1,066             | 7,800            | 969               | 8,253            | 1,013             | 9,876            | 1,197             |
| Benton            | 58,761           | 1,703             | 51,511           | 1,484             | 43,586           | 1,219             | 47,479           | 1,326             |
| Clatsop           | 22,263           | 1,345             | 25,516           | 1,514             | 27,939           | 1,648             | 29,272           | 1,707             |
| Columbia          | 15,131           | 780               | 15,260           | 787               | 18,314           | 930               | 18,967           | 956               |
| Coos              | 37,596           | 1,211             | 35,844           | 1,147             | 39,014           | 1,242             | 35,988           | 1,159             |
| Crook             | 8,378            | 1,117             | 6,260            | 818               | 6,621            | 843               | 7,279            | 927               |
| Curry             | 10,555           | 986               | 10,687           | 1,004             | 11,278           | 1,025             | 11,642           | 1,049             |
| Deschutes         | 72,529           | 1,756             | 104,666          | 2,412             | 98,801           | 2,208             | 108,967          | 2,316             |
| Douglas           | 85,040           | 1,766             | 90,733           | 1,882             | 93,566           | 1,927             | 96,429           | 1,974             |
| Gilliam           | 872              | 996               | 2,396            | 2,738             | 1,128            | 1,289             | 1,166            | 1,333             |
| Grant             | 4,178            | 1,045             | 4,118            | 1,043             | 4,629            | 1,172             | 3,558            | 895               |
| Harney            | 2,650            | 763               | 2,569            | 745               | 2,579            | 748               | 2,192            | 622               |
| Hood River        | 9,959            | 1,132             | 9,772            | 1,092             | 9,509            | 1,034             | 16,458           | 1,760             |
| Jackson           | 98,002           | 1,282             | 100,059          | 1,275             | 108,813          | 1,360             | 111,479          | 1,356             |
| Jefferson         | 4,813            | 659               | 6,691            | 898               | 8,380            | 1,088             | 8,380            | 1,041             |
| Josephine         | 47,687           | 1,458             | 38,677           | 1,161             | 34,399           | 1,010             | 34,373           | 967               |
| Klamath           | 57,247           | 1,928             | 68,371           | 2,268             | 59,498           | 1,967             | 62,501           | 2,029             |
| Lake              | 4,364            | 1,187             | 6,495            | 1,767             | 5,859            | 1,583             | 8,428            | 2,233             |
| Lane              | 302,695          | 2,061             | 264,509          | 1,775             | 251,328          | 1,676             | 240,106          | 1,591             |
| Lincoln           | 27,601           | 1,394             | 30,200           | 1,510             | 32,766           | 1,598             | 35,371           | 1,692             |
| Linn              | 94,644           | 1,911             | 69,382           | 1,386             | 63,079           | 1,257             | 75,332           | 1,475             |
| Malheur           | 13,815           | 1,031             | 15,163           | 1,103             | 15,948           | 1,135             | 16,777           | 1,190             |
| Marion            | 158,109          | 1,310             | 170,131          | 1,376             | 195,990          | 1,552             | 198,041          | 1,536             |
| Metro             | 945,634          | 1,526             | 960,691          | 1,515             | 977,730          | 1,522             | 995,035          | 1,525             |
| Milton-Freewater  | 4,642            | 1,649             | 5,041            | 1,749             | 5,070            | 1,729             | 4,987            | 1,666             |
| Morrow            | 7,221            | 1,783             | 4,955            | 1,173             | 5,685            | 1,322             | 6,617            | 1,521             |
| Polk              | 19,036           | 718               | 24,220           | 913               | 24,190           | 898               | 25,926           | 945               |
| Sherman           | 876              | 973               | 851              | 920               | 804              | 846               | 884              | 931               |
| Tillamook         | 9,940            | 884               | 11,609           | 1,014             | 13,488           | 1,178             | 13,004           | 1,116             |
| Umatilla          | 41,059           | 1,480             | 41,662           | 1,456             | 47,273           | 1,626             | 46,770           | 1,580             |
| Union             | 12,866           | 1,072             | 14,417           | 1,187             | 16,010           | 1,307             | 14,498           | 1,188             |
| Wallowa           | 6,801            | 1,902             | 7,059            | 1,961             | 7,104            | 1,973             | 4,078            | 1,125             |
| Wasco             | 16,760           | 1,483             | 16,746           | 1,489             | 16,145           | 1,435             | 16,106           | 1,425             |
| Wheeler           | 758              | 1,011             | 767              | 1,023             | 763              | 935               | 764              | 986               |
| Yamhill           | 52,199           | 1,509             | 55,685           | 1,559             | 57,130           | 1,558             | 53,418           | 1,422             |
| Unspec.           |                  | 0                 | 1                | 0                 | 5,673            | 163               | 4,335            |                   |
| Rounding adj.     |                  |                   |                  |                   |                  |                   | -2               |                   |
| <b>OR. TOTALS</b> | <b>2,263,099</b> | <b>1,519</b>      | <b>2,280,515</b> | <b>1,501</b>      | <b>2,318,342</b> | <b>1,504</b>      | <b>2,366,480</b> | <b>1,511</b>      |



Table 7: Oregon Solid Waste Generated by Wasteshed, 1992-1995

| Wasteshed         | 1992                        |                   |                             | 1993              |                             |                   | 1994                        |                   |                             | 1995              |                             |                   |
|-------------------|-----------------------------|-------------------|-----------------------------|-------------------|-----------------------------|-------------------|-----------------------------|-------------------|-----------------------------|-------------------|-----------------------------|-------------------|
|                   | Generated Population (tons) | Per Capita (lbs.) | Generated Population (tons) | Per Capita (lbs.) | Generated Population (tons) | Per Capita (lbs.) | Generated Population (tons) | Per Capita (lbs.) | Generated Population (tons) | Per Capita (lbs.) | Generated Population (tons) | Per Capita (lbs.) |
| Baker             | 9,401                       | 15,800            | 1,190                       | 9,028             | 16,100                      | 1,121.5           | 9,911                       | 16,300            | 1,216.1                     | 12,644            | 16,500                      | 1,551.4           |
| Benton            | 80,241                      | 69,015            | 2,325                       | 73,729            | 69,415                      | 2,124.3           | 67,640                      | 71,510            | 1,891.8                     | 73,395            | 71,600                      | 2,052.7           |
| Clatsop           | 27,411                      | 33,100            | 1,656                       | 32,503            | 33,700                      | 1,929.0           | 35,063                      | 33,900            | 2,068.6                     | 36,312            | 34,300                      | 2,142.3           |
| Columbia          | 23,025                      | 38,800            | 1,187                       | 21,167            | 38,800                      | 1,091.1           | 23,547                      | 39,400            | 1,195.3                     | 25,904            | 39,700                      | 1,314.9           |
| Coos              | 47,631                      | 62,100            | 1,534                       | 44,663            | 62,500                      | 1,429.2           | 50,536                      | 62,800            | 1,609.4                     | 49,861            | 62,100                      | 1,587.9           |
| Crook             | 9,959                       | 15,000            | 1,328                       | 8,160             | 15,300                      | 1,066.7           | 8,175                       | 15,700            | 1,041.4                     | 10,404            | 15,700                      | 1,325.4           |
| Curry             | 13,418                      | 21,400            | 1,254                       | 14,287            | 21,300                      | 1,341.5           | 15,490                      | 22,000            | 1,408.2                     | 16,970            | 22,200                      | 1,542.7           |
| Deschutes         | 85,387                      | 82,600            | 2,067                       | 127,407           | 86,800                      | 2,935.6           | 129,210                     | 89,500            | 2,887.4                     | 138,823           | 94,100                      | 3,102.2           |
| Douglas           | 114,507                     | 96,300            | 2,378                       | 117,445           | 96,400                      | 2,436.6           | 120,984                     | 97,100            | 2,491.9                     | 126,601           | 97,700                      | 2,607.6           |
| Gilliam           | 1,049                       | 1,750             | 1,199                       | 2,550             | 1,750                       | 2,914.3           | 1,328                       | 1,750             | 1,517.7                     | 1,449             | 1,750                       | 1,656.0           |
| Grant             | 5,089                       | 8,000             | 1,272                       | 4,843             | 7,900                       | 1,226.1           | 5,501                       | 7,900             | 1,392.7                     | 4,406             | 7,950                       | 1,115.4           |
| Harney            | 3,249                       | 6,950             | 935                         | 3,253             | 6,900                       | 942.9             | 3,227                       | 6,900             | 935.4                       | 3,312             | 7,050                       | 960.0             |
| Hood River        | 11,814                      | 17,600            | 1,343                       | 12,841            | 17,900                      | 1,434.7           | 12,817                      | 18,400            | 1,393.2                     | 19,700            | 18,700                      | 2,141.3           |
| Jackson           | 115,135                     | 152,900           | 1,506                       | 124,034           | 157,000                     | 1,580.1           | 166,517                     | 160,000           | 2,081.5                     | 166,243           | 164,400                     | 2,078.0           |
| Jefferson         | 6,082                       | 14,600            | 833                         | 7,979             | 14,900                      | 1,071.0           | 10,218                      | 15,400            | 1,327.0                     | 10,794            | 16,100                      | 1,401.8           |
| Josephine         | 55,513                      | 65,400            | 1,698                       | 47,998            | 66,600                      | 1,441.4           | 46,861                      | 68,100            | 1,376.2                     | 52,021            | 71,100                      | 1,527.8           |
| Klamath           | 66,074                      | 59,400            | 2,225                       | 77,607            | 60,300                      | 2,574.0           | 71,448                      | 60,500            | 2,361.9                     | 76,062            | 61,600                      | 2,514.4           |
| Lake              | 4,633                       | 7,350             | 1,261                       | 6,889             | 7,350                       | 1,874.6           | 6,456                       | 7,400             | 1,744.9                     | 9,143             | 7,550                       | 2,471.1           |
| Lane              | 374,767                     | 293,700           | 2,552                       | 369,113           | 298,000                     | 2,477.3           | 370,116                     | 300,000           | 2,467.4                     | 355,189           | 301,900                     | 2,367.9           |
| Lincoln           | 34,487                      | 39,600            | 1,742                       | 37,483            | 40,000                      | 1,874.2           | 41,432                      | 41,000            | 2,021.1                     | 43,617            | 41,800                      | 2,127.7           |
| Linn              | 111,875                     | 99,039            | 2,259                       | 95,205            | 100,142                     | 1,901.4           | 88,292                      | 100,350           | 1,759.7                     | 106,883           | 102,154                     | 2,130.2           |
| Malheur           | 17,098                      | 26,800            | 1,276                       | 17,838            | 27,500                      | 1,297.3           | 18,091                      | 28,100            | 1,287.6                     | 19,699            | 28,200                      | 1,402.1           |
| Marion            | 213,943                     | 241,346           | 1,773                       | 232,672           | 247,243                     | 1,882.1           | 267,999                     | 252,640           | 2,121.6                     | 279,205           | 257,846                     | 2,210.3           |
| Metro             | 1,460,380                   | 1,239,500         | 2,356                       | 1,536,510         | 1,268,000                   | 2,423.5           | 1,613,599                   | 1,285,000         | 2,511.4                     | 1,730,266         | 1,305,100                   | 2,693.0           |
| Milton-Freewater  | 5,551                       | 5,630             | 1,972                       | 5,796             | 5,765                       | 2,010.8           | 5,814                       | 5,865             | 1,982.6                     | 6,362             | 5,985                       | 2,169.5           |
| Morrow            | 8,151                       | 8,100             | 2,013                       | 5,929             | 8,450                       | 1,403.3           | 6,507                       | 8,600             | 1,513.3                     | 7,535             | 8,700                       | 1,752.3           |
| Polk              | 23,909                      | 53,000            | 902                         | 32,438            | 53,046                      | 1,223.0           | 31,794                      | 53,845            | 1,180.9                     | 33,677            | 54,844                      | 1,250.9           |
| Sherman           | 1,146                       | 1,800             | 1,273                       | 1,020             | 1,850                       | 1,102.7           | 1,006                       | 1,900             | 1,058.9                     | 1,111             | 1,900                       | 1,169.5           |
| Tillamook         | 14,458                      | 22,500            | 1,285                       | 15,957            | 22,900                      | 1,393.6           | 18,645                      | 22,900            | 1,628.4                     | 17,824            | 23,300                      | 1,556.7           |
| Umatilla          | 47,700                      | 55,470            | 1,720                       | 49,012            | 57,235                      | 1,712.7           | 55,811                      | 58,135            | 1,920.0                     | 58,045            | 59,215                      | 1,996.9           |
| Union             | 15,391                      | 24,000            | 1,283                       | 17,758            | 24,300                      | 1,461.6           | 20,339                      | 24,500            | 1,660.3                     | 20,746            | 24,400                      | 1,693.6           |
| Wallowa           | 7,234                       | 7,150             | 2,023                       | 7,631             | 7,200                       | 2,119.7           | 7,945                       | 7,200             | 2,206.9                     | 4,983             | 7,250                       | 1,384.2           |
| Wasco             | 22,202                      | 22,600            | 1,965                       | 21,817            | 22,500                      | 1,939.3           | 21,897                      | 22,500            | 1,946.4                     | 22,756            | 22,600                      | 2,022.8           |
| Wheeler           | 817                         | 1,500             | 1,089                       | 837               | 1,500                       | 1,116.0           | 861                         | 1,550             | 1,111.0                     | 1,003             | 1,550                       | 1,294.2           |
| Yamhill           | 64,049                      | 69,200            | 1,851                       | 71,797            | 71,454                      | 2,009.6           | 76,504                      | 73,355            | 2,085.9                     | 76,410            | 75,156                      | 2,083.3           |
| Unspec.           | 2                           |                   |                             | 6                 |                             | 0.2               | 5,674                       |                   | 163.5                       | 4,356             |                             | 125.5             |
| <b>OR. TOTALS</b> | <b>3,102,778</b>            | <b>2,979,000</b>  | <b>2,083</b>                | <b>3,255,202</b>  | <b>3,038,000</b>            | <b>2,143.0</b>    | <b>3,437,255</b>            | <b>3,082,000</b>  | <b>2,230.5</b>              | <b>3,623,705</b>  | <b>3,132,000</b>            | <b>2,314.0</b>    |

Table 8: Oregon Materials Recovered, 1992-1995

| Material Type          | 1992<br>Weight (tons) | 1993<br>Weight (tons) | 1994<br>Weight (tons) | 1995<br>Weight (tons) |
|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Container glass        | 69,284                | 74,541                | 73,512                | 65,998                |
| Other glass            | 41                    | 439                   | 6,030                 | 620                   |
| <b>Total glass</b>     | <b>69,325</b>         | <b>74,980</b>         | <b>79,542</b>         | <b>66,618</b>         |
| Aluminum               | 18,245                | 16,030                | 16,805                | 18,600                |
| Scrap metal            | 26,927                | 36,325                | 33,699                | 40,100                |
| Tinned cans            | 7,400                 | 9,755                 | 8,557                 | 8,424                 |
| Aerosol cans           | 0                     | 2                     | 0                     | 0                     |
| <b>Total metals</b>    | <b>52,572</b>         | <b>62,112</b>         | <b>59,061</b>         | <b>67,124</b>         |
| Cardboard/kraft paper  | 204,729               | 226,147               | 251,559               | 306,823               |
| High-grade paper       | 67,077                | 44,497                | 35,401                | 41,906                |
| Magazines              | 11,246                | 14,020                | 11,911                | 14,443                |
| Phone books*           | 0                     | 0                     | 1,799                 | 2,574                 |
| Mixed waste paper      | 24,012                | 28,087                | 38,770                | 66,268                |
| Newspaper              | 130,181               | 127,990               | 143,911               | 148,656               |
| Fiber-based fuel       |                       |                       |                       | 3,302                 |
| <b>Total papers</b>    | <b>437,245</b>        | <b>440,741</b>        | <b>483,352</b>        | <b>583,973</b>        |
| #1 PET beverage        | 3,329                 | 4,404                 | 4,392                 | 5,199                 |
| #1 other               | 58                    | 0                     | 0                     | 0                     |
| #2 milk jugs           | 1,940                 | 2,610                 | 4,289                 | 3,286                 |
| #2 other               | 1,841                 | 1,807                 | 976                   | 1,003                 |
| #3 PVC                 | 25                    | 12                    | 5                     | 25                    |
| #4 LDPE                | 1,196                 | 1,564                 | 3,843                 | 2,533                 |
| #5                     | 360                   | 182                   | 157                   | 238                   |
| #6                     | 471                   | 399                   | 292                   | 310                   |
| Composite plastic      | 0                     | 0                     | 497                   | 868                   |
| Mixed plastic          | 300                   | 168                   | 584                   | 1,359                 |
| Other plastic (P7)     | 0                     | 0                     | 13                    | 16                    |
| Plastic bottles**      |                       |                       |                       | 130                   |
| <b>Total plastic</b>   | <b>9,520</b>          | <b>11,146</b>         | <b>15,049</b>         | <b>14,968</b>         |
| Antifreeze             | 5                     | 5                     | 11                    | 32                    |
| Flourescent lamps      | 0                     | 0                     | 15                    | 2                     |
| Gypsum wallboard       | 3,695                 | 17,004                | 6,726                 | 11,681                |
| Lead acid batteries*** | 176                   | 460                   | 417                   | 504                   |
| Old broken crayons     | 0                     | 0                     | 1                     | 1                     |
| Paint                  | 120                   | 178                   | 153                   | 388                   |
| Porcelain              | 0                     | 0                     | 13                    | 9                     |
| Rubber tire buffings   | 0                     | 0                     | 2,698                 | 4,027                 |
| Scrap film (X-ray)     | 42                    | 55                    | 58                    | 62                    |
| Solvents               | 16                    | 6                     | 6                     | 246                   |
| Textiles               |                       |                       |                       | 445                   |
| Tires                  | 34,392                | 34,853                | 30,454                | 53,265                |
| Used Motor Oil         | 28,796                | 38,636                | 49,769                | 45,583                |
| <b>Total other</b>     | <b>67,243</b>         | <b>91,197</b>         | <b>90,320</b>         | <b>116,244</b>        |
| Animal waste/grease    | 0                     | 0                     | 22,986                | 30,002                |
| Food waste             | 0                     | 0                     | 2,000                 | 3,000                 |
| Wood waste             | 112,425               | 141,922               | 157,881               | 165,055               |
| Yard debris            | 91,348                | 152,589               | 208,722               | 210,240               |
| <b>Total organics</b>  | <b>203,773</b>        | <b>294,511</b>        | <b>391,589</b>        | <b>408,297</b>        |
| Adj. rounding          |                       |                       |                       | 2                     |
| <b>OREGON TOTALS</b>   | <b>839,679</b>        | <b>974,687</b>        | <b>1,118,913</b>      | <b>1,257,225</b>      |

\*Phone books included in mixed waste paper in 1992 and 1993.

\*\*About 900 tons of plastic bottles is included with mixed plastics.

\*\*\*Includes only batteries collected at household hazardous waste collection events.

**Recovery  
Rates**

Table 9: Estimated Recovery Rates by Material Type, 1995

| Material Type            | Amount<br>Recovered<br>(tons) | Amount<br>Disposed<br>(tons) | Amount<br>Generated<br>(tons) | Estimated<br>Recovery<br>Rate |
|--------------------------|-------------------------------|------------------------------|-------------------------------|-------------------------------|
| Container glass          | 65,998                        | 59,686                       | 125,684                       | 52.51%                        |
| Other glass              | 620                           | 17,784                       | 18,404                        | 3.37%                         |
| <b>Total glass</b>       | <b>66,618</b>                 | <b>77,470</b>                | <b>144,088</b>                | <b>46.23%</b>                 |
| Aluminum                 | 18,600                        | 8,369                        | 26,969                        | 68.97%                        |
| Scrap metal              | 40,100                        | 134,704                      | 174,804                       | 22.94%                        |
| Tinned cans              | 8,424                         | 27,532                       | 35,956                        | 23.43%                        |
| <b>Total metals</b>      | <b>67,123</b>                 | <b>170,605</b>               | <b>237,728</b>                | <b>28.24%</b>                 |
| Cardboard/kraft paper    | 306,823                       | 128,237                      | 435,060                       | 70.52%                        |
| High-grade paper         | 41,906                        | 54,656                       | 96,562                        | 43.40%                        |
| Magazines                | 14,443                        | 41,916                       | 56,359                        | 25.63%                        |
| Newspaper                | 148,656                       | 56,956                       | 205,612                       | 72.30%                        |
| Low-grade paper          | 72,144                        | 153,014                      | 225,158                       | 32.04%                        |
| Nonrecyclable paper      | 0                             | 112,282                      | 112,282                       | 0.00%                         |
| <b>Total papers</b>      | <b>583,972</b>                | <b>547,061</b>               | <b>1,131,033</b>              | <b>51.63%</b>                 |
| Rigid plastic containers | 10,396                        | 23,684                       | 34,080                        | 30.50%                        |
| Other plastic            | 4,632                         | 157,358                      | 161,990                       | 2.86%                         |
| <b>Total plastic</b>     | <b>15,028</b>                 | <b>181,042</b>               | <b>196,070</b>                | <b>7.66%</b>                  |
| Textiles & mixed         | 445                           | 57,707                       | 58,152                        | 0.77%                         |
| Tires                    | 57,292                        | 2,030                        | 59,322                        | 96.58%                        |
| Other inorganics         | 58,447                        | 320,923                      | 379,370                       | 15.41%                        |
| <b>Total other</b>       | <b>116,184</b>                | <b>380,660</b>               | <b>496,844</b>                | <b>23.38%</b>                 |
| Misc. organics           | 30,004                        | 112,184                      | 142,188                       | 21.10%                        |
| Food waste               | 3,000                         | 412,915                      | 415,915                       | 0.72%                         |
| Wood waste               | 165,055                       | 200,019                      | 365,074                       | 45.21%                        |
| Yard debris              | 210,240                       | 131,491                      | 341,731                       | 61.52%                        |
| <b>Total organics</b>    | <b>408,299</b>                | <b>856,609</b>               | <b>1,264,908</b>              | <b>32.28%</b>                 |
| <b>OREGON TOTALS</b>     | <b>1,257,225</b>              | <b>2,213,447</b>             | <b>3,470,672</b>              | <b>36.22%</b>                 |

## Respondents to 1995 Material Recovery Surveys

**Private Recycling  
Survey Respondents**

|                                                      |                                                   |                                                            |                                                                                        |
|------------------------------------------------------|---------------------------------------------------|------------------------------------------------------------|----------------------------------------------------------------------------------------|
| A & J Recycling<br>Ontario, OR                       | Baker Commodities<br>Portland, OR                 | Clayton Ward Co<br>Kennewick, WA                           | Don & Larrys Inc<br>La Grande, OR                                                      |
| A & P Recycling<br>The Dalles, OR                    | Bar 7A Trucking<br>Redmond, OR                    | Clayton Ward Co<br>Salem, OR                               | Douglas County Bottling<br>Co<br>Roseburg, OR                                          |
| ABC Recycling<br>Central Point, OR                   | Basin Recycling<br>Pasco, WA                      | Clean Care Corp<br>Tacoma, WA                              | Dumont Distributing Co.<br>Corvallis, OR                                               |
| Agricultural Chemical<br>Association<br>Salem, OR    | Best Buy In Town<br>Hillsboro, OR                 | Clearwater Beverage Inc<br>Bend, OR                        | East County Recycling<br>Portland, OR                                                  |
| AJP Northwest<br>Portland, OR                        | Big Country Distributors<br>Inc<br>Burns, OR      | Coast Beverage Co<br>Warrenton, OR                         | Echanis Distributing Co.<br>Ontario, OR                                                |
| Albertsons Distribution<br>Center<br>Portland, OR    | Biomass-One<br>White City, OR                     | Coast Distributing Co<br>Portland, OR                      | ECR<br>Pendleton, OR                                                                   |
| Alcoa Recycling<br>Vancouver, WA                     | Blitz Weinhard Brewing<br>Co<br>Portland, OR      | Coca Cola Bottling<br>North Bend, &<br>Wilsonville, OR     | Empire Beverage of<br>Astoria Inc<br>Warrenton, OR                                     |
| All Star Recycling<br>Shelton, WA                    | Bredl Saw Service<br>Portland, OR                 | Columbia Aluminum<br>Recycling Co. (CARCO)<br>Portland, OR | Energy Pro<br>Clackamas, OR                                                            |
| Allwood Recycling<br>Fairview, OR                    | Bring Recycling<br>Eugene, OR                     | Columbia Distributing Co<br>(Melittis)<br>Portland, OR     | Envirochem Services<br>Portland, OR                                                    |
| AM Document<br>Destruction<br>Vancouver, WA          | Bureau of Land<br>Management<br>Baker City, OR    | Columbia Gorge Beverage<br>Inc<br>The Dalles, OR           | Environmental<br>Alternatives Ltd.<br>Donald, OR                                       |
| American Compost &<br>Recycling<br>Portland, OR      | Burns Tires<br>White City, OR                     | Connies Distributing Co<br>Inc<br>La Grande, OR            | Environmental Learning<br>Center<br>Oregon City, OR                                    |
| American Rag Company<br>Portland, OR                 | Calaveras Cement Co<br>Redding, CA                | Container Recovery Inc<br>Portland, OR                     | Environmental Recycling<br>Klamath Falls, OR                                           |
| Armstrong World<br>Industries Inc.<br>St. Helens, OR | Cemenergy<br>Redding, CA                          | Dalton Distributing Co Inc<br>Burns, OR                    | Environmental Services<br>(Dexter)<br>Oregon Coast Sanitation,<br>Inc.<br>Coos Bay, OR |
| Ash Grove Cement<br>Portland, OR                     | Central Oregon Recycling<br>Bend, OR              | Darling International<br>Portland, OR                      | Ericksons Sentry Market<br>Burns, OR                                                   |
| Associated Grocers<br>Seattle, WA                    | Central Oregon Recycling<br>Haines, OR            | RS Davis Recycling<br>Station<br>Clackamas, OR             | Eugene Chemcial<br>Harrisburg, OR                                                      |
| Astoria Lions Club<br>Astoria, OR                    | Central Waste Oil Haulers<br>Bend, OR             | Denton Plastics Inc<br>Portland, OR                        | Eugene Mission<br>Eugene, OR                                                           |
| Atlas Tracks Inc.<br>Tualatin, OR                    | City of Eugene<br>Eugene, OR                      | Dept. of Environmental<br>Quality<br>Portland, OR          |                                                                                        |
| Automatic Heat<br>Eugene, OR                         | City of McMinnville<br>McMinnville, OR            | Diashowa America<br>Seattle, WA                            |                                                                                        |
| B & L Recycling<br>Eugene, OR                        | City of Newberg<br>Newberg, OR                    | Dinihanian, Vahan M<br>Holly Farms<br>Beaverton, OR        |                                                                                        |
| B2 Recycling<br>Portland, OR                         | City of Portland<br>(Maintenance)<br>Portland, OR | Dolco Packaging<br>Redmond, WA                             |                                                                                        |
|                                                      | Clatsop Distributing Co<br>Astoria, OR            |                                                            |                                                                                        |

**Recovery Rates**

|                                                             |                                                     |                                                             |                                                        |
|-------------------------------------------------------------|-----------------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------|
| Evanite Fiber Corp<br>Corvallis, OR                         | Goodwill Industries<br>Eugene, OR                   | Knez Building Materials<br>Tigard, OR                       | New Earth Recovery<br>Woodland, WA                     |
| EZ Recycling<br>Portland, OR                                | Graf Paper Salvage<br>Portland, OR                  | Lakeside Reclamation<br>Beaverton, OR                       | City of Newberg<br>Newberg, OR                         |
| Wade Fagen<br>Bend, OR                                      | Graybeal Distributing Co<br>Pendleton, OR           | Lane Forests Products<br>Eugene, OR                         | Northwest Resource<br>Recycling<br>Eugene, OR          |
| Far West Fibers<br>Beaverton, OR                            | Greenstone Industries<br>Portland, OR               | Doug Latta<br>Newport, OR                                   | Odell Lyons Club<br>Odell, OR                          |
| Ferguson Hides &<br>Recycling<br>Burns, OR                  | Grimms Fuel Co<br>Lake Oswego, OR                   | Les Schwab Warehouse<br>Center<br>Prineville, OR            | OMNI Products, Inc.<br>Portland, OR                    |
| Fibres International<br>Bellevue, WA                        | Hanke Brothers Recycling<br>Portland, OR            | Marie Mills<br>Tillamook, OR                                | O'Neill Distributing Co<br>Klamath Falls, OR           |
| First Recovery (Valvoline<br>Inc.)<br>Lexington, KY         | Harbor Oil Inc<br>Portland, OR                      | Marko Foam Products<br>Wilsonville, OR                      | Ontario Cold Storage<br>Ontario, OR                    |
| Fitzs Waste Oil<br>North Bend, OR                           | Heather Oak Enterprises<br>Inc<br>Junction City, OR | McFarlanes Bark Inc<br>Milwaukie, OR                        | Oregon Garden Products<br>Hillsboro, OR                |
| FLD Distributors Inc<br>Medford, OR                         | Hickory Springs<br>Manufacturing Co<br>Portland, OR | MDC & Recycling<br>Portland, OR                             | Oregon Recycling Systems<br>Portland, OR               |
| Fleming Foods<br>Portland, OR                               | High Desert Beverage,<br>Inc.<br>Bend, OR           | Medford Beverage Co.<br>(Portland Bottling)<br>Portland, OR | Oregon Resin Recycling<br>(OPR Sales)<br>Milwaukie, OR |
| Franklin & Quinn<br>Distributing Co<br>Klamath Falls, OR    | Hodgen Distributing Inc<br>Pendleton, OR            | Merlin Plastics<br>Delta, BC, Canada                        | Oregon Paper Fibers<br>Portland, OR                    |
| Fred Lea Distributing<br>Salem, OR                          | Hyponex<br>Clackamas, OR                            | METRO Central, South,<br>and HHW<br>Portland, OR            | Oregon Soil Corp<br>Beaverton, OR                      |
| Fuel Processors Inc<br>Portland, OR                         | Idaho Tire Recovery, Inc.<br>Shoshone, ID           | Metro Plastics, Inc.<br>Puyallup, WA                        | Owens Illinois Glass<br>Container Inc<br>Portland, OR  |
| Gage Industries<br>Lake Oswego, OR                          | Industrial Oils<br>Klamath Falls, OR                | Mid Columbia<br>Distributing Inc<br>Hood River, OR          | Owyhee Distributing Co<br>Inc<br>Nyssa, OR             |
| Gardner Enterprises Inc<br>John Day, OR                     | Inman Oil Co<br>Vancouver, WA                       | Minsingers Floral Nursery<br>West Linn, OR                  | P & E Distributing Co<br>Baker, OR                     |
| Garrison Pallet Exchange<br>Salem, OR                       | International Paper<br>Gardiner, OR                 | Monrovia Nursery<br>Dayton, OR                              | Pabst Brewery<br>Tumwater, WA                          |
| Garten Foundation<br>Salem, OR                              | Interstate Plastics<br>Vancouver, WA                | Moss, Donald Lee<br>Lakeview, OR                            | Pacific Northern Oil<br>Portland, OR                   |
| Georgia Pacific Corp<br>Canby, OR                           | Jackson County<br>Distributors<br>Medford, OR       | Mr. Cees (Cees<br>Enterprises)<br>Salem, OR                 |                                                        |
| Georgia Pacific<br>Toledo, OR                               | James River Paper Co Inc<br>(Halsey)<br>Halsey, OR  | National Polystyrene<br>Recycling Co.<br>Corona, CA         |                                                        |
| Gladstone Recycling<br>Hillsboro, OR                        | Kaseberg, Lee & Karen<br>Wasco, OR                  | Neel Distributing Klamath<br>Basin<br>Klamath Falls, OR     |                                                        |
| Gold River Distributing<br>Co Inc<br>Medford, OR            | KB Recycling<br>Canby, OR                           | Neighborhood Recycling<br>Center<br>Portland, OR            |                                                        |
| Good Samaritan Hospital<br>& Medical Center<br>Portland, OR | Kiwanis Club<br>Tillamook, OR                       |                                                             |                                                        |

## Recovery Rates

|                                                  |                                                           |                                                      |                                                        |
|--------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------|--------------------------------------------------------|
| Pacific Rim Asset Recovery<br>Aloha, OR          | Reuse It<br>Portland, OR                                  | Spencer Environmental Service Inc<br>Oregon City, OR | United Grocers Inc.<br>Milwaukie, OR                   |
| Pacific Xray Corp<br>Portland, OR                | Rexius Forest Bi-Products<br>Eugene, OR                   | St. Helens Ice & Beverage Inc.<br>St. Helens, OR     | United Recycling<br>North Plains, OR                   |
| Paper Chase Recycling<br>Portland, OR            | River Cities Recycling Center<br>Oregon City, OR          | Star Distributors Inc<br>Tillamook, OR               | Universal Wood Recycling<br>Portland, OR               |
| Pendleton Bottling Co., Inc.<br>Pendleton, OR    | Riverside Hogan Distributing Inc.<br>Albany, OR           | Star of Hope Recycling<br>North Bend, OR             | Van Dusen Beverages<br>Astoria, OR                     |
| Pepsi Cola<br>Various locations in OR            | Robinson Arthur R<br>Pendleton, OR                        | Styro Cycle<br>Portland, OR                          | Vernonia Senior Center<br>Vernonia, OR                 |
| Periodicals Paradise<br>Portland, OR             | Ropak Northwest Inc.<br>Kent, WA                          | Sumac Supply<br>Portland, OR                         | Walla Walla Recycling<br>Walla Walla, WA               |
| Phoenix Recycling<br>Eugene, OR                  | Rosterolla Distributing Inc (Kfalls)<br>Klamath Falls, OR | Sunmark Data Inc<br>Portland, OR                     | Walmart Inc<br>Salem, OR                               |
| Portland Habilitation Center Inc<br>Portland, OR | Royal Crown Cola Bottling Co<br>Various locations in OR   | Sunwest Energy Corp<br>Portland, OR                  | Warm Springs Composite Products<br>Warm Springs, OR    |
| Portland Recycling Team, Inc.<br>Portland, OR    | Royal Distributors, Inc.<br>Tillamook, OR                 | Talco Plastics<br>Whittier, CA                       | Waste Control Recycling (Kelso)<br>Kelso, WA           |
| Potters Industries<br>Canby, OR                  | S & H Logging<br>Tualatin, OR                             | Taylormade Products Inc<br>Scappoose, OR             | Waste Oil Recovery Co<br>Phoenix, OR                   |
| Premier Distributors Inc<br>Eugene, OR           | Safeway's Distribution Center<br>Clackamas, OR            | The Dalles Recycling Center<br>The Dalles, OR        | Waste Recovery Inc<br>Portland, OR                     |
| Pritchett Salvage<br>Sweet Home, OR              | Schnitzer Industries<br>Portland, OR                      | Thomas & Son Beverage Inc<br>Coos Bay, OR            | Wastech (Or Processing & Recovery Ctr)<br>Portland, OR |
| Proler International<br>Seattle, WA              | Scientific Development Inc<br>Eugene, OR                  | Thomas Distributing Co Inc<br>Salem, OR              | West Coast Grocers<br>Tacoma, OR                       |
| Providence Medical Center<br>Portland, OR        | Sherman Youth Fund<br>Wasco, OR                           | Thriftway Plastics Collection<br>Portland, OR        | Western Beverage Co<br>Various locations in OR         |
| R & R Distributors Inc.<br>Newport, OR           | Simpson Paper Co<br>West Linn, OR                         | Tillamook Soda Works (Pepsi)<br>Tillamook, OR        | Western Pulp Products<br>Corvallis, OR                 |
| Rainier Brewery<br>Seattle, WA                   | Smurfit Newsprint<br>Newberg, OR                          | Tillamook Wholesale Inc<br>Tillamook, OR             | Western Recycling (Fruitland)<br>Boise, ID             |
| RB Rubber<br>McMinnville, OR                     | Smurfit Newsprint<br>Sweet Home, OR                       | Tire Shredders Inc<br>Goldendale, WA                 | Weyerhaeuser Paper Co<br>Eugene, OR                    |
| Recyclers of Oregon<br>Albany, OR                | Smurfit Recycling<br>Portland, OR                         | Tualatin Valley Waste Recovery<br>Hillsboro, OR      | Weyerhaeuser Paper Fibers<br>Beaverton, OR             |
| Recycling Solutions, Inc.<br>Medford, OR         | Sno Cap Distributors<br>La Grande, OR                     | Undaunted Recycler, The<br>Eugene, OR                |                                                        |
| Red Barn Recycling<br>Portland, OR               | Southern Oregon Tallow<br>Eagle Point, OR                 | United Drain Oil (Washougal)<br>Renton, WA           |                                                        |
| Redmond Tallow Co<br>Redmond, OR                 | SPARC Enterprises<br>Grants Pass, OR                      |                                                      |                                                        |
| Redwood Treatment Plant<br>Grants Pass, OR       |                                                           |                                                      |                                                        |

Willamette Industries Inc  
Portland, OR

Willamette Resource  
Wilsonville, OR

Wilsonville Waste Wood  
Sherwood, OR

Wood Exchange  
Portland, OR

Wright Chevrolet  
Fossil, OR

Yaquina Recycling  
Newport, OR

**Private Recycling  
Survey Non-  
Respondents**

Portland Pallet Recovery  
Portland, OR

Rainy River Forest  
Products (now Stone  
Consolidated Corp.)  
Steilacoom, WA

**Scrap Metal Survey  
Respondents**

Asset Recovery  
Portland, OR

Aurora Wreckers &  
Recyclers, Inc.  
Aurora, OR

Burchame Metals  
Albany, OR

Calbag Metals Co  
Portland, OR

Cherry City Recycling Inc.  
Salem, OR

Christianson Brothers  
Recycling (DC Metals)  
Eugene, OR

Cooper Recycling  
Albany, OR

Interstate Salvage  
Portland, OR

Iras Sales & Service  
Madras, OR

Metro Metals Northwest  
Portland, OR

Mt. Hood Metals  
Portland, OR

Recycling Depot  
Lebanon, OR

Seiki America  
Portland, OR

Sessler Metals  
Klamath Falls, OR

Steel Outlet Inc  
Roseburg, OR

Richard Thomas Scrap  
Metal  
The Dalles, OR

Western Recycling  
Salem, OR

**Hauler Survey  
Respondents**

A-1 Disposal Service  
Portland, OR

Acme Cascade Disposal  
Service  
Eugene, OR

AGG Enterprises Inc  
Portland, OR

Albany Lebanon  
Sanitation Co  
Albany, OR

Alberta Sanitary Service  
Portland, OR

Aloha Garbage Co  
Beaverton, OR

Alpine Disposal &  
Recycling  
Portland, OR

American Sanitary Service  
Gresham, OR

Argay Disposal Service  
Milwaukie, OR

Ashland Sanitary &  
Recycling Service  
Ashland, OR

ASW Disposal Inc  
Eugene, OR

B & J Garbage Co  
Boring, OR

Babe's Garbage Service  
Powers, OR

Baker Sanitary Service  
Baker City, OR

Baldwin Sanitary Service  
Portland, OR

Bear Box Co.  
Portland, OR

Bend Garbage &  
Recycling Co  
Bend, OR

Blaines Sanitary Service  
Portland, OR

Bliss Sanitary Service  
Boring, OR

Borgens Disposal Service  
Milwaukie, OR

Brandts Sanitary Service  
Monmouth, OR

Browns Island Inc  
Salem, OR

Brummell Construction  
Portland, OR

C & B Sanitary Service  
Burns, OR

Canby Disposal Co  
Canby, OR

Cascade Recycling Co  
Bend, OR

Cedar Mills Disposal  
Beaverton, OR

City of Cannon Beach  
Cannon Beach, OR

City of Elgin  
Elgin, OR

City of Milton Freewater  
Milton-Freewater, OR

City of North Powder  
North Powder, OR

City of Winston  
Winston, OR

City Sanitary & Recycling  
Service  
McMinnville, OR

City Sanitary Service  
Portland, OR

City Sanitary Service  
Tillamook, OR

Clackamas Garbage Co  
Milwaukie, OR

Cloudburst Recycling  
Portland, OR

Columbia County Transfer  
Station Inc  
Forest Grove, OR

Columbia Sanitary Service  
Portland, OR

Coos Bay Sanitary Service  
Coos Bay, OR

Cornelius Disposal  
Service  
Cornelius, OR

Corvallis Disposal Co  
Corvallis, OR

Cottage Grove Garbage  
Service  
Cottage Grove, OR

Countryside Disposal  
Service  
Veneta, OR

Curry Transfer &  
Recycling  
Brookings, OR

D & O Garbage Service  
Inc  
Salem, OR

Dallas Garbage Disposal  
Co  
Dallas, OR

Daves Sanitary Service  
Portland, OR

Dees Sanitary Service Inc  
Portland, OR

Deines Brothers  
Portland, OR

Mel Deines Sanitary  
Service Inc  
Milwaukie, OR

## Recovery Rates

|                                                           |                                                                    |                                                               |                                                                           |
|-----------------------------------------------------------|--------------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------------------|
| Deyoung Sanitary Service<br>Portland, OR                  | Grande Ronde Recovery<br>Inc<br>La Grande, OR                      | Kiltow, Gaylen Sanitary<br>Service<br>Portland, OR            | Moreland Sanitary Service<br>Inc<br>Portland, OR                          |
| Dons Garbage Service<br>Aloha, OR                         | Grant County Public<br>Works<br>Canyon City, OR                    | Klamath County Solid<br>Waste Management<br>Klamath Falls, OR | Mountain View Sanitary<br>Boring, OR                                      |
| Douglas County Public<br>Works Department<br>Roseburg, OR | Grant County Recycling<br>Prairie City, OR                         | Klamath Rec Inc<br>Klamath Falls, OR                          | Mt Hood Refuse Removal<br>Sandy, OR                                       |
| Dunthorpe Sanitary<br>Service Inc<br>Lake Oswego, OR      | Grants Pass Sanitation Inc<br>Grants Pass, OR                      | Lake County Court<br>Lakeview, OR                             | Multnomah Disposal &<br>Recycling<br>Portland, OR                         |
| Eager Beaver Sanitary<br>Service<br>Forest Grove, OR      | Gresham Sanitary Service<br>Inc<br>Gresham, OR                     | Lakeview High School<br>Lakeview, OR                          | Myers Dropbox Service<br>Portland, OR                                     |
| Eastside Recycling District<br>Portland, OR               | Gruetter Sanitary Service<br>Portland, OR                          | Lane County Solid Waste<br>Division<br>Eugene, OR             | Nehalem Valley Sanitary<br>Service<br>Vernonia, OR                        |
| Eastside Waste &<br>Recycling<br>Portland, OR             | Heiberg Garbage Service<br>Portland, OR                            | Lehl Co Inc<br>Clackamas, OR                                  | Newberg Garbage Service<br>Newberg, OR                                    |
| Eckert Sanitary Service<br>Inc<br>Vancouver, WA           | High Country Disposal Inc<br>Redmond, OR                           | Lehl Disposal Inc<br>Canby, OR                                | North Bend Sanitation<br>North Bend, OR                                   |
| Ege Sanitary Service<br>Troutdale, OR                     | Hillsboro Garbage<br>Disposal<br>Hillsboro, OR                     | Les Sanitary Service<br>Coos Bay, OR                          | North Lincoln Sanitary<br>Service<br>Lincoln City, OR                     |
| Egger Garbage Service<br>Portland, OR                     | Hoffman Sanitation<br>Portland, OR                                 | Lorens Sanitation Service<br>Keizer, OR                       | Northern Wasco County<br>Landfill<br>The Dalles, OR                       |
| Elmers Sanitary Service<br>Portland, OR                   | Hohnstein Garbage &<br>Recycling<br>Portland, OR                   | Lou & Chucks Sanitary<br>Service<br>Forest Grove, OR          | Oak Grove Disposal Co<br>Inc<br>Milwaukie, OR                             |
| Environmental Waste<br>Systems Inc<br>St Helens, OR       | Hood River Garbage<br>Service Inc<br>Hood River, OR                | Mac's Garbage Service<br>Scappoose, OR                        | Ogden-Martin Systems<br>(Brooks Energy Recovery<br>Facility)<br>Salem, OR |
| Evergreen Waste Systems<br>Vancouver, WA                  | Hood River Recycling &<br>Transfer Station, Inc.<br>Hood River, OR | Madras Sanitary Service<br>Madras, OR                         | Ontario Sanitary Service<br>Inc<br>Ontario, OR                            |
| Excel Services &<br>Recycling<br>Astoria, OR              | Horizon Project, Inc.<br>Milton-Freewater, OR                      | Malheur County Public<br>Works Department<br>Vale, OR         | Oregon City Garbage Co<br>Oregon City, OR                                 |
| Finley Buttes Landfill<br>Boardman, OR                    | Horning Brothers Sanitary<br>Service<br>Reedsport, OR              | Marine Drop Box Co<br>Portland, OR                            |                                                                           |
| Flannerys Drop Box<br>Service<br>Gresham, OR              | Housing Authority of<br>Portland<br>Portland, OR                   | McInnis & Son<br>Portland, OR                                 |                                                                           |
| Fleming, Jack Sanitary<br>Portland, OR                    | Irvington Sanitary Service<br>Portland, OR                         | Mill City Disposal<br>Lyons, OR                               |                                                                           |
| Forest Grove Disposal<br>Service<br>Forest Grove, OR      | Jefferson County Road<br>Department<br>Madras, OR                  | Millers Sanitary Service<br>Inc<br>Beaverton, OR              |                                                                           |
| Garbarino Disposal<br>Service Inc<br>North Plains, OR     | Keller Drop Box Inc<br>West Linn, OR                               | Mitchell Disposal & Metal<br>Salvage Site<br>Mitchell, OR     |                                                                           |
| Gladstone Disposal Co Inc<br>Oregon City, OR              |                                                                    | Mohr Garbage Service<br>Portland, OR                          |                                                                           |
|                                                           |                                                                    | Molalla Sanitary<br>Oregon City, OR                           |                                                                           |



## Recovery Rates

|                                                      |                                                         |                                                              |                                                       |
|------------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------------|-------------------------------------------------------|
| Oregon Waste Systems Inc<br>Arlington, OR            | Royal Refuse Center<br>Eugene, OR                       | Syring Sanitary Service,<br>Inc.<br>Sandy, OR                | Walker Garbage Service<br>Portland, OR                |
| Pacific Garbage Service<br>Inc<br>Forest Grove, OR   | Sani Pac Inc<br>Eugene, OR                              | The Dalles Disposal<br>Service<br>The Dalles, OR             | Peter Walker & Son<br>Gresham, OR                     |
| Pacific Sanitation<br>Salem, OR                      | Sanitary Disposal Inc<br>Hermiston, OR                  | The Recycling Team<br>Bend, OR                               | Walker Refuse<br>Portland, OR                         |
| Pendleton Sanitary<br>Service, Inc.<br>Pendleton, OR | Sanitary Service Co Inc<br>Salem, OR                    | Thompson's Sanitary<br>Service<br>Newport, OR                | Washington County<br>Dropbox<br>Hillsboro, OR         |
| Phillips Garbage Service<br>St. Paul, OR             | Santiam Sanitary Service<br>Sublimity, OR               | Tillamook County Public<br>Works Department<br>Tillamook, OR | Waste Management Inc<br>Portland, OR                  |
| Pilot Rock Sanitation<br>Service<br>Pilot Rock, OR   | Schield Sanitary Service<br>Portland, OR                | Trashco<br>Portland, OR                                      | Weber Disposal Service<br>Portland, OR                |
| Portland Disposal &<br>Recycling<br>Portland, OR     | Schmidts Sanitary<br>Tigard, OR                         | Trico Disposal<br>Grants Pass, OR                            | Weisenfluh, J & R<br>Sanitary Service<br>Portland, OR |
| Pride Disposal<br>Sherwood, OR                       | Schnell, LL Inc<br>Clackamas, OR                        | Troudt Brothers<br>Portland, OR                              | Weitzel Refuse<br>Portland, OR                        |
| Prineville Disposal Inc<br>Prineville, OR            | Seaside Gearhart<br>Recycling & Transfer<br>Seaside, OR | Twelve Mile Disposal<br>Service<br>Gresham, OR               | West Beaverton Sanitary<br>Service<br>Beaverton, OR   |
| Rahn Sanitary Service<br>Enterprise, OR              | Sevier & Son<br>Portland, OR                            | Union Transfer Station<br>Union, OR                          | West Linn Disposal<br>Oregon City, OR                 |
| Rahn's Sanitary Service<br>Athena, OR                | Siuslaw Disposal Inc<br>Florence, OR                    | United Disposal Service<br>Woodburn, OR                      | West Slope Garbage<br>Service<br>Portland, OR         |
| Rainier Sanitary Service<br>Rainier, OR              | Source Recycling<br>Corvallis, OR                       | Valley Garbage Service<br>(Salem)<br>Salem, OR               | Westlane Disposal<br>Florence, OR                     |
| Redding Sanitary Service<br>Garibaldi, OR            | South Lincoln Landfill Inc<br>Waldport, OR              | Valley Garbage Service<br>(Beaverton)<br>Beaverton, OR       | Westside Recycling<br>District<br>Portland, OR        |
| Redland Disposal<br>Oregon City, OR                  | Southern Oregon<br>Sanitation Inc<br>Grants Pass, OR    | Valley Landfills Inc<br>(PRC)<br>Corvallis, OR               | Wheeler County Court<br>Fossil, OR                    |
| Refuse Removal Inc<br>Portland, OR                   | Suburban Garbage Service<br>Salem, OR                   | Valley West Refuse<br>Disposal Inc<br>Aloha, OR              | Wichita Sanitary Service<br>Gladstone, OR             |
| Rimrock Recycling<br>Hines, OR                       | Sunrise Enterprises Shelter<br>Workshop<br>Roseburg, OR | Vogel Brothers Inc<br>Gresham, OR                            | Wilderness Garbage &<br>Recycling<br>La Pine, OR      |
| River City Disposal &<br>Recycling<br>Portland, OR   | Sunrise Sanitation Service<br>Moro, OR                  | Wacker, Dave Sanitary<br>Portland, OR                        | Woodfeathers, Inc.<br>Portland, OR                    |
| Rockwood Solid Waste<br>Inc<br>Gresham, OR           | Sunset Garbage Collection<br>Inc<br>Portland, OR        | Wadsworth Garbage<br>Disposal Service<br>Coquille, OR        |                                                       |
| Rogue Waste Systems Inc<br>Medford, OR               | Sutherland Sanitary Service<br>Sutherland, OR           | Dan Walker Disposal<br>Service<br>Estacada, OR               |                                                       |
| Roseburg Disposal Co<br>Roseburg, OR                 | Swatco Sanitary Service<br>Portland, OR                 |                                                              |                                                       |
| Rossman Sanitary Service<br>Lake Oswego, OR          | Sweet Home Sanitation<br>Service<br>Sweet Home, OR      |                                                              |                                                       |

**Recovery Rates**

|                                                             |                                                          |                                                           |                                                   |
|-------------------------------------------------------------|----------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------|
| Wooten Sanitary<br>Tigard, OR                               | Columbia Ridge Landfill<br>& Recycling<br>Arlington, OR  | Imnaha Disposal Site<br>Wallowa County                    | Reedsport Landfill<br>Douglas County              |
| Wunsch Sanitary Service<br>Portland, OR                     | Crane Disposal Site<br>Harney County                     | Jordan Valley Disposal<br>Site<br>Malheur County          | Richland Disposal Site<br>Richland, OR            |
| Young, Jack Inc<br>Portland, OR                             | Crescent Landfill<br>Klamath County                      | Juntura Disposal Site<br>Malheur County                   | Riley Disposal Site<br>Harney County              |
| <b>Disposal Survey<br/>Respondents</b>                      | Crook County Landfill<br>Prineville, OR                  | Klamath Falls Landfill<br>Klamath Falls, OR               | Riverbend Sanitary<br>Landfill<br>McMinnville, OR |
| Adel Disposal Site<br>Lake County                           | Dayville Disposal Site<br>Grant County                   | Knott Pit Landfill<br>Deschutes County                    | Roseburg Landfill<br>Douglas County               |
| Agate Beach Landfill<br>Lincoln County                      | Delta Sand & Gravel<br>Demolition Landfill<br>Eugene, OR | Lakeside Reclamation<br>Beaverton, OR                     | Seneca Landfill<br>Seneca, OR                     |
| Andrews Disposal Site<br>Harney County                      | Diamond Disposal Site<br>Harney County                   | Lakeview Disposal Site<br>Lakeview, OR                    | Shaniko Disposal Site<br>Shaniko, OR              |
| Antelope Disposal Site<br>Antelope, OR                      | Drewsey Disposal Site<br>Harney County                   | Long Creek Landfill<br>Long Creek, OR                     | Short Mountain Landfill<br>Lane County            |
| Ant Flat Landfill<br>Wallowa County                         | Dry Creek Disposal Site<br>Medford, OR                   | Lytle Boulevard Landfill<br>Malheur County                | Silver Lake Disposal Site<br>Lake County          |
| Ashland Sanitary Landfill<br>(Valley View)<br>Ashland, OR   | Energy Recovery Facility<br>(Brooks)<br>Brooks, OR       | Malin Landfill<br>Klamath County                          | Sod House Disposal Site<br>Harney County          |
| Baker Sanitary Landfill<br>Baker City, OR                   | Fields Disposal Site<br>Harney County                    | McDermitt Disposal Site<br>Malheur County                 | South Lincoln Landfill<br>Waldport, OR            |
| Beatty Disposal Site<br>Klamath County                      | Finley Buttes Landfill<br>Boardman, OR                   | Milton Freewater Landfill<br>Milton-Freewater, OR         | South Stage Landfill<br>Medford, OR               |
| Beaver Hill Incinerator &<br>Disposal Site<br>Coquille, OR  | Fort Rock Disposal Site<br>Lake County                   | Mitchell Disposal & Metal<br>Salvage Site<br>Mitchell, OR | Sprague River Disposal<br>Site<br>Klamath County  |
| Bend Demolition Landfill<br>Bend, OR                        | Fossil Landfill<br>Wheeler County                        | Monument Landfill<br>Monument, OR                         | Spray Landfill<br>Wheeler County                  |
| Bly Disposal Site<br>Klamath County                         | Fox Hill Landfill<br>Union County                        | Negus Sanitary Landfill<br>Deschutes County               | Summer Lake Disposal<br>Site<br>Lake County       |
| Box Canyon Disposal Site<br>Jefferson County                | Frenchglen Disposal Site<br>Harney County                | North Marion County<br>Disposal Facility<br>Salem, OR     | Unity Sanitary Landfill<br>Unity, OR              |
| Browns Island Demolition<br>Landfill<br>Salem, OR           | Grants Pass Landfill<br>(Merlin)<br>Grants Pass, OR      | Northern Wasco County<br>Landfill Inc<br>The Dalles, OR   |                                                   |
| Burns/Hines Disposal Site<br>Burns, OR                      | Haines Landfill<br>Haines, OR                            | Paisley Disposal Site<br>Lake County                      |                                                   |
| Chemult Disposal Site<br>Klamath County                     | Halfway Disposal Site<br>Halfway, OR                     | Pilot Rock Landfill<br>Pilot Rock, OR                     |                                                   |
| Christmas Valley Disposal<br>Site<br>Lake County            | Hendrix Landfill<br>Grant County                         | Plush Disposal Site<br>Lake County                        |                                                   |
| Coffin Butte Sanitary<br>Landfill (Valley)<br>Corvallis, OR | Hillsboro Landfill<br>Hillsboro, OR                      | Prairie City Landfill<br>Prairie City, OR                 |                                                   |
|                                                             | Huntington Disposal Site<br>Huntington, OR               | Rahns Sanitary Landfill<br>Athena, OR                     |                                                   |

# 1995 Oregon Material Recovery Survey

If you need assistance completing this form, in Oregon call 1-800-452-4011 and ask for Jacquie Moon at ext. 5479 or Judy Henderson at ext. 5521, or dial direct to Jacquie at (503) 229-5479 and Judy at (503) 229-5521.

Line#

|          |         |
|----------|---------|
| Material | ID Code |
|          | 1       |

## A Sources Of Material

| OREGON COUNTY NAME                                | Amount you collected yourself from offices, grocery stores, private citizens, schools, restaurants/bars, etc. | Amount you collected from other recyclers or amount from unknown sources | A+B<br>TOTAL<br>TONS/<br>GALLONS |
|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|----------------------------------|
|                                                   |                                                                                                               |                                                                          | 2                                |
|                                                   |                                                                                                               |                                                                          | 3                                |
|                                                   |                                                                                                               |                                                                          | 4                                |
|                                                   |                                                                                                               |                                                                          | 5                                |
|                                                   |                                                                                                               |                                                                          | 6                                |
|                                                   |                                                                                                               |                                                                          | 7                                |
|                                                   |                                                                                                               |                                                                          | 8                                |
|                                                   |                                                                                                               |                                                                          | 9                                |
| Additional County Totals, If Any, page 2, line 33 |                                                                                                               |                                                                          | 10                               |
| Unknown County Of Origin In Oregon                |                                                                                                               |                                                                          | 11                               |
| Total Tons Collected From Out-Of-State            |                                                                                                               |                                                                          | 12                               |
| <b>TOTAL Tons Collected In 1995</b>               | <i>Add lines 2 through 12</i>                                                                                 |                                                                          | 13                               |

## B Material Sold/Shipped/Transferred/Used

(Circle 'C' if material composted, 'E' if material burned for energy recovery, or 'R' if recycled)

| COMPANY NAME                                                                                    | LOCATION (City/State)         |       | TONS/GALLONS |
|-------------------------------------------------------------------------------------------------|-------------------------------|-------|--------------|
|                                                                                                 |                               | C E R | 14           |
|                                                                                                 |                               | C E R | 15           |
|                                                                                                 |                               | C E R | 16           |
|                                                                                                 |                               | C E R | 17           |
| Total Exported To Out-Of-Country Markets (List Company Handling Export Of Materials On Line 18) |                               |       |              |
| COMPANY NAME                                                                                    | LOCATION (City/State/Country) |       | TONS/GALLONS |
|                                                                                                 |                               | C E R | 18           |
| Total Tons From Additional Companies, If Any, page 2, line 40                                   |                               |       |              |
| Total Tons Used By Your Company To Make A Product                                               |                               |       | 19           |
|                                                                                                 |                               |       | 20           |
| <b>TOTAL Tons Sold In 1995</b>                                                                  |                               |       | 21           |
| <i>Add lines 14 through 20</i>                                                                  |                               |       |              |

**C** Beginning Inventory, January 1, 1995 (If Known)

22

**D** Ending Inventory, December 31, 1995 (If Known)

23

**E** Does this form balance? Line 13 + line 22 should equal line 21 + line 23. If not, please explain:

**F** Name Of Person Who Filled Out This Form: \_\_\_\_\_

Phone: \_\_\_\_\_

# Worksheet To List Additional Counties Of Origin and Buyers

## A Sources Of Material (Continued)

| OREGON COUNTY NAME                                        | Amount you collected yourself from offices, grocery stores, private citizens, schools, restaurants/bars, etc. | Amount you collected from other recyclers or amount from unknown sources | A+B<br>TOTAL<br>TONS/<br>GALLONS |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|----------------------------------|
|                                                           |                                                                                                               |                                                                          | 24                               |
|                                                           |                                                                                                               |                                                                          | 25                               |
|                                                           |                                                                                                               |                                                                          | 26                               |
|                                                           |                                                                                                               |                                                                          | 27                               |
|                                                           |                                                                                                               |                                                                          | 28                               |
|                                                           |                                                                                                               |                                                                          | 29                               |
|                                                           |                                                                                                               |                                                                          | 30                               |
|                                                           |                                                                                                               |                                                                          | 31                               |
|                                                           |                                                                                                               |                                                                          | 32                               |
| Add lines 24 through 32. Enter amount on page 1, line 10. |                                                                                                               |                                                                          | 33                               |

## B Material Sold/Shipped/Transferred/Used (Continued)

(Circle 'C' if material composted, 'E' if material burned for energy recovery, or 'R' if recycled)

| COMPANY NAME                                              | LOCATION (City/State) | C | E | R | TONS/GALLONS |
|-----------------------------------------------------------|-----------------------|---|---|---|--------------|
|                                                           |                       | C | E | R | 34           |
|                                                           |                       | C | E | R | 35           |
|                                                           |                       | C | E | R | 36           |
|                                                           |                       | C | E | R | 37           |
|                                                           |                       | C | E | R | 38           |
|                                                           |                       | C | E | R | 39           |
| Add lines 34 through 39. Enter amount on page 1, line 19. |                       |   |   |   | 40           |

## G Comments

**CONFIDENTIALITY OF INFORMATION**  
 ORS 459A.050 (7) states, "Information collected under subsection (6) of this section, as it relates specifically to the entity's customer lists or specific amounts and types of materials collected or marketed, shall be maintained as confidential by the Department and exempt from disclosure under ORS 192.410 to 192.505. The Department may use and disclose such information in aggregated form."



# 1995 RECYCLING COLLECTOR SURVEY

Company Name \_\_\_\_\_

Wasteshed \_\_\_\_\_

**A. POST-CONSUMER MATERIALS HANDLED IN 1995 (single wasteshed)**

**INSTRUCTIONS:** For each post-consumer material handled in 1995, record the amt. obtained by each of the following collection methods. A separate page 1 should be filled out for each wasteshed from which material is obtained. In columns (A)-(E) record the amount collected by your company. In column (F), record the amt. received from other companies; \*list each company below. If material is received from multiple wastesheds, the totals reported (column G1) for each wasteshed should, when added together, equal the total reported in column (G2) on page 2. If material is collected in only one wasteshed, (G1) will = (G2).

| Materials<br>(See Recovered *<br>Materials definitions<br>on Attachment A) |                      | Unit of Measure<br>(Circle one per<br>line) |                                           | Amount collected: only by your company |                               |                                         |                     |                                      | (F)*<br>Amt Received<br>from other<br>companies<br>(list below) | (G1)<br>Total Amount<br>Collected/ Handled in<br>this wasteshed<br>(A)+(B)+(C)+(D)+(E)+(F) |
|----------------------------------------------------------------------------|----------------------|---------------------------------------------|-------------------------------------------|----------------------------------------|-------------------------------|-----------------------------------------|---------------------|--------------------------------------|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------|
|                                                                            |                      |                                             |                                           | (A)<br>On-Route<br>Residential         | (B)<br>On-Route<br>Commercial | (C)<br>Disposal sites<br>& Transfer Str | (D)<br>Multi-family | (E)<br>Other Depots<br>Special Event |                                                                 |                                                                                            |
| Paper                                                                      | Newspaper            | Pounds                                      | Tons                                      |                                        |                               |                                         |                     |                                      |                                                                 |                                                                                            |
|                                                                            | Corr. Cardboard      | Pounds                                      | Tons                                      |                                        |                               |                                         |                     |                                      |                                                                 |                                                                                            |
|                                                                            | High Grade Paper     | Pounds                                      | Tons                                      |                                        |                               |                                         |                     |                                      |                                                                 |                                                                                            |
|                                                                            | Magazines            | Pounds                                      | Tons                                      |                                        |                               |                                         |                     |                                      |                                                                 |                                                                                            |
|                                                                            | Mixed Waste Paper    | Pounds                                      | Tons                                      |                                        |                               |                                         |                     |                                      |                                                                 |                                                                                            |
|                                                                            | Phone Books          | Pounds                                      | Tons                                      |                                        |                               |                                         |                     |                                      |                                                                 |                                                                                            |
| Metals                                                                     | Tinned Cans          | Pounds                                      | Tons                                      |                                        |                               |                                         |                     |                                      |                                                                 |                                                                                            |
|                                                                            | Aluminum             | Pounds                                      | Tons                                      |                                        |                               |                                         |                     |                                      |                                                                 |                                                                                            |
|                                                                            | Other Scrap Metal    | Pounds                                      | Tons                                      |                                        |                               |                                         |                     |                                      |                                                                 |                                                                                            |
|                                                                            | Lead Acid Batteries  | Pounds                                      | Units Tons                                |                                        |                               |                                         |                     |                                      |                                                                 |                                                                                            |
| Organics                                                                   | Yard Debris          | Pounds                                      | Tons<br>Loose Cu. Yd.<br>Compacted Cu.Yd. |                                        |                               |                                         |                     |                                      |                                                                 |                                                                                            |
|                                                                            | Wood Waste           | Pounds                                      | Tons CuYd                                 |                                        |                               |                                         |                     |                                      |                                                                 |                                                                                            |
| Other                                                                      | Used Motor Oil       | Tons                                        | Gallons                                   |                                        |                               |                                         |                     |                                      |                                                                 |                                                                                            |
|                                                                            | Tires                | Pounds                                      | Units Tons                                |                                        |                               |                                         |                     |                                      |                                                                 |                                                                                            |
|                                                                            | Glass Containers     | Pounds                                      | Tons                                      |                                        |                               |                                         |                     |                                      |                                                                 |                                                                                            |
|                                                                            | Milk Jugs            | Pounds                                      | Tons                                      |                                        |                               |                                         |                     |                                      |                                                                 |                                                                                            |
|                                                                            | Plastic Bottles #1-7 | Pounds                                      | Tons                                      |                                        |                               |                                         |                     |                                      |                                                                 |                                                                                            |
|                                                                            | Mixed Plastic        | Pounds                                      | Tons                                      |                                        |                               |                                         |                     |                                      |                                                                 |                                                                                            |
|                                                                            | Other _____          | Pounds                                      | Tons                                      |                                        |                               |                                         |                     |                                      |                                                                 |                                                                                            |
|                                                                            | Other _____          | Pounds                                      | Tons                                      |                                        |                               |                                         |                     |                                      |                                                                 |                                                                                            |
| Other _____                                                                | Pounds               | Tons                                        |                                           |                                        |                               |                                         |                     |                                      |                                                                 |                                                                                            |

\* For data tracking purposes, please list the companies from which you received materials. Don't report the method of collection for those materials. Attach a separate sheet if more room is necessary. \*

Company Name \_\_\_\_\_

**B. TOTAL POST-CONSUMER MATERIALS SOLD, DELIVERED AND/OR USED IN 1995 (All wastesheds)**

**INSTRUCTIONS:** This table is used to determine the total amount of each post-consumer material you sold, delivered and/or used on-site in 1995 by adjusting column (G2), "Total Amount Collected /Handled" in all wastesheds for changes in inventory (ending inventory minus beginning inventory). This table covers all wastesheds from which material is collected or obtained. In column (G2) below, if material is collected in multiple wastesheds, add together each wasteshed's column (G1) on page 1. If material is collected in only one wasteshed, (G1) will = (G2). For columns (H) & (I), if no inventory, enter zero. For column (H), "Beginning Inventory Jan. 1, 1995", use the "Ending Inventory Dec. 31, 1994" (from last year's form). In column (J) for each material, add (G2) to (H) and subtract (I). Note: Do not record inventory for yard debris or wood waste; the amount collected will be counted as recovered without regard to inventory.

| MATERIAL             | Unit of Measure<br>(Circle one) |                   | (G2)<br>Total Amount<br>Collected/Handled in<br>all wastesheds<br>1995 | (H)<br>Beginning<br>Inventory<br>Jan. 1, 1995 | (I)<br>Ending<br>Inventory<br>Dec. 31, 1995 | (J)<br>Total sold, delivered<br>and/or used on site<br>1995<br>(G2) + (H) - (I) = |
|----------------------|---------------------------------|-------------------|------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------|-----------------------------------------------------------------------------------|
|                      |                                 |                   |                                                                        |                                               |                                             |                                                                                   |
| Newspaper            | Pounds                          | Tons              | _____ + ( _____ - _____ ) = _____                                      |                                               |                                             |                                                                                   |
| Corr. Cardboard      | Pounds                          | Tons              | _____ + ( _____ - _____ ) = _____                                      |                                               |                                             |                                                                                   |
| High Grade Paper     | Pounds                          | Tons              | _____ + ( _____ - _____ ) = _____                                      |                                               |                                             |                                                                                   |
| Magazines            | Pounds                          | Tons              | _____ + ( _____ - _____ ) = _____                                      |                                               |                                             |                                                                                   |
| Mixed Waste Paper    | Pounds                          | Tons              | _____ + ( _____ - _____ ) = _____                                      |                                               |                                             |                                                                                   |
| Phone Books          | Pounds                          | Tons              | _____ + ( _____ - _____ ) = _____                                      |                                               |                                             |                                                                                   |
| Tinned Cans          | Pounds                          | Tons              | _____ + ( _____ - _____ ) = _____                                      |                                               |                                             |                                                                                   |
| Aluminum             | Pounds                          | Tons              | _____ + ( _____ - _____ ) = _____                                      |                                               |                                             |                                                                                   |
| Other Scrap Metal    | Pounds                          | Tons              | _____ + ( _____ - _____ ) = _____                                      |                                               |                                             |                                                                                   |
| Lead Acid Batteries  | Lbs. Units                      | Tons              | _____ + ( _____ - _____ ) = _____                                      |                                               |                                             |                                                                                   |
| Yard Debris          | Pounds                          | Tons              | _____ + ( _____ 0 _____ - _____ 0 _____ ) = _____                      |                                               |                                             |                                                                                   |
|                      |                                 | Loose Cu. Yd.     |                                                                        |                                               |                                             |                                                                                   |
|                      |                                 | Compacted Cu. Yd. |                                                                        |                                               |                                             |                                                                                   |
| Wood Waste           | Lbs. Tons                       | Cu. Yd.           | _____ + ( _____ 0 _____ - _____ 0 _____ ) = _____                      |                                               |                                             |                                                                                   |
| Used Motor Oil       | Tons                            | Gallons           | _____ + ( _____ - _____ ) = _____                                      |                                               |                                             |                                                                                   |
| Tires                | Lbs. Units                      | Tons              | _____ + ( _____ - _____ ) = _____                                      |                                               |                                             |                                                                                   |
| Glass Containers     | Pounds                          | Tons              | _____ + ( _____ - _____ ) = _____                                      |                                               |                                             |                                                                                   |
| Milk Jugs            | Pounds                          | Tons              | _____ + ( _____ - _____ ) = _____                                      |                                               |                                             |                                                                                   |
| Plastic Bottles #1-7 | Pounds                          | Tons              | _____ + ( _____ - _____ ) = _____                                      |                                               |                                             |                                                                                   |
| Mixed Plastic        | Pounds                          | Tons              | _____ + ( _____ - _____ ) = _____                                      |                                               |                                             |                                                                                   |
| Other _____          | Pounds                          | Tons              | _____ + ( _____ - _____ ) = _____                                      |                                               |                                             |                                                                                   |
| Other _____          | Pounds                          | Tons              | _____ + ( _____ - _____ ) = _____                                      |                                               |                                             |                                                                                   |
| Other _____          | Pounds                          | Tons              | _____ + ( _____ - _____ ) = _____                                      |                                               |                                             |                                                                                   |

**1995 Recycling Collector Survey**

Company Name \_\_\_\_\_

**C. TOTAL POST-CONSUMER MARKETING INFORMATION 1995 (All Wastesheds)**

**INSTRUCTIONS:** This table is used to track the statewide movement of material to end use markets. This information is necessary to help DEQ avoid double-counting or under-counting materials. This table covers all wastesheds from which material is collected or obtained. Total up all material sold, delivered or used by your company and record in "Amount Sold, Delivered or Used" column. *Please be consistent when reporting units of measure.* In the last two columns list the name and city of each company to which material is sold or delivered or where used in 1995. **Note:** 1) For each material, use a separate line for each recycler to whom material was sold, delivered or used by in 1995. The total of these entries should equal the amount recorded on page 2, column (J). 2) Use the rows marked "other" on page 5 if you need more lines or if you handled materials not listed on this survey. 3) If your company used a recovered material (example - used oil was burned in your shop heater), list your company as the company to which material was sold, delivered or used. 4) If requested, your response to this portion of the survey will be held as confidential business information. See the bottom of page 5 for further detail.

| MATERIAL          | Amount Sold, Delivered or Used<br>(Total Amt. should = column (J), page 2) |    | Unit of Measure<br>(Circle one) |      | Company Name<br>Material Sold, Delivered or Used | Company Location<br>City, State |
|-------------------|----------------------------------------------------------------------------|----|---------------------------------|------|--------------------------------------------------|---------------------------------|
|                   | a.                                                                         | b. | Pounds                          | Tons |                                                  |                                 |
| Newspaper         | a.                                                                         |    |                                 |      |                                                  |                                 |
|                   | b.                                                                         |    | Pounds                          | Tons |                                                  |                                 |
|                   | Total Amt. = a+b                                                           |    |                                 |      |                                                  |                                 |
| Corr. Cardboard   | a.                                                                         |    |                                 |      |                                                  |                                 |
|                   | b.                                                                         |    | Pounds                          | Tons |                                                  |                                 |
|                   | Total Amt. = a+b                                                           |    |                                 |      |                                                  |                                 |
| High Grade Paper  | a.                                                                         |    |                                 |      |                                                  |                                 |
|                   | b.                                                                         |    | Pounds                          | Tons |                                                  |                                 |
|                   | Total Amt. = a+b                                                           |    |                                 |      |                                                  |                                 |
| Magazines         | a.                                                                         |    |                                 |      |                                                  |                                 |
|                   | b.                                                                         |    | Pounds                          | Tons |                                                  |                                 |
|                   | Total Amt. = a+b                                                           |    |                                 |      |                                                  |                                 |
| Mixed Waste Paper | a.                                                                         |    |                                 |      |                                                  |                                 |
|                   | b.                                                                         |    | Pounds                          | Tons |                                                  |                                 |
|                   | Total Amt. = a+b                                                           |    |                                 |      |                                                  |                                 |
| Phone Books       | a.                                                                         |    |                                 |      |                                                  |                                 |
|                   | b.                                                                         |    | Pounds                          | Tons |                                                  |                                 |
|                   | Total Amt. = a+b                                                           |    |                                 |      |                                                  |                                 |
| Tinned Cans       | a.                                                                         |    |                                 |      |                                                  |                                 |
|                   | b.                                                                         |    | Pounds                          | Tons |                                                  |                                 |
|                   | Total Amt. = a+b                                                           |    |                                 |      |                                                  |                                 |
| Aluminum          | a.                                                                         |    |                                 |      |                                                  |                                 |
|                   | b.                                                                         |    | Pounds                          | Tons |                                                  |                                 |
|                   | Total Amt. = a+b                                                           |    |                                 |      |                                                  |                                 |

Company Name \_\_\_\_\_

C. cont'd: POST-CONSUMER MARKETING INFORMATION 1995 (All Wastesheds)

See completion INSTRUCTIONS on page 3.

| MATERIAL             | Amount Sold,<br>Delivered or Used<br>(Total Amt. should =<br>column (J), page 2) | Unit<br>of Measure<br>(Circle one) | Company Name<br>Material Sold, Delivered or Used | Company Location<br>City, State | Circle "C" if<br>Composted, or "E"<br>if burned for Energy<br>Recovery |
|----------------------|----------------------------------------------------------------------------------|------------------------------------|--------------------------------------------------|---------------------------------|------------------------------------------------------------------------|
| Other Scrap Metal    | a.                                                                               |                                    |                                                  |                                 |                                                                        |
|                      | b.                                                                               | Pounds    Tons                     |                                                  |                                 |                                                                        |
|                      | <b>Total Amt. = a+b</b>                                                          |                                    |                                                  |                                 |                                                                        |
| Lead Acid Batteries  | a.                                                                               |                                    |                                                  |                                 |                                                                        |
|                      | b.                                                                               | Pounds    Units    Tons            |                                                  |                                 | C    E                                                                 |
|                      | <b>Total Amt. = a+b</b>                                                          |                                    |                                                  |                                 |                                                                        |
| Yard Debris          | a.                                                                               | Pounds    Tons                     |                                                  |                                 |                                                                        |
|                      | b.                                                                               | Loose Cu. Yds.                     |                                                  |                                 | C    E                                                                 |
|                      | <b>Total Amt. = a+b</b>                                                          | Compacted Cu. Yds.                 |                                                  |                                 |                                                                        |
| Wood Waste           | a.                                                                               | Pounds    Tons                     |                                                  |                                 |                                                                        |
|                      | b.                                                                               | Loose Cu. Yds.                     |                                                  |                                 | C    E                                                                 |
|                      | <b>Total Amt. = a+b</b>                                                          | Compacted Cu. Yds.                 |                                                  |                                 |                                                                        |
| Used Motor Oil       | a.                                                                               |                                    |                                                  |                                 |                                                                        |
|                      | b.                                                                               | Tons    Gallons                    |                                                  |                                 | C    E                                                                 |
|                      | <b>Total Amt. = a+b</b>                                                          |                                    |                                                  |                                 |                                                                        |
| Tires                | a.                                                                               |                                    |                                                  |                                 |                                                                        |
|                      | b.                                                                               | Pounds    Units    Tons            |                                                  |                                 | C    E                                                                 |
|                      | <b>Total Amt. = a+b</b>                                                          |                                    |                                                  |                                 |                                                                        |
| Glass Containers     | a.                                                                               |                                    |                                                  |                                 |                                                                        |
|                      | b.                                                                               | Pounds    Tons                     |                                                  |                                 |                                                                        |
|                      | <b>Total Amt. = a+b</b>                                                          |                                    |                                                  |                                 |                                                                        |
| Milk Jugs            | a.                                                                               |                                    |                                                  |                                 |                                                                        |
|                      | b.                                                                               | Pounds    Tons                     |                                                  |                                 |                                                                        |
|                      | <b>Total Amt. = a+b</b>                                                          |                                    |                                                  |                                 |                                                                        |
| Plastic Bottles #1-7 | a.                                                                               |                                    |                                                  |                                 |                                                                        |
|                      | b.                                                                               | Pounds    Tons                     |                                                  |                                 |                                                                        |
|                      | <b>Total Amt. = a+b</b>                                                          |                                    |                                                  |                                 |                                                                        |



**1995 Recycling Collector Survey**

Company Name \_\_\_\_\_

**C. cont'd: TOTAL POST-CONSUMER MARKETING INFORMATION 1995(All Wastesheds)**

See completion INSTRUCTIONS on page 3.

| MATERIAL         | Amount Sold, Delivered or Used<br>(Total Amt. should = column (J), page 2) |    | Unit of Measure<br>(Circle one) |      | Company Name<br>Material Sold, Delivered or Used | Company Location<br>City, State |
|------------------|----------------------------------------------------------------------------|----|---------------------------------|------|--------------------------------------------------|---------------------------------|
|                  | a.                                                                         | b. | Pounds                          | Tons |                                                  |                                 |
| Mixed Plastic    | a.                                                                         |    |                                 |      |                                                  |                                 |
|                  | b.                                                                         |    | Pounds                          | Tons |                                                  |                                 |
| Total Amt. = a+b |                                                                            |    |                                 |      |                                                  |                                 |
| Other _____      | a.                                                                         |    |                                 |      |                                                  |                                 |
|                  | b.                                                                         |    | Pounds                          | Tons |                                                  |                                 |
| Total Amt. = a+b |                                                                            |    |                                 |      |                                                  |                                 |
| Other _____      | a.                                                                         |    |                                 |      |                                                  |                                 |
|                  | b.                                                                         |    | Pounds                          | Tons |                                                  |                                 |
| Total Amt. = a+b |                                                                            |    |                                 |      |                                                  |                                 |
| Other _____      | a.                                                                         |    |                                 |      |                                                  |                                 |
|                  | b.                                                                         |    | Pounds                          | Tons |                                                  |                                 |
| Total Amt. = a+b |                                                                            |    |                                 |      |                                                  |                                 |
| Other _____      | a.                                                                         |    |                                 |      |                                                  |                                 |
|                  | b.                                                                         |    | Pounds                          | Tons |                                                  |                                 |
| Total Amt. = a+b |                                                                            |    |                                 |      |                                                  |                                 |
| Other _____      | a.                                                                         |    |                                 |      |                                                  |                                 |
|                  | b.                                                                         |    | Pounds                          | Tons |                                                  |                                 |
| Total Amt. = a+b |                                                                            |    |                                 |      |                                                  |                                 |
| Other _____      | a.                                                                         |    |                                 |      |                                                  |                                 |
|                  | b.                                                                         |    | Pounds                          | Tons |                                                  |                                 |
| Total Amt. = a+b |                                                                            |    |                                 |      |                                                  |                                 |

**Confidentiality:** You may return Part C (pages 3 - 6, "Total Post-Consumer Marketing Information") of this survey directly to DEQ rather than to the wasteshed representative if you prefer to limit access to this information. To limit access to only DEQ staff, write on these pages "confidential business information", and return by Tuesday, February 27, 1996 to Jacquie Moon, DEQ, 811 SW 6th Ave., Portland, OR 97204. Parts A & B of this survey must be returned directly to your wasteshed representative (county) for inclusion in the annual recycling report. Please notify your wasteshed representative if you return this form directly to DEQ.

Company name \_\_\_\_\_

## RECYCLING EDUCATION, PROMOTION AND NOTIFICATION ACTIVITIES

A good education and promotion program is essential to the effectiveness of the overall recycling program and is required by Oregon Revised Statute (ORS) 459A. In the space below, please list information about the recycling education, promotion, and notification activities you conducted during 1995, attach additional pages if necessary. Include information on and examples of:

- Brochures distributed
- School/ group presentations
- Billing/ reminder notices
- Informational booths
- Ads, articles, news features
- Posters, displays
- Public service announcements
- Special events

### EXAMPLES

1. Seven grade school presentations of 25 minutes each, 270 kids total, February-June 1995, at Oakland and Riverdale Schools.
2. Yard debris recycling leaflet delivered to all customers, January 1995 (see attachment #1).
3. Series of monthly recycling newspaper ads in the Herald-Examiner 1995 (see attachment #2).
4. Recycling reminders on monthly bills (see attachment #3).
5. Four radio advertisements; 2/8/95, 6/5/95, 9/6/95 & 11/9/95 (see attachment #4).
6. Recycling collection and promotion at County Fair, 7/15- 7/21 (see attachment #5).

**RECYCLING COLLECTION INFORMATION**

**Multi-family Recycling**

Please estimate the number of apartment complexes with 5 or more units which participate in your recycling program. (Please provide the number of apartment complexes, not the number of apartment units in the complexes.)

\_\_\_\_\_

**Commercial Recycling Participation**

Please estimate the number of commercial businesses which participate in your recycling program.

\_\_\_\_\_

**Changes to On-Route Residential Recycling Collection Program**

Have you changed the area where you provide on-route residential recycling collection in 1995? For example, has your franchise area changed, have you added recycling service to a rural area, or have you acquired a new route area?

\_\_\_\_\_ Area changed  
\_\_\_\_\_ Area not changed

If you marked "area changed" in the above question, please describe how the area has changed, or attach a map showing all the areas where you provide on-route residential collection (note - collectors serving the Eugene urban growth boundary do not need to provide a map of their unfranchised collection areas)

**OUT-OF STATE SOLID WASTE DISPOSAL**

In order to accurately portray the wasteshed's recovery rate, all solid waste generated in the wasteshed must be accounted for, including any waste disposed out of state.

If you disposed of solid waste (residential, commercial, construction or demolition) out-of-state that was collected in the wasteshed, please indicate the total amount and type disposed during calendar year 1995.

\_\_\_\_\_ type of waste - specify, e.g., tires

\_\_\_\_\_ tons

**Thank you for your assistance!**

## Recovered Materials Definitions (Includes only Post-Consumer Material)

| Paper                   |                                                                                                                                                                                                                                                                                           |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NEWSPAPER               | Printed ground-wood newsprint (minimally bleached fiber) and newspaper inserts referred to as #1 news. <i>Excludes over-runs, printer waste, and trim.</i>                                                                                                                                |
| CORR. CARDBOARD & KRAFT | Kraft linerboard and container-board cartons of corrugated paper (waxed or unwaxed) and Kraft paper bags. <i>Excludes converting plant waste paper (i.e. DLK clippings and local grocery bag waste).</i>                                                                                  |
| HIGH GRADE PAPER        | Includes computer printout, ledger-grade printing and writing paper and other bleached papers that can be de-inked and that are relatively free of groundwood and coatings. Includes mixed office paper programs such as James River Office Pack. <i>Excludes converting plant waste.</i> |
| MAGAZINES               | Glossy, clay-coated bleached paper; no newspaper inserts; tabloids or paperback books; may include magazine-type catalogs.                                                                                                                                                                |
| MIXED WASTE PAPER       | A mixture of papers such as unsorted junk mail, and low-valued grades of paper not listed above, such as chipboard and other folding boxboard, molded paper containers, envelopes with plastic windows or pressure-sensitive labels, and paper with thin plastic coatings.                |
| DIRECTORIES             | Telephone directories.                                                                                                                                                                                                                                                                    |
| Glass                   |                                                                                                                                                                                                                                                                                           |
| CONTAINER GLASS         | Glass bottles and jars used to package food, beer, liquor, wine, juice, soft drinks, medicine, toiletries, and chemicals. Includes bottles that are returned by consumers to be washed and refilled. <i>Excludes special formula glass, such as pyrex glass.</i>                          |
| OTHER GLASS             | Window glass, fiberglass, light bulbs and other glass that differs in chemical composition from food and beverage container glass.                                                                                                                                                        |
| Metal                   |                                                                                                                                                                                                                                                                                           |
| TINNED CANS             | Steel food and beverage cans, including cans with tin and other coatings, and also uncoated cans.                                                                                                                                                                                         |
| ALUMINUM                | Includes aluminum cans and food containers, aluminum foil, and scrap aluminum such as lawn furniture and screen doors.                                                                                                                                                                    |
| OTHER SCRAP METAL       | Appliances (e.g., discarded stoves, washers, dryers, refrigerators and other large household appliances), and all other scrap metal.                                                                                                                                                      |

## Plastic

|                   |                                                                                                                                                                                                                                |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1 PET BEVERAGE   | Bottles made from polyethylene terephthalate commonly used for soft drink and liquor bottles.                                                                                                                                  |
| #1 PET OTHER      | Other non-beverage products and packages made from polyethylene terephthalate (PET or PETE).                                                                                                                                   |
| #2 HDPE MILK JUGS | Clear "natural" jugs made from high-density polyethylene used for milk, water, juice and some other beverages.                                                                                                                 |
| #2 HDPE OTHER     | Other products and packaging made from high-density polyethylene.                                                                                                                                                              |
| #3 PVC            | Polyvinyl chloride, commonly used for food packaging film and forms, closures, blister-pack, tape, bottles for shampoo, and other household items.                                                                             |
| #4 LDPE           | Low-density polyethylene, Commonly used as a clear film wrap used to package many products. Many plastic bags, container lids and some bottles are also made with LDPE.                                                        |
| #5 PP             | Polypropylene, commonly used for containers, tubs and bottles for yogurt, cream cheese, margarine, medicine, snack foods, confections and condiments; screw-on or snap-on caps; and bags, sacks, film and wrap.                |
| #6 PS AND EPS     | Polystyrene and Expanded Polystyrene, commonly used in an expanded form for egg cartons, meat trays, coffee cups, fast-food containers and foam blisters/"peanuts", and in solid form for containers and plastic "silverware". |
| MIXED PLASTIC     | Plastics which are recycled without being sorted by resin type.                                                                                                                                                                |
| PLASTIC BOTTLES   | Plastic bottles with threaded necks which are recycled without being sorted by resin type.                                                                                                                                     |

## Other

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WOOD WASTE     | Construction lumber (dimensional lumber construction materials resulting from remodeling, repair, demolition, or construction of residences, buildings and other structures) and packaging lumber used in pallets and crates. <i>Excludes wood waste from manufacturing (e.g., mobil home manufacturing), wood burned on site for disposal or used for landfill cover, and branches, logs, etc. from major land clearing, logging operations, and sawmill operations.</i> |
| YARD DEBRIS    | Pruning, bulky woody yard waste, leaves and grass clippings, and Christmas trees.                                                                                                                                                                                                                                                                                                                                                                                         |
| TIRES          | A tire that is no longer suitable for its original intended purpose because of wear, damage or defect.                                                                                                                                                                                                                                                                                                                                                                    |
| USED MOTOR OIL | Oil which has been refined from crude oil, used, and as a result of such use, contaminated by physical or chemical impurities ("off specification" oil).                                                                                                                                                                                                                                                                                                                  |

## ATTACHMENT B

NATIONAL RECYCLING COALITION  
MEASUREMENT STANDARDS AND REPORTING GUIDELINES

| <u>Material</u>                                                 | <u>Volume/Count</u>                         | <u>Weight in<br/>Tons</u> | <u>Weight in<br/>Pounds</u> |
|-----------------------------------------------------------------|---------------------------------------------|---------------------------|-----------------------------|
| Aluminum cans                                                   | case (24), 12 oz<br>(26 cans to 1 pound)    | .0005                     | .923                        |
| Aluminum cans                                                   | case (24), 12 oz<br>(29-30 cans to 1 pound) | .0004                     | .800                        |
| Aluminum cans                                                   | one full store<br>collection bag            | .009                      | 18                          |
| Aluminum cans, whole                                            | one cubic yard                              | .031                      | 50-74                       |
| Ferrous cans, whole                                             | one cubic yard                              | .075                      | 150                         |
| Ferrous cans, flattened                                         | one cubic yard                              | .425                      | 850                         |
| Refillable beer bottles                                         | case (24 bottles)                           | .006                      | 12                          |
| Beer bottles                                                    | case (24), 22 oz                            | .0112                     | 22.5                        |
| Glass, whole bottles                                            | case (24), 12 oz.                           | .008                      | 16                          |
| Glass, whole bottles                                            | case (24), 16 oz.                           | .0125                     | 25                          |
| Glass, whole bottles                                            | case (12), 40 oz.                           | .0112                     | 22.5                        |
| Glass, whole bottles                                            | one cubic yard                              | .4                        | 600-1,000                   |
| Glass, semi-crushed                                             | one cubic yard                              | .7                        | 1,000-1,800                 |
| PET soda bottles                                                | case (24), 16 oz                            | .0012                     | 2.4                         |
| PET bottles (water)                                             | case (15), 1.5 liter                        | .0007                     | 1.4                         |
| PET soda bottles                                                | case (8), 2 liter                           | .0006                     | 1.2                         |
| PET soda bottles, whole, loose                                  | one cubic yard                              | .018                      | 30-40                       |
| PET soda bottles, whole, loose                                  | gaylord <sup>1</sup>                        | .023                      | 40-53                       |
| PET soda bottles, baled                                         | 30" x 62"                                   | .25                       | 500                         |
| PET soda bottles, granulated                                    | gaylord                                     | .36                       | 700-750                     |
| Film, baled                                                     | 30" x 42" x 48"                             | .55                       | 1,100                       |
| HDPE milk jugs, whole, loose                                    | 6-7 gallon jugs                             | .0005                     | 1                           |
| HDPE milk jugs, baled                                           | 32" x 60"                                   | .225                      | 400-500                     |
| HDPE (mixed), granulated                                        | gaylord                                     | .45                       | 800-1,000                   |
| Mixed PET, milk jugs, & other<br>rigid containers, whole, loose | one cubic yard                              | .019                      | Ave. 38                     |
| Mixed rigid, no film or milk<br>jugs, whole, loose              | one cubic yard                              | .0245                     | Ave. 49                     |

<sup>1</sup>Gaylord size most commonly used 40" X 48" x 36"

| <u>Material</u>             | <u>Volume/Count</u> | <u>Weight/Tons</u> | <u>Weight/Lbs</u>      |
|-----------------------------|---------------------|--------------------|------------------------|
| Newsprint, loose            | one cubic yard      | .29                | 360-800                |
| Newsprint, compacted        | one cubic yard      | .43                | 720-1,000              |
| Corrugated cardboard, loose | one cubic yard      | .15                | 300                    |
| Corrugated cardboard, baled | one cubic yard      | .55                | 1,000-1,200            |
| Milk cartons                | one cubic yard      | .022               | 45                     |
| Grass clippings             | one cubic yard      | .475               | 400-1,500 <sup>2</sup> |
| Leaves                      | one cubic yard      | .1875              | 250-500                |
| Yard debris, loose          | one cubic yard      | .125               | 250 <sup>3</sup>       |
| Yard debris, compacted      | one cubic yard      | .32                | 640                    |
| Wood collected at landfills | one cubic yard      | .125               | 250                    |
| Wood chips, green           | one cubic yard      | .236               | 472.97                 |
| Wood chips, dry             | one cubic yard      | .121               | 243.25                 |
| Wood, cord                  | one cubic yard      | .25                | 500                    |
| Lead acid battery           | one                 | .018               | 35.9                   |
| Used motor oil              | one gallon          | .0037              | 7.4                    |
| Oil filters                 | 1 drum, crushed     | .35                | 700                    |
| Oil filters                 | 1 drum, uncrushed   | .087               | 175                    |
| Tire- passenger car         | one                 | .01                | 20                     |
| Tire- truck, light          | one                 | .0175              | 35                     |
| Tire- semi                  | one                 | .0525              | 105                    |
| Antifreeze                  | one gallon          | .0042              | 8.42                   |
| Appliances                  |                     |                    |                        |
| Stove                       | one                 | .075               | 150                    |
| Dryer                       | one                 | .062               | 125                    |
| Washer                      | one                 | .075               | 150                    |
| Refrigerator                | one                 | .125               | 250                    |
| Dishwasher                  | one                 | .062               | 125                    |

Revised 12/13/95 by Oregon Department of Environmental Quality

<sup>2</sup>Yard waste densities are especially variable between communities and in different seasons within a community because of differences in types of foliage, moisture, and humidity. The 1,500 density factor for grass is based on program experience in Minnesota.

<sup>3</sup>Uncompacted yard debris varies a great deal in weight. The figure of 250 pounds per cubic yard may be high for a lot of uncompacted yard debris. Loose piles may weigh as little as 100 pounds per cubic yard. Use your best judgment in using these conversions (100 pounds per cubic yard = .05 tons a cubic yard).

# MUNICIPAL SOLID WASTE DISPOSAL FACILITIES

(Receiving More Than 1,000 Tons/Year)

## Solid Waste Disposal Report/Fee Calculation

Use for Waste Received On & After 4/1/94

Mail to:  
 Dept. of Environmental Quality  
 Business Office  
 811 SW Sixth Ave.  
 Portland, Or. 97204

For DEQ use only:  
 Date Rec'd \_\_\_\_\_  
 Amount Rec'd \_\_\_\_\_  
 Check no. \_\_\_\_\_

Facility Name \_\_\_\_\_ SW Permit No. \_\_\_\_\_

Ownership type (check one):  business  local government  nonprofit  
 state agency  federal government

### REPORTING PERIOD

(Check one)  Jan.- March  April- June  July- Sept.  Oct.- Dec. 199\_\_

Please mail reports and required fees quarterly no later than January 31, April 30, July 31, and October 31.

### INSTRUCTIONS FOR COMPLETING THIS FORM

This form has been changed to incorporate self-payment of DEQ solid waste permit fees (\$.30/ton for most facilities), as well as solid waste disposal fees (\$.81/ton) and the Orphan Site Account fee (\$.13/ton). See page 4 for more details and an explanation of types of waste included. *Complete pages two and three of this form first.* Record the weight (if scales used) or volume of *all* in-state waste and out-of-state waste for the reporting period. If your solid waste permit does not require you to monitor and report amount of waste received, estimate population served by allocating the population between in-state and out-of-state. Compute tonnage by assuming one ton of waste per person per year. *Calculation of the fees must be made on this form, even if you also submit reporting information on your own forms.*

Use TOTAL TONS from pages two and three of this form to perform the calculations below. You may submit one check to cover the total amount due.

|                                                      |       |   |                      |            |
|------------------------------------------------------|-------|---|----------------------|------------|
| Total In-State Solid Waste:                          |       |   |                      |            |
| # of Tons (or Equivalent) (from page 2, step 3 or 4) | _____ | + |                      |            |
| Total Out-of-State Waste:                            |       |   |                      |            |
| # of Tons (or Equivalent) (from page 3, step 6 or 7) | _____ | = |                      |            |
| <b>Total Tons Received In Reporting Period:</b>      | _____ | X | \$ .81/ton           | = _____    |
|                                                      |       |   | .13/ton              | = _____    |
|                                                      |       |   | .30*/ton             | = _____    |
|                                                      |       |   | <b>TOTAL PAYMENT</b> | = \$ _____ |

\* "Incinerators" use \$.30/ton.  
 "Energy Recovery Facilities" use \$.22/ton.  
 "Composting Facilities" use \$.19/ton.

I CERTIFY that I am familiar with the information contained in this report and that to the best of my knowledge such information is true, complete and accurate.

NAME (PRINT) \_\_\_\_\_ SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_  
 TELEPHONE \_\_\_\_\_ TITLE \_\_\_\_\_

**SPECIFIED WASTES:** If your site is authorized by the Department to receive "cleanup materials contaminated with hazardous substances," you must, on a quarterly basis, report the source, type, quantity, and date of waste received. Please attach to this form. (Include specified wastes as part of the amounts entered on the back of this form.)



# IN-STATE ("DOMESTIC") SOLID WASTE DISPOSAL WORKSHEET

Facility Name \_\_\_\_\_

SW Permit No. \_\_\_\_\_

|    | COUNTY                                                   |                 | COMMERCIAL VEHICLES |                 | PRIVATE VEHICLES |                 |          |
|----|----------------------------------------------------------|-----------------|---------------------|-----------------|------------------|-----------------|----------|
|    | OREGON COUNTY NAME                                       | COMPACTED       |                     | UNCOMPACTED     |                  | UNCOMPACTED     |          |
|    |                                                          | No. of Vehicles | Quantity            | No. of Vehicles | Quantity         | No. of Vehicles | Quantity |
|    |                                                          | Yd<br>T         |                     | Yd<br>T         |                  | Yd<br>T         |          |
|    |                                                          | Yd<br>T         |                     | Yd<br>T         |                  | Yd<br>T         |          |
|    |                                                          | Yd<br>T         |                     | Yd<br>T         |                  | Yd<br>T         |          |
|    |                                                          | Yd<br>T         |                     | Yd<br>T         |                  | Yd<br>T         |          |
|    |                                                          | Yd<br>T         |                     | Yd<br>T         |                  | Yd<br>T         |          |
|    | Additional Counties From Attached Sheet                  | Yd<br>T         |                     | Yd<br>T         |                  | Yd<br>T         |          |
|    | Unknown Origin in Oregon                                 | Yd<br>T         |                     | Yd<br>T         |                  | Yd<br>T         |          |
|    | Subtotal: In-State Counting Waste (Tons Only)            | T               |                     | T               |                  | T               |          |
| 2  | Contaminated Cleanup Material                            |                 |                     | Yd<br>T         |                  | Yd<br>T         |          |
|    | Asbestos                                                 |                 |                     | Yd<br>T         |                  | Yd<br>T         |          |
|    | Industrial Waste, (includes industrial woodwaste)        |                 | Yd<br>T             | Yd<br>T         |                  | Yd<br>T         |          |
|    | Rubble, Rock, Asphalt, etc.                              |                 |                     | Yd<br>T         |                  | Yd<br>T         |          |
|    | Other (Specify)                                          |                 |                     | Yd<br>T         |                  | Yd<br>T         |          |
| +2 | Total: In-State Counting & Non-counting Waste (Tonsonly) | T               |                     | T               |                  | T               |          |

Please report amount of waste for previous quarter. Indicate measurement by circling cubic yards (Yd) or tons (T). Attach separate sheet for additional counties.

By-county accuracy is important. However, estimates may be used.

**LINE TOTAL**  
(Add Across)

If quantities above not recorded in tons, convert to equivalent tonnage. Put total of Tonnage column in 3B below. Put result in 3A below.

|                                     | Cubic Yards              |          | Tonnage                                                      |
|-------------------------------------|--------------------------|----------|--------------------------------------------------------------|
| Domestic Solid Waste _____          | Total compacted cu. yd.  | X .35 =  | _____ T                                                      |
| Domestic Solid Waste _____          | Total uncompactd cu. yd. | X .15 =  | _____ T                                                      |
| Contaminated Cleanup Material _____ | Total uncompactd cu. yd. | X 1.2 =  | _____ T                                                      |
| Asbestos _____                      | Total uncompactd cu. yd. | X .25 =  | _____ T                                                      |
| Industrial Waste _____              | Total compactd cu. yd.   | X .35 =  | _____ T                                                      |
| Industrial Waste _____              | Total uncompactd cu. yd. | X .15 =  | _____ T                                                      |
| Rubble, Rock, Asphalt, etc. _____   | Total uncompactd cu. yd. | X 1.25 = | _____ T                                                      |
| Other (Specify) _____               | Total uncompactd cu. yd. | X ___ =  | _____ T                                                      |
| <b>TOTAL (add down)</b>             |                          |          | T <span style="float: right;">Put result in 3B below.</span> |

|                                          |          |   |                         |         |             |
|------------------------------------------|----------|---|-------------------------|---------|-------------|
| <b>Total In-State SW Equivalent Tons</b> | _____ 3A | + | _____ 3B                | =       |             |
| <b>Population</b>                        | = _____  |   | X 1 ton annually/person | = _____ | ÷ 4 = _____ |

# OUT-OF-STATE SOLID WASTE DISPOSAL WORKSHEET

Facility Name \_\_\_\_\_

SW Permit No. \_\_\_\_\_

Please report amount of waste for previous quarter. Indicate measurement by circling cubic yards (Yd) or tons (T).

| Out-of-State Waste Type                | COMMERCIAL VEHICLES |          |                 |          | PRIVATE VEHICLES |          |                                    |
|----------------------------------------|---------------------|----------|-----------------|----------|------------------|----------|------------------------------------|
|                                        | COMPACTED           |          | UNCOMPACTED     |          | UNCOMPACTED      |          |                                    |
|                                        | No. of Vehicles     | Quantity | No. of Vehicles | Quantity | No. of Vehicles  | Quantity |                                    |
| Resid/Comm/Const/Demo/Industrial SW    |                     | Yd<br>T  |                 | Yd<br>T  |                  | Yd<br>T  |                                    |
| Contaminated Cleanup Material          |                     |          |                 | Yd<br>T  |                  | Yd<br>T  |                                    |
| Asbestos                               |                     |          |                 | Yd<br>T  |                  | Yd<br>T  | <b>LINE TOTAL<br/>(Add Across)</b> |
| <b>Out-of-State Totals (Tons only)</b> |                     | T        |                 | T        |                  | T        | T                                  |

Put result in 6A below.

5  
Conversion Table

If quantities above not recorded in tons, convert to equivalent tonnage. Put total of Tonnage column in 6B below.

|                               | Cubic Yards                    |       | Tonnage   |
|-------------------------------|--------------------------------|-------|-----------|
| Domestic Solid Waste          | _____ Total compacted cu. yd.  | X .35 | = _____ T |
| Domestic Solid Waste          | _____ Total uncompactd cu. yd. | X .15 | = _____ T |
| Contaminated Cleanup Material | _____ Total uncompactd cu. yd. | X 1.2 | = _____ T |
| Asbestos                      | _____ Total uncompactd cu. yd. | X .25 | = _____ T |
| <b>TOTAL (add down)</b>       |                                |       | T         |

Put result in 6B below.

|                                              |          |                         |          |     |         |
|----------------------------------------------|----------|-------------------------|----------|-----|---------|
| <b>Total Out-of-State SW Equivalent Tons</b> | _____ 6A | +                       | _____ 6B | =   |         |
| <b>Population</b>                            | = _____  | X 1 ton annually/person | = _____  | ÷ 4 | = _____ |



Printed on Recycled Paper



## EXPLANATION OF TYPES OF WASTE INCLUDED

**SOLID WASTE PER TON DISPOSAL ("TIPPING") FEES.** ORS 459A.110 and 459A.115, and ORS 340-97-120 require each solid waste disposal site (except transfer stations) that receives domestic solid waste to submit a total solid waste disposal fee of 81 cents per ton (\$.50/ton plus \$.31/ton) for all in-state "domestic" and out-of-state waste received. ORS 459.236 and OAR 340-97-120 also require such sites to submit a fee of 13 cents per ton for remedial action under the Orphan Site Account.

Domestic solid waste must also be reported by county of origin for DEQ to determine the material recovery rate.

For the purpose of assessing the above fees, "Domestic Solid Waste" does not include:

- (1) Sewage sludge or septic tank and cesspool pumpings.
- (2) Source separated recyclable material, or material recovered at the disposal site.
- (3) Ash deposited in an ash monofill from a resource recovery facility or incinerator.

**SOLID WASTE PERMIT FEES. ORS 459.235 AND OAR 340-97-110 THROUGH -120** require solid waste disposal sites to pay a solid waste Permit Compliance Fee and a 1991 Recycling Act permit fee. These fees are based on tonnage received at the site in the previous calendar quarter. The Permit Compliance fees are calculated at a rate of \$.21/ton for landfills and incinerators, \$.13/ton for energy recovery facilities and \$.10/ton for composting facilities. The 1991 Recycling Act permit fee is \$.09/ton for all facility types. The rate on page 1 includes both the Permit Compliance fee and the 1991 Recycling Act permit fee (e.g. \$.21 + .09 = \$.30/ton).

**INSTRUCTIONS FOR PAGE 2.** This form requests reports of the quantities of "counting" waste and "non-counting" wastes received at your facility. This breakdown will help DEQ calculate more accurately the amount of solid waste disposed of for each county. "Counting" wastes "count" towards the solid waste disposal rate. The disposal rate is then used to calculate the county *material recovery rate*. Certain wastes ("non-counting" wastes) may by law be excluded from the disposal rate; if you record these wastes separately, please list them in Part 2 of this form. **BOTH "COUNTING" AND "NON-COUNTING" WASTES ARE INCLUDED IN YOUR TOTAL TONNAGE FOR PURPOSES OF CALCULATING YOUR SOLID WASTE DISPOSAL FEES AND YOUR PERMIT FEES.**

**"Counting" Resid./Const./Demolition SW by County.** "Counting" wastes include domestic solid waste, and construction and demolition waste such as lumber and wood, drywall (gypsum), glass, roofing material and similar materials. Report amounts of "counting" waste for the previous calendar quarter by county in **Part 1**. If you do not track "non-counting wastes" (see below) separately, count all wastes as "counting or unknown."

Enter amounts in **Part 1**. Indicate measurement by circling cubic yards (Yd) or tons (T). Attach separate sheet for additional counties. Then add tons in Part 1 to get a subtotal of "counting" waste.

**"Non-counting" waste.** "Non-counting" wastes are not reported by county. Enter amounts of non-counting wastes in **Part 2**. Then add "non-counting" tons to "counting" tons to get total counting and non-counting tons. Put result in 3A.

"Non-counting" wastes are:

|                               |                                                                                                                                     |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Rubble, rock, asphalt, etc.   | ("soil, dirt, concrete rubble, concrete blocks, bricks, gravel, ash, major metal demolition debris")                                |
| "Industrial" woodwaste        | ("slash from logging and sawmills, major landclearing debris")                                                                      |
| Other industrial waste        | (waste generated by industrial or manufacturing processes)                                                                          |
| Asbestos                      |                                                                                                                                     |
| Other wastes                  | (Please specify type of waste on the line provided and contact DEQ to determine a conversion factor if you do not weigh the waste.) |
| Contaminated cleanup material |                                                                                                                                     |

*Note: "Counting" and "non-counting" wastes are not an issue for page 3, Out-of-State Solid Waste reported.*

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# State of the Plan Report

Part A: Annual Update on  
the Benchmarks of the  
Regional Solid Waste  
Management Plan for  
FY1995-96

*Regional Environmental Management  
Waste Reduction & Planning Services*

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November 20, 1996



**METRO**

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**Regional Solid Waste Activities**  
**Fiscal Year 1995-96**  
**Part A: Annual Update on the Benchmarks of the**  
**Regional Solid Waste Management Plan**

## **Executive Summary**

### ***Purpose***

The annual State of the Plan Report assesses progress made within the region toward meeting the goals and objectives contained in the Regional Solid Waste Management Plan 1995-2000 (RSWMP). The report addresses how Metro, local governments, and the private sector are proceeding in implementing the Plan's recommendations. It also contains measures of advancement toward the Plan's waste management and waste reduction benchmarks. Finally, the Report recommends revisions to the RSWMP based on those findings.

State of the Plan Reports will be produced in two parts each fiscal year. The first part, Part A, will present the findings with regard to how well the region is proceeding toward the RSWMP goals and objectives. The second part, Part B, will provide an analysis of those findings and recommend any revisions to the RSWMP that might be necessary. The RSWMP calls for this close level of monitoring to ensure that implementation efforts are proceeding, and to provide adequate opportunity to modify ineffective practices.

As the RSWMP was adopted in December 1995, this first reporting process will cover the last six months of FY 1995-96. This particular document represents Part A, the findings, of the FY 1995-96 reporting process. Part B, the analysis and recommendations, will be released in January 1997. Although a longer period of time will be necessary to assess the general effectiveness of the RSWMP, this first report will provide an early chance for interested parties to comment on its format. Metro staff believes that coordination and cooperation among its regional partners is necessary to achieve the region's solid waste goals and objectives, and will carry forward this commitment in development of the annual State of the Plan reports.

### ***Part 1 - RSWMP Regional Solid Waste Management Benchmarks***

- From 1994 to 1995, the regional recycling level increased from 41 percent to 43 percent. The recovery level, which includes fuel and energy recovery in addition to recycling, increased from 45 to 46 percent.
- Waste generation per capita rose from 1.34 tons per person per year to 1.44. This increase is primarily a consequence of a continuing upswing in the business and construction cycle during recent years.
- Landfilled mixed waste is up from last year, but is pacing regional growth - as indicated by the flat per-capita rate of disposal.

## ***Part 2 - Implementation of Recommended Practices***

### **Residential Waste Reduction**

#### *Overall progress:*

- Over the next several years, the Plan calls for greater emphasis on waste prevention. Consistent with that directive, Metro did initiate a pilot waste prevention program. Progress towards Plan objectives for the region's residential recycling infrastructure, including multi-family services, are on track.

#### *Highlights:*

- Weekly curbside or equivalent service for yard debris instituted throughout region.
- Curbside collection of scrap paper available throughout the region.

#### *Issues:*

- Metro is assessing its role in direct distribution of compost bins.
- Metro and local government are reassessing strategies of targeting neighborhoods low in curbside participation and of targeting removal of yard debris in drop boxes.

### **Business Waste Reduction**

#### *Overall progress:*

Both waste prevention and recycling efforts were expanded consistent with the Plan. Significant advances toward managing the organics waste stream and in post-collection processing also were made.

#### *Highlights:*

- Commercial recycling recognition program (Business Recycling Awards Group "BRAG" ) significantly expanded.
- Metro's Model Waste Prevention program addressed three new generator groups.
- City of Portland's required commercial recycling program instituted.
- Proposals for two organics processing demonstration projects solicited by Metro.
- Significant activity by the private sector in requesting franchises for dry waste processing facilities.

#### *Issues:*

- Assessment of progress towards Plans recycling service level objectives will require inventory of existing service levels. Inventories to be developed in conjunction with local government waste reduction plans.

## **Building Industries Waste Reduction**

### *Overall progress:*

The Plan promotes technical education services, adherence to the waste management hierarchy, and improving access to recycling and recovery services. Continued progress in all these areas was achieved during the reporting period.

### *Highlights:*

- Institutionalization of the Earth-Wise Builder Program as a state recognized, non-profit organization.
- Development of on-site recycling service strategies by local governments.
- Significant expansion of private sector processing. Two new facilities franchised by Metro in 1996 with two more expected soon.

### *Issues:*

- Effectiveness of service strategies for construction sites needs further examination, particularly in light of growth of MRFs.

## **Solid Waste Facilities - Regulation and Siting**

### *Overall progress:*

Plan objectives points to the need for government regulatory and siting requirements that protect the public but allow the development of processing facilities. The Yard Debris Licensing Program adopted by Metro takes the region a major step in that direction.

### *Highlights:*

Cooperative development of the Yard Debris Licensing System by local governments, processors, and Metro.

### *Issues:*

Development of a similar system for organics processing facilities is called for by the Plan. Some of this work will be done in conjunction with the revisions to the Metro regulatory code getting underway.



## **Solid Waste Facilities - Transfer and Disposal System**

### *Overall progress:*

- Metro continues to monitor the performance of the transfer and disposal system and plan for improvements to the system in accord with the Plan. This report period saw no major changes in the current system of transfer stations and landfills.

### *Highlights:*

- Development of a Capital Improvement Plan for Metro facilities was initiated.
- Development of proposal for rebidding of transfer station operating contracts for Metro Central and Metro South was initiated.

### *Issues:*

- The Capital Improvement Program will address modifications that could alleviate congestion at Metro South.
- The Metro requirements for reload facilities are expected to be addressed through review of recent applications and the Code revision process.

## Part 1 - RSWMP Regional Solid Waste Benchmarks

**Note on Table 1.1.** RSWMP specifies that certain benchmarks - in particular, Landfilled Solid Waste and Disposal Benchmarks - are to be established or verified within a year of adoption. This time was allotted because these benchmarks require special studies of generators and waste composition. At the time of this report, data from the study of multi-family households was being cleaned and verified. A pilot for commercial generators had been completed, and full-scale measurement was scheduled to begin in October 1996. A design for study of construction & demolition debris has been drafted and is being circulated for comment. Implementation of the tracking surveys (RSWMP, page 9-10), which will allow interim updates of generator surveys and the regional waste characterization studies, will commence in early 1997.

The following statistics await completion of indicated surveys:

- Landfilled Solid Waste will be provided in the next State of the Plan, after setting up the Tracking Surveys (RSWMP, page 9-10).
- Single Family Disposal Benchmarks are due to be released around the end of 1996.
- Multi-Family Disposal Benchmarks are due to be released around the end of 1996.
- Business Disposal Benchmarks will be provided in the next State of the Plan, which coincides with the targeted completion of the Commercial Generator Survey (currently in production).
- Construction & Demolition Disposal Benchmarks are due to be released around the end of 1997, pending completion of the Construction & Demolition Generator Survey (currently in planning).

Table 1.1 - RSWMP Solid Waste Regional Benchmarks

|                                                  | RSWMP Baseline Assumptions | Current Indicator <sup>1</sup> | Year 2000 Indicator | Units            |
|--------------------------------------------------|----------------------------|--------------------------------|---------------------|------------------|
| <b>System Benchmarks</b>                         |                            |                                |                     |                  |
| Recycling Level <sup>2</sup>                     | 39%                        | 43%                            | 48%                 | percent          |
| Recovery Level <sup>2</sup>                      | 42%                        | 46%                            | 52%                 | percent          |
| Per Capita:                                      |                            |                                |                     |                  |
| Generation                                       | 1.34                       | 1.44                           | 1.36                | tons/capita/year |
| Recycling                                        | 0.58                       | .67                            | 0.71                | tons/capita/year |
| Disposal                                         | 0.76                       | .77                            | 0.65                | tons/capita/year |
| Solid Waste Hierarchy                            |                            |                                |                     |                  |
| Prevention                                       | n/a                        | n/a                            | 1%                  | percent          |
| Recycling                                        | 28%                        | 34%                            | 35%                 | percent          |
| Composting                                       | 6%                         | 7%                             | 9%                  | percent          |
| Energy/Fuel                                      | 8%                         | 6%                             | 7%                  | percent          |
| Disposal                                         | 58%                        | 53%                            | 48%                 | percent          |
| <b>Facility Benchmarks</b>                       |                            |                                |                     |                  |
| Direct-Haul Tonnage                              | 1,088,700                  | 1,120,237                      | 990,700             | tons/year        |
| Transfer Stations                                | 820,900                    | 834,926                        | 679,800             | tons/year        |
| Materials Recovery Facilities (MRF) <sup>3</sup> | 113,500                    | 111,736                        | 157,300             | tons/year        |
| Ltd. Purpose Landfill                            | 154,300                    | 166,482                        | 153,600             | tons/year        |
| Landfilled Solid Waste                           | 1,023,100                  | 1,045,492                      | 926,400             | tons/year        |
| Food                                             | 222,600                    |                                | 191,300             | tons/year        |
| Recyclables                                      | 366,100                    |                                | 291,700             | tons/year        |
| Yard Debris                                      | 60,000                     |                                | 59,300              | tons/year        |
| Other                                            | 374,400                    |                                | 384,100             | tons/year        |
| <b>Disposal Benchmarks</b>                       |                            |                                |                     |                  |
| Single Family                                    | 30                         |                                | 28                  | lbs/HH/week      |
| Food                                             | 9.1                        |                                | 8.4                 | lbs/HH/week      |
| Recyclables                                      | 9.7                        |                                | 8.8                 | lbs/HH/week      |
| Yard Debris                                      | 2.9                        |                                | 2.7                 | lbs/HH/week      |
| Other                                            | 8.0                        |                                | 8.0                 | lbs/HH/week      |
| Multi-Family                                     | 24                         |                                | 19                  | lbs/HH/week      |
| Food                                             | 7.4                        | See "Note on Table 1.1" page 6 | 7.4                 | lbs/HH/week      |
| Recyclables                                      | 9.0                        |                                | 5.3                 | lbs/HH/week      |
| Yard Debris                                      | 1.9                        |                                | 1.1                 | lbs/HH/week      |
| Other                                            | 5.4                        |                                | 5.4                 | lbs/HH/week      |
| Business                                         | 20                         |                                | 16                  | lbs/emp/week     |
| Food                                             | 4.6                        |                                | 2.9                 | lbs/emp/week     |
| Recyclables                                      | 8.2                        |                                | 5.1                 | lbs/emp/week     |
| Yard Debris                                      | 0.7                        |                                | 0.7                 | lbs/emp/week     |
| Other                                            | 6.9                        |                                | 6.9                 | lbs/emp/week     |
| Construction & Demo                              | 234,000                    |                                | 235,800             | tons/year        |
| C&D per capita                                   | 0.18                       |                                | 0.17                | tons/capita/year |

Notes:

- All figures exclude auto shredder residue, petroleum contaminated soil, and other special wastes.
- Sources:
  - RSWMP (Table 9.3)
  - Interim 1995 Recycling Level Survey
  - SWIS Report - August 1996 Abridged Version
  - Regional Waste Characterization Study - 1993-94

<sup>1</sup>The "Current Indicator" for System Benchmarks is based on calendar year 1995 data; for Facility Benchmarks, it is based on FY 1995-96 data.

<sup>2</sup>Excludes: auto fluff, pcs, and other special wastes, as well as pre-consumer waste and excavation wastes.

<sup>3</sup>RSWMP was completed prior to the recent wave of MRF construction. The RSWMP baseline includes materials delivered to the processing lines at Metro Central, Marion County Waste-to-Energy, etc. The Current Indicator is mixed waste delivered to stand-alone MRFs. The comparable baseline number is 69,920 tons.

## ***Background Economic Information***

- Between FY 1994-95 and FY 1995-96 the region's population grew by nearly two percent, from 1,564,00 to 1,595,800.<sup>4</sup>
- Employment in the region also grew between FY 1994-95 and FY 1995-96, from 783,000 employees to 818,600 employees, an increase of nearly four and a half percent.<sup>5</sup>
- The number of single and multi-family residential building permits issued in the tri-county region increased 10% between FY 1994-95 (12,616 units) and FY 1995-96 (13,871 units).

## ***System Measurement Studies for FY 1995-96***

### **Commercial Generator Study**

This project is the third round in the Generator Survey Program initiated during 1992 and beginning with single family and multi-family, respectively. The program consists of a series of sample surveys that measure waste, recyclables, and characteristics of individual solid waste generators.

The Commercial Generator Study will weigh and characterize the waste and recycling of twelve business types in three areas of the Metro region, two suburban areas and one urban area. Other data such as location, business size, size of customer base, land use, location, duration at site and type of recycling service will be gathered for each sample unit. Sit-down eating and drinking establishments will be separated into pre- and post-consumer categories before the material sort. Both sit-down eating and drinking establishments and grocery stores will be sorted into material categories extended to include compostables. Also, in-depth interviews will be conducted in order to assess qualitative variables.

A contract was awarded on May 10, 1996 to Harding Lawson Associates for the \$120,000, multi-year project. May, June, and July were devoted to study design and other preliminary tasks. A pilot study was completed in mid-August. Presently, the pilot data is being analyzed in order to refine the study method. The first of four seasonal sampling events is scheduled to commence in October.

### **Construction and Demolition Generator Study**

See "Note on Table 1.1" page 6.

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<sup>4</sup>Population statistics are from Portland State University Center for Population Research and Census.

<sup>5</sup>Wage & Salary Employment, Oregon Employment Department Research and Statistics.

## Part II - Tracking Implementation of the Recommended Practices

### *Residential Waste Reduction*

**Summary:** Over the next five years, the RSWMP focus is to build on existing residential programs and shift to a stronger focus on waste prevention and home composting. In the longer term of five to ten years, the RSWMP focuses on new collection technologies for the residential waste stream, along with the potential collection and processing of residential food waste.

Tasks for FY 1995-96 and Status of Relevant Metro / Local Government Programs and Activities:

**1. Waste Prevention - This strategy emphasizes:**

- Waste prevention as the best approach to resource conservation;
- Education in the schools and regional media campaigns as two primary tools to communicate the message;
- Early evaluation of waste prevention programs to determine their effectiveness.

Two sets of recommended practices fall under this strategy:

- a) **Education and Information.** The recommended practices envision three basic types of programs: media campaigns, educational programs, and Earth-Wise Purchasing. No specific requirements for these waste prevention programs were indicated by the RSWMP for FY 1995-96. Budget work and development of a waste prevention message for the media campaigns will occur in FY 1996-97.

Metro did, however, undertake the Greener Cleaner Pilot Project, a residential waste prevention activity (see "Greener Cleaner Pilot Project" RSWMP Solid Waste Programs), as well as a billboard campaign displaying local children's artwork focusing on the waste prevention message.

- b) **Home Composting.** The strategy is to continue the workshops and home compost demonstration sites and to improve the bin distribution program through ongoing evaluation efforts.

During FY 1995-96, in accordance with the Plan, the compost workshops continued to be held in the spring and fall and the three compost demonstration sites were maintained. A new demonstration site was opened at Leach Botanical Gardens. A new demonstration site in Washington County is expected to be sited in FY 1996-97.

The evaluation of the compost bin distribution program showed high levels of satisfaction among bin purchasers as well as support for the program. Metro

staff is assessing its role in the direct distribution of compost bins and how to better target non-composting households.

2. **Recycling** - The strategy is to improve the performance of existing curbside programs, and to expand services to new materials when feasible. The recommended practices prescribe a variety of both single-family and multi-family programs to accomplish these objectives. A notable achievement has been making the process of developing annual local government work plans consistent with the strategies adopted in the RSWMP.

Three sets of recommended practices fall under this strategy:

- a) **Expand Existing Residential Curbside Programs.** During FY 1995-96, the Plan called for:
  - **Curbside collection of scrap paper throughout the region** - With the beginning of this service in the unincorporated areas of Washington County outside the urban services boundary, 9/1/96, this goal has been accomplished.
  - **Weekly curbside collection (or equivalent) of yard debris** in the two remaining jurisdictions not having such service. The spring 1996 Yard Debris Study showed that the service levels established in these jurisdictions met the requirement. (See "1996 Metro Yard Debris Study" Programs Evaluated, page 20.)
  - **Recycling containers at multi-family complexes** - The goal is to serve the maximum feasible number of units by 7/97. Several jurisdictions have already achieved that goal and have shifted focus to maintaining their systems. Other jurisdictions are still working to achieve the goal to have 85% of their units served. An effective promotional campaign for multi-family recycling was also implemented during the year. (See "Multi-Family Promotional Campaign" Regional Promotion/Education Campaigns, page 24.)
  - **Regional education and promotion campaigns** - A promotional campaign was implemented that focused on recycling at multi-family complexes. (See "Multi-Family Promotional Campaign" Regional Promotion/Education Campaigns, page 24)
  - **Target low participant neighborhoods** - While the Plan envisioned Metro leading a program in this area in FY 1995-96, discussions among Metro and local government staff determined that a closer look is needed at the potential effectiveness of this approach.
  - **Programs that target reduction of yard debris in drop boxes and self-haul** - Efforts to develop programs led to the determination that the scope of the problem is not as severe as previously thought, although it should continue to be monitored in upcoming waste characterization studies. It has also been suggested that local governments, rather than Metro, should be the responsible party for developing such programs. A related question on Metro's policy regarding yard debris received at its transfer stations is to be addressed during FY 1996-97.

- b) **New Collection, Transfer, and Disposal Technologies.** The strategy as outlined in the Plan, looks toward the increasing experience in local curbside programs to provide insights into the development of new collection technologies, such as co-collection. While there were no recommended practices adopted by the Plan in this area, cooperative research and investigation on promising techniques was envisioned. The City of Portland is currently taking the lead in coordinating such research. Metro has also contributed to these investigations through its development of the commercial organics processing pilot project.
- c) **Curbside Collection and Processing of Residential Food Wastes.** Development of practices in this area are dependent upon the results of the commercial organics processing pilot project currently underway.

## ***Business Waste Reduction***

*Summary:* The recommended practices for business waste reduction place a strong emphasis on following the solid waste reduction hierarchy. As in the residential sector, aggressive waste prevention programs and expansion of recycling services to businesses is a strong focus. Additional strategies for organics, mixed dry waste processing, and fiber-based fuel are also prescribed.

Tasks for FY 1995-96 and Status of Relevant Metro / Local Government Programs and Activities:

1. **Waste Prevention and Recycling** - As in the residential waste reduction practices, waste prevention is the best approach to resource conservation and early evaluation of waste prevention efforts is key in determining their effectiveness. Two sets of recommended practices fall under this strategy.

- a) **Education, Information & Market Development.** The recommended practices prescribe a number programs designed to accommodate the variety of businesses in the region and their special needs. These programs include waste evaluations, model waste prevention programs, coordinated media campaigns, and integration of recycled materials into both procurement policies and manufacturing processes.

The major focus for FY 1995-96 was the continuing development of Earth-Wise programs and Metro's information services to manufacturers. The development of model waste prevention programs also continued during this fiscal year. (See "Model Waste Prevention Programs for Businesses" Business Waste Reduction, page 25.) Metro and local governments also began their development and planning process for meeting the waste evaluation objectives.

- b) **Expand Source-Separated Recycling.** While waste prevention is an important focus for the next five years, development of source-separated recycling activities at businesses is expected to be a major contributor to the region's reaching its waste reduction goals.

The recommended practices stress the importance of ensuring that services (including appropriate containers) are provided to businesses of all size. A specific objective targeted by the Plan, i.e., 50% of all businesses served by recycling services by 1/96, was premised on the understanding that current services and the City of Portland's new required commercial recycling program would result in this target being met. The long-term objective, i.e., 100% of all businesses by 1/99, and similar targets for small businesses, i.e., 100% of all businesses by 1/00, are currently being discussed in the context of an overall inventory of existing service levels. The inventories are being done as part of each local government's development of a waste reduction plan.

Consistent with the requirements of the Plan, the Business Recycling Awards Group (BRAG) commercial recycling recognition program was significantly expanded during the fiscal year. (See "Business Recycling Awards Group [BRAG] Commercial Recycling Recognition Program" Programs Initiated, page 17.)

2. **Organics** - The Plan assigns responsibility to the private sector for the siting and development of processing capacity for organic waste. Metro will play a strong role in sponsoring demonstration projects to assist in this development. Consistent with the Plan, during FY 1995-96 this process began and resulted in two proposals. Implementation of these proposals is expected to occur during FY 1996-97. (See "Commercial Food Waste and Processing Pilot" Business Waste Reduction, page 25.)

During the year, Metro also worked with local governments, garbage haulers, and the private sector, to investigate issues associated with collecting organic materials from generators such as grocery stores and restaurants.

The licensing system established for yard debris processors during the fiscal year, is expected to be useful in developing franchise policies and resolving siting issues associated with siting organics processing facilities. (See "Metro Licensing Program for Yard Debris Processing and Reload Facilities" Programs Initiated, page 18.)

- a) **Collection and Off-Site Recovery of Source-Separated Food and Non-Recyclable Paper From Businesses.** Consistent with the Plan, during FY 1995-96 this process began and resulted in two proposals. Implementation of these proposals is expected to occur during FY 1996-97. (See "Commercial Food Waste and Processing Pilot" Business Waste Reduction, page 25.)
3. **Post-Collection Recovery.** Although the Plan stresses the importance of "upstream" recovery techniques, it acknowledges that post-collection recovery will play an important role in reaching regional recovery goals.
    - a) **Regional Processing Facilities for Mixed Dry Waste** - The recommended practices stress the importance of developing sufficient processing capacity and regional access from all parts of the region. These objectives will primarily be achieved through private initiatives as regulated by the Metro franchise system.



The Plan was premised on the belief that public sector intervention might be necessary to achieve the capacity and access objectives. However, in the spring of 1996 Metro received a significant number of applications for mixed dry waste processing facilities indicating that intervention was probably not necessary. (See "Regional Materials Recovery Facilities [MRFs]," Business Waste Reduction, page 26.)

While the Plan indicated that the review of processing facility fee structures and vertical integration restrictions would be completed by July 1996, it is currently anticipated that these tasks will be extended into FY 1996-97. Metro continued to supply technical assistance for market development for recovered materials.

- b) **Fiber-Based Fuel** - The Plan recommended that support for fiber-based fuel be contingent on its economic viability. During FY 1995-96, the Metro Central Transfer Station contractor, BFI, Inc., made significant strides in their effort to develop a viable processing system. (See "Fiber-Based Fuel - Metro Regional Center" Programs Initiated, page 17.)

### ***Building Industries Waste Reduction***

*Summary:* The Plan attempts to implement a broad-based strategy strongly consistent with the waste management hierarchy and with a focus on providing educational materials for the building industry.

Tasks for FY 1995-96 and Status of Relevant Metro / Local Government Programs and Activities:

1. **Waste Prevention** - The aim of current waste prevention efforts, including on-site audits and developing technical assistance information, is to move from research and development to a broad-based Earth-Wise building program that is a permanent part of the building industry.
  - a) **Develop Targeted Technical and Educational Programs.** During FY 1995-96, the on-site audits and technical assistance activities continued. The eventual goal is to have such activities integrated into the overall Earth-Wise Builder Program. Efforts to institutionalize the Earth-Wise Builder Program were advanced when the program became a state-recognized, non-profit organization. (See "Earth-Wise Builder Program," Programs Initiated, page 18.)
2. **Recycling** - The Plan recognizes that construction and demolition activities produce significant amounts of recyclable material and that segregating and diverting those materials at the generator level can be a very effective way of capturing high-value material.
  - a) **On-Site Source Separation at Construction and Demolition Sites.** During FY 1995-96, Metro and local governments developed strategies to ensure that on-site recycling services are available at construction and demolition sites. In the next fiscal year, the strategies will be assessed to determine how effectively they are being implemented. Included in this assessment will be an examination

of how the new dry waste processing facilities are affecting these on-site recycling efforts and how economic issues affect the growth of these recycling activities.

Additional activities that support construction and demolition site recycling were conducted by Metro and local governments. (See "Summary of 1995-96 Local Government Waste Reduction and Recycling Programs" Table A-3, RSWMP Solid Waste Programs)

- b) **Develop Markets to Support Recycling Rather Than Energy Recovery.** Metro assisted St. Vincent DePaul in developing their retail location for a wood depot and helped with its construction. Metro also promoted building material salvage businesses through the printing of 9,000 copies of the 1996 Metro Construction Site Recycling Guide. Metro continues to provide support for development of industries using recycled construction and demolition materials through its Recycling Business Assistance Program.

### 3. Post Collection Recovery

- a) **Develop Regional Dry Waste Processing Facilities for Waste From Sites Where Separation and Collection of Recyclables is Not Possible.** The Plan recognizes that dry waste processing facilities complement a site-based construction and demolition recycling system. At the present time, it appears that the system of developing dry waste processing facilities will do this. However, Metro will continue to monitor this issue as the new facilities come on line. (For a broader discussion of the dry waste processing facility issue, please see "Business Waste Reduction - Regional Materials Recovery Facilities (MRFs)," page 26.)

## ***Solid Waste Facilities - Regulation and Siting***

*Summary:* The Plan identifies two important areas in which the regulation and siting of solid waste facilities is of regional concern: yard debris and organic waste processing facilities. The need for regional activity was premised on the belief that without regional environmental and performance standards, the facilities could not be sited and operated. Since the long-term regional recycling goals depend upon yard debris and organics programs, this would be a major obstacle.

Tasks for FY 1995-96 and Status of Relevant Metro / Local Government Programs and Activities:

1. **Yard Debris Processing System.** After working closely with local governments and processors, a yard debris licensing program was developed and implemented. The program generally matched the target dates in the Plan, with new facilities required to be licensed beginning in March 1996, and existing facilities required to be licensed by August 1997. (See "Metro Yard Debris Program for Yard Debris Processing and Reload Facilities," Programs Initiated, page 18.) Metro is continuing to work with local governments to ensure that clear and objective siting standards for yard debris processing facilities are adopted throughout the region.

2. **Organic Waste Regulatory System.** The plan for developing an organic waste regulatory system will use the yard debris processing system as a guide. The effort to revise the Metro Code during FY 1996-97 is expected to address many of the issues regarding regulating organic waste processing facilities. Metro will continue to work with local governments to ensure that processing facilities can be sited. However, the timeline for that process will not be completed until Metro has revised its Code.

### ***Solid Waste Facilities - Transfer and Disposal System***

*Summary:* The recommendations for the transfer and disposal system emphasize the maintenance of the existing system of Metro transfer stations for the management of municipal solid waste. The Plan also recognizes the need for additional services such as designated facilities for special wastes.

Tasks for FY 1995-96 and Status of Relevant Metro / Local Government Programs and Activities:

1. **Maintain Existing System of Three Transfer Stations; Build No New Transfer Stations; No Redirection of Haulers.** In accord with the Plan, the development of a capital improvement plan was initiated during FY 1995-96, with completion expected in June 1997. With the concurrence of Council, existing Metro transfer station operations contracts were extended and the rebid process begun. The new contracts will begin in May 1997.

Consistent with the Plan, expanded service for reuse and recycling was initiated through a contract with St. Vincent DePaul at the Metro South Transfer Station.

2. **Maintain the Existing System of Private General and Limited Purpose Landfills.** There were no major changes in the current system during FY 1995-96.
3. **Maintain Options for Haulers to Choose Among Disposal Alternatives.** There were no major changes in the current system during FY 1995-96.
4. **Reload Facilities.** There were no major changes in the current system during FY 1995-96.

## **Appendix**

### **Program Descriptions**

#### ***Programs Initiated***

##### **Metro Flood Debris Programs**

In February 1996 flood waters damaged many areas of the region. In order to manage the debris left behind, Metro and local jurisdictions implemented temporary programs. Metro set up two different programs for its transfer stations. The first was geared to local governments, and the second to citizens.

For the first program, a special flood debris account was set up for each local jurisdiction. Local jurisdictions were then allowed to use vouchers to debit loads of flood debris to their accounts. Accounts were not payable until reimbursement from the Federal Emergency Management Agency (FEMA) had been received. Generally, local jurisdictions received a reimbursement of 75% of the cost of their flood debris, with Metro writing off the balance. Under this voucher program, nearly 4,000 tons of flood debris were received at the transfer stations and debited to the special accounts.

In the second program, self-haul customers with flood debris from their residences or small businesses were allowed to dump at the Metro transfer stations for a reduced fee. (Five dollars for a car or pick-up load and ten dollars with a trailer.) This program was in effect from late February through the end of March 1996, and resulted in nearly 900 tons of flood debris being brought into the Metro transfer stations.

##### **City of Portland Mandatory Commercial Recycling Program**

Effective January 1, 1996, all businesses, multi-family complexes, and construction projects with a permit value over \$25,000 within the City of Portland are required to recycle. The mandatory recycling program was passed by ordinance through the City of Portland Council. The focus of the program is outreach, education, and assistance.

All commercial entities received a written notice that they would be required to recycle beginning January 1996. Guides, recycling forms, tips, and resources for assistance followed the initial notice. More interactive outreach is in planning stages.

Staff developed a comprehensive business recycling plan with assistance from businesses, waste haulers, and environmental groups specifying that businesses work to achieve a 50% recycling goal. Separate recycling plans were also developed for multi-family housing units and construction and demolition sites.

Measurement efforts will include analysis of increases in number of businesses recycling, increases in the number of materials recycled, and quarterly tonnage trend information. Independent recyclers have a share of the market and staff is developing methods to measure their impact.

Enforcement includes random inspections and complaint-based investigations. Businesses found to be in violation are given a 30-day assistance period in which City staff will help the business set up and implement a program. After 30 days, non-compliant businesses may be fined up to \$500. Enforcement actions did not begin until April 1996.

### **Business Recycling Awards Group (BRAG) Commercial Recycling Recognition Program**

The BRAG program is a business recognition program developed cooperatively by local governments in Clackamas, Multnomah, Washington, and Clark Counties and Metro. The program recognizes businesses that reduce waste, reuse materials, recycle, and buy recycled products. Businesses that successfully qualify for the program receive:

- their name in print ads and press releases;
- a membership certificate, suitable for framing, and a window decal;
- a newsletter providing tips on how to reduce, reuse, and recycle more;
- personalized assistance to help businesses expand current programs;
- an opportunity to be on the cutting edge of a new trend in business.

There are two award categories. The first is a basic BRAG membership for businesses that recycle at least three items on a regular basis, prevent waste through at least three ongoing activities, and buy at least three different recycled products. The second category is a distinguished BRAG membership for businesses that regularly recycle at least six items, prevent waste using six ongoing activities, buy at least six different recycled products, and provide information to customers, suppliers, and other businesses about how to recycle, prevent waste, and buy recycled.

The program has received a positive response from the business community.

### **Fiber-Based Fuel - Metro Regional Center**

On January 18, 1996, Metro launched a fiber-based fuel (FBF) program as part of its "waste free" conference room program. FBF programs were also implemented for the employee lunch room and the paper toweling in all rest rooms. To maximize material collection, Metro coffee and food vendors were asked to support the waste free program.

Between January 18, 1996 and June 30, 1996, Metro Regional Center recovered approximately 1.5 tons of FBF. Recovery levels are modest since the Regional Center is not the ideal generator for FBF material. However, since Metro's role in waste prevention is education, it is important that Metro implement these kinds of pilot programs so that others can be encouraged and assisted in the implementation of their own programs. The

types of generators that are optimal for an FBF program include: special events, fast food restaurants, stadiums, malls, grocery stores, and theaters.

Expansion of the FBF program is planned for other Metro facilities in the coming fiscal year. Both the Metro Washington Park Zoo and the Convention Center will begin FBF programs during the fall of 1996.

### **Earth-Wise Builder Program**

Over the last four years, Metro has promoted construction and demolition recycling and the "buy recycled" message to home builders, home remodelers, demolition and commercial contractors. In order to appeal to a larger audience, Metro has helped establish the Earth-Wise Builder program. This program ties in many different green building techniques with Metro's original goals of recycling construction and demolition debris and increasing demand for recycled-content building materials.

In January 1996, Earth-Wise Builders became a state-recognized, non-profit organization. The Earth-Wise Builders' board has offered continuing education for member contractors in the form of monthly two hour technical sessions on new products and changes in job site recycling options. Member contractors received media coverage from two local TV stations as a result of their work assembling the St. Vincent DePaul Wood Depot dry storage building. There are presently 24 members, of which eight are contractors.

Most recently, a summit meeting of all of the green building organizations in the Metro region was convened to discuss possible partnerships and cooperative efforts. The four groups, American Institute of Architects Committee on the Environment, PGE Earth-Smart, NW Eco-Builders Guild, and Earth-Wise Builders agreed to hold a combined quarterly meeting for all members, collaborate on upcoming fall home and garden and home improvement shows, and work towards creating a resource center for contractors and the public.

### **Metro Licensing Program for Yard Debris Processing and Reload Facilities**

On November 30, 1995, the Metro Council adopted licensing standards for yard debris processing and reload facilities. As of March 1, 1996, the licensing program went into effect for all new facilities. Operators of existing facilities will have until August 1997 to apply for a license and to comply with program standards. By the end of the fiscal year, two applications from existing facilities had been received.

The program was developed to respond to the challenges and opportunities created by the increase in yard debris recycling in the region since 1987. Many facilities are located in areas that are becoming urbanized. As a result, nuisance impacts such as odor, dust, and noise have caused heightened public awareness and concern. In response, Metro convened a regional task force to develop solutions that would be effective, as well as acceptable, to the yard debris processing industry. The task force consisted of yard debris

processors, local governments, haulers, and the Oregon Department of Environmental Quality. The licensing program was developed with the guidance of this task force.

The program will help to ensure that facilities are operated in a manner that minimizes nuisance impacts on surrounding communities. The program will require operators of facilities in the region to apply for a Metro license and to comply with program standards, which include requirements for facility design, operating standards, and odor minimization.

## ***Programs Evaluated***

### **1995 Compost Bin Distribution Program**

Through a contract with Market Decisions Corporation (MDC), a Portland marketing research firm, a telephone survey was conducted in December 1995 to evaluate Metro's home compost bin distribution program<sup>6</sup>. A total of 875 households were surveyed, with 700 of those being households that had purchased compost bins at a discount from Metro in 1994 and 1995, and the remainder selected at random from the general population.

Overall, the survey found that bin purchasers were satisfied with their purchases, with 91% indicating they were somewhat satisfied or more. There was also a great deal of support for continuing a government-sponsored discount compost bin program. Of bin purchasers, 92% said they thought the program should continue. Approximately 80% of non-bin purchasers also supported the idea.

Two of the primary objectives of the survey and their significant findings are as follows:

- Evaluate the effect of the bin program on composting among the bin purchasers when compared to the general public.
  1. Bin purchasers reported an increase in composting levels after receiving the bin. Fifty-two percent said they composted more yard debris and 39% said they composted more food scraps after receiving the bin.
  2. Bin purchasers also reported setting out less yard debris less frequently for curbside pickup than prior to purchasing the bin. They also reported disposing less food waste in the trash or garbage disposal.
  3. Bin owners are more than twice as likely to compost yard debris and nearly three times as likely to compost food scraps than the general population.
- Investigate the amount of yard debris and food waste put into the compost bins.
  1. The amount of yard debris and food scraps composted by bin purchasers compared to the composting portion of the general population who did not

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<sup>6</sup>Market Decisions Corporation, "Metro Compost Bin Program Evaluation - Summary of Findings," January 1996. Report available from Metro Regional Environmental Management Library.

purchase Metro bin is about the same for food waste and slightly less for yard debris.

2. The average amount of yard debris composted each week by bin purchasers was one 32-gallon can per week, compared to one and one-half 32-gallon cans for those in the general population who compost.
3. The average amount of food scraps composted by bin purchasers was slightly over three 1-pound coffee cans per week, compared to slightly under three 1-pound coffee cans per week for those in the general population who compost.
4. Based on volumes reported by bin purchasers, approximately 750 pounds of material per year per household is diverted through home composting.

### **1996 Metro Yard Debris Study**

During the spring of 1996, the third in an annual series of studies took place to determine the effect of different yard debris collection programs present in the region on single-family household yard debris disposal patterns. The study was conducted by Metro in cooperation with local governments and their haulers, and the Statistical Consulting Laboratory at Portland State University.<sup>7</sup>

In the region, there are several different kinds of residential yard debris programs.<sup>8</sup> However, there is a regional requirement that all programs must be equivalent to or more effective than weekly curbside collection in keeping yard debris out of the wastestream. For the last three years, a study has been conducted each spring to measure the amount of yard debris disposed as waste from different areas within the region. The results of these studies have helped to determine which programs are meeting the regional requirement and which need to be reviewed.

The most recent study included 15 jurisdictions and four different programs, including weekly curbside collection, every-other-week curbside collection with 32-gallon containers and with 60-gallon containers, and depot/on-call services. The results showed that all of the programs met the requirement of providing a yard debris collection program that was at least as effective as weekly curbside collection at keeping yard debris out of the wastestream.

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<sup>7</sup>Statistical Consulting Laboratory, Portland State University, "1996 Metro Yard Debris Study," May 15, 1996. Report available from Metro Regional Environmental Management Library.

<sup>8</sup>See Table A-1 for a matrix of the different programs.



## ***RSWMP Solid Waste Programs***

### **I. County and City Programs**

- Metro Region Yard Debris Collection Programs, Jan. '96 - Table A-1
- Materials Collected in Curbside Programs, FY 1995-96 - Table A-2
- Summary of FY 1995-96 Local Government Waste Reduction and Recycling Programs - Table A-3

### **II. Cooperative Regional Programs**

#### **A. Regional Grant Programs**

##### **1. Government:**

- Metro Challenge Grant Allocations - Table A-4
- Peer Grant Program

The Metro Peer Grant program allocated \$100,000 to public agencies during FY 1995-96 to develop waste prevention, recycling, and Earth-Wise purchasing programs within their daily operations. Funds were distributed on a competitive basis. Program results, final reports, and case studies will be available for distribution in June 1997. The following agencies were awarded grants:

1. Portland Public Schools - The Ben Franklin Project. Total Grant Award: \$30,000; This project will develop resource conservation programs for 19 middle schools. Pre-grant resource conservation practices will be documented and plans developed that will maximize waste recovery through recycling, waste prevention practices, vegetative waste diversion, and energy conservation. A Resource Coordinator and organized green clubs from each of the 19 middle schools will manage the program.
2. City of Milwaukie - Resource Conservation Project. Total Grant Award: \$40,000; The City of Milwaukie is in the process of writing and implementing energy, water, and material resource conservation plans for each of the City's four facilities. The plans will include:
  - ◇ Energy and water efficiency;
  - ◇ Waste prevention and recycling;
  - ◇ Recycled product procurement policy review and use of recycled products for applicable facility renovations;
  - ◇ Development of educational materials and employee training.

The project involves three government agencies: Metro, City of Milwaukie, and the DEQ. The Metro Peer Grant / City of Milwaukie model for public agencies will be modified and duplicated in a DEQ / City of Milwaukie resource conservation project for businesses.

3. Washington County Justice Complex. Total Grant Award: \$30,000; Washington County, in conjunction with Hoffman Construction and the Zimmer Gunsul Frasca Architectural Design firm are in the process of constructing a justice center complex that consists of a new county jail, community corrections center, sheriff's office, and a park and ride. Metro Peer Grant funds will be used to purchase recycled products for the new construction and publicize their use through media events, permanent signage in the new buildings, and a "how-to" guide for builders.

- Cleanup Grant Allocation - Table A-5

Metro funds utilized for cleanup programs increased from \$34,616 in FY 1994-95 to \$48,423 in FY 1995-96. Sixty separate events, involving 28 local jurisdictions, were given funding assistance through Metro cleanup grants. Although cleanup programs rely heavily on volunteer labor and donated materials and services, the events continue to be expensive. Costs incurred for cleanup programs during FY 1995-96 totaled nearly \$138,000.

- Master Recycler Grant Summary

A total of \$25,000 was awarded to the Master Recycler program by Metro. Of that, \$5,000 was drawn from the Regional Environmental Services budget for help with household hazardous waste events, and the rest was drawn from the Waste Reduction & Planning Services budget for help with home composting and other waste reduction outreach activities.

2. Private Non-Profit:

- Thrifts Grants Summary

In FY 1995-96, \$352,921 was distributed to the three participating thrift organizations to assist them with disposal costs at Metro facilities. During that same period, the three participating thrifts diverted to reuse or recycling a combined 17,826 tons of donated material.

Table A-6 - Tons Reused or Recycled by Participating Thrifts FY 1995-96

| Thrift Organization | Material reused or recycled | Material disposed of as garbage | Recycling level |
|---------------------|-----------------------------|---------------------------------|-----------------|
| St. Vincent DePaul  | 5011 tons                   | 1102 tons                       | 82%             |
| Salvation Army      | 4099 tons                   | 1719 tons                       | 70%             |
| Goodwill            | <u>8716 tons</u>            | <u>6418 tons</u>                | 58%             |
| Total               | <b>17,826 tons</b>          | <b>9,239 tons</b>               |                 |

### 3. Private For-Profit

- Metro Recycling Business Development Grants - Table A-7

## B. Residential Waste Prevention, Home Composting, and Recycling

### 1. Composting

- Earth-Wise Compost Program

The Earth-Wise Compost Program was adopted in FY 1994-95 when a committee of experts developed standards for commercial yard debris compost produced in the Metro area. FY 1995-96 was the first full year of the program. The purpose of the Earth-Wise standards is to provide greater assurance that yard debris compost will not cause harm to the environment and human health, and to help stabilize and increase the market for compost made with recycled yard debris.

Participation in the program is voluntary. Those processors whose product meets or exceeds standards are designated Earth-Wise. They receive a certificate and logos to use in promoting their product. In FY 1995-96, nine local processors applied for the program. Samples of finished yard debris compost were taken in October and May by Agra Earth and Environmental, a consulting firm under contract to Metro. The samples were analyzed by various laboratories for pH, heavy metals, pesticide residue, plant nutrients, foreign materials, salts and weed-seed germination. Eight of the nine processors met the standards and were designated Earth-Wise.

- Compost Workshops

The compost workshops are presented in the spring and fall of the fiscal year. The spring 1996 workshops were held at the four Metro compost demonstration centers: Mt. Hood Community College, Fulton Community Gardens, Clackamas Community College, and Leach Botanical Gardens. Three additional workshops were presented by an outside contractor at three Washington County locations: Beaverton Community College, City of Tigard and Washington County Extension Office. A total of 27 workshops were given at these locations with 288 people attending.

- Compost Bin Distribution Program

On June 15, 1996, Metro sponsored a one-day compost bin sale at four locations in Portland and Washington County. Nearly 11,000 Earth Machine compost bins were sold for \$22.00, a fraction of the \$90.00 retail price. The cost of the program to Metro was \$80,000 for the bin purchases and local advertising expenses. The event was co-sponsored by Metro, City of Portland, and Washington County.

## **C. Regional Promotion/Education Campaigns**

- **Multi-Family Promotional Campaign**

In June of 1995, a multi-family recycling public promotion campaign was developed and implemented. The message targeted the tenants of multi-family complexes, rather than owners and managers as was the focus of past campaigns. Tenants were encouraged to request recycling services from their managers or to properly utilize the recycling systems that had been installed at their complexes.

The effort had a very low budget and relied on some corporate sponsorship provided by Pietro's Pizza and Smurfit Newsprint and Recycling. The campaign utilized a wide variety of media including some unusual and untried venues, such as movie theaters, pizza box flyers, and restrooms in pubs, restaurants, and health clubs. Ads in Willamette week, radio spots, grocery bags, and mail-out packets completed the outreach. All ads encouraged the audience to call Metro Recycling Information for a free packet of materials to help them develop recycling programs or properly use the systems in place. Different packets of materials representing each local jurisdiction's unique program were prepared.

While response was not overwhelming, the Recycling Information Center did experience a ten-fold increase in the number of calls requesting information on multi-family recycling, as compared to June of 1994 and May of 1995. The most effective advertising proved to be radio ads, with movie theater ads and print materials in Willamette Week tying for second. The majority of calls requesting information came from tenants in the City of Portland living in complexes without on-site recycling services. The tally for the source of the caller's information about recycling was informal and done manually.

The Multi-Family Support Group consisting of local government representatives and Metro staff felt that although simple and inexpensive, the campaign was positive and that the change in focus away from owners and managers was a good choice.

- **Greener Cleaner Pilot Project**

The Greener Cleaner Pilot Project served as a unique opportunity to blend the goals of residential waste prevention and waste reduction education for school-age children. The pilot project involved the creation of a Greener Cleaner kit and the presentation of the kit and its waste-prevention, toxics-reduction message to over 425 fifth grade students throughout the Metro region. The purpose of the project was to increase the general public awareness of specific actions that can be taken to prevent waste and reduce the use of household hazardous cleaning products. The kit and presentation were designed such that it would be easy for the children to share with their families what they had learned.

The Greener Cleaner kit was composed of a number of items designed to promote a variety of waste prevention activities. The kit included such items as a string tote

shopping bag, custom-labeled plastic spray bottles, a composting video, and a *Greener Cleaner Pocket Book* with steps to a healthier, waste-wise home.

A parent/student survey was given to every student receiving a Greener Cleaner kit and the returned surveys provided valuable positive feedback regarding the usefulness of the kit. The survey was designed to show how the kit recipients and their families used the kits and how their behavior was changed, if at all.<sup>9</sup>

Metro staff recommends that the Greener Cleaner program be continued into the 1996-97 fiscal year.

#### **D. Business Waste Reduction**

- Commercial Food Waste and Processing Pilot

This pilot project is the result of a series of public workshops conducted in 1994 to help develop a regional food waste management system. The purpose of this one year, \$150,000 project is to test the collection and recovery of commercial pre-consumer vegetative food waste. The selection committee was made up of representatives from DEQ, local governments, and Metro staff. After reviewing a two-phase request for proposals process, the Committee selected two proposers, Oregon Waste Systems/Waste Management of Oregon and Oregon Soils Corporation. Contract negotiations with Waste Management are completed and their contract for \$55,000 was signed in September 1996. Contract negotiations with Oregon Soils Corporation are still in the development stage.

- Model Waste Prevention Programs for Businesses

Three types of businesses were targeted for the Model Waste Prevention Programs in FY 1995-96:

1. "Sold on Waste Prevention" - Real Estate Waste Prevention Campaign. Metro partnered with the Portland Metropolitan Association of Realtors (PMAR) to develop and implement a waste prevention education program for its membership. PMAR represents licensed realtors in Clackamas, Multnomah, and Washington counties. Through the project, waste prevention programs were implemented for three real estate offices. Other program activities included a waste prevention presentation at a monthly PMAR membership meeting, an exhibition at the Realtor Multiple Listing Service trade show, distribution of project brochures to real estate schools and PMAR, and waste prevention articles published in the PMAR monthly newsletter and one in the real estate section of The Oregonian newspaper.

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<sup>9</sup>For more information contact the Metro Regional Environmental Library for a copy of the "Greener Cleaner Pilot Project Residential Waste Prevention Summary Report."

2. "Green Key" - Hotel Resource Efficient Project Promotion. In conjunction with the Portland Oregon Visitors Association, American Motel and Hotel Association, and the Green Hotel Association, Metro developed a promotional mailer for the Green Key Hotel Resource Efficient guide. The guide is based upon a Metro demonstration project that involved six area hotels and provides hotels with a blueprint for setting up resource efficient programs. Promotion activities included Green Key guides mailed to 100 Metro area hotels, local governments, and solid waste agencies in other states. The Green Key guides are available through the Metro REM library.
3. Multnomah Bar Association Waste Prevention Project Development. The Bar Association Waste Prevention project was formally launched on July 1, 1996. However, prior to that date extensive project development was completed and endorsements secured.

- Business Recycling Awards Group (BRAG) Commercial Recycling Recognition Program

See "Programs Initiated"

- Regional Materials Recovery Facilities (MRFs)

During 1996, private sector interest in dry waste processing has continued to grow. At the end of 1995, there were four private processing facilities in operation handling almost 90,000 tons per year of dry wastes. (Metro Central Transfer Station also processes such wastes when they are received.) As of October 1996, two new facilities (Waste Management of Oregon in Troutdale, Or. and; Oregon Recycling Systems, in northwest Portland) have been granted franchises. A third firm, KB Recycling, also has an application pending for a new facility. A fourth facility, located next to Hillsboro Landfill, is also expected to request to enter the system. These new facilities are expected to add approximately 140,000 new tons per year of processing capacity for the region.

These facilities were anticipated by the RSWMP and they represent an important part of how the region will achieve our long term regional recycling goals. When the RSWMP was being developed, it was unclear whether the private sector would develop enough of these facilities to provide reasonable access to such facilities throughout the region. Given the number and location of the new facilities, this concern may no longer be valid.

The individual franchise agreements will contain the necessary conditions such as recovery requirements that will ensure the facilities are consistent with the goals and objectives of the Plan. Metro and local governments are also undertaking efforts to ensure these facilities complement and do not undermine local governments source separated recycling programs.

- Fiber-Based Fuel - Metro Regional Center

See "Programs Initiated"

**E. Construction/Demolition Waste Reduction**

- Earth-Wise Building Program

See "Programs Initiated"

- St. Vincent DePaul Wood Depot

The St. Vincent De Paul Wood Depot is one of the few used building material retail locations in the Metro region. The success of this site will provide Metro with an example of a reuse program that is working to help meet state-mandated recycling goals. In FY 1994-95, Metro contracted with St. Vincent de Paul to establish The Wood Depot. The original \$10,000 contract established a simple gravel pad and fenced perimeter. This first contract did not provide for any shelter to be built on-site. As a result, 85% of the material they were trying to sell was ruined for reuse by precipitation and had to be either recycled or disposed of as garbage.

In FY 1995-96, Metro funded a portion (\$6,500) of the cost to build a 30' x 60' structure for the retailing and storage of weather-sensitive used building materials. The member contractors of Earth-Wise Builders, Inc. volunteered their labor and expertise in assembling the building. The construction of a dry storage area at The Wood Depot ties into the wood waste recovery project that St. Vincent DePaul is heading up at Metro South Station. All of the salable lumber pulled out at the transfer station is going back to the Wood Depot to be sold to the public.

**Table A-8 - Used building materials handled by the Wood Depot in FY 1995-96**

|                                                                 | Estimated tons received       | Estimated gross sales of building materials |
|-----------------------------------------------------------------|-------------------------------|---------------------------------------------|
| Used building materials donated directly to the Wood Depot      | 60 tons                       | \$48,000                                    |
| Salable wood recovered from the MSS that went to the wood depot | 15 tons<br>Jan. - August 1996 | \$1,000<br>Jan. - August 1996               |

#### **F. Solid Waste Facilities - Regulation and Siting**

- Metro Licensing Program for Yard Debris Processing and Reload Facilities

See "Programs Initiated"

#### **G. Solid Waste Facilities - Transfer and Disposal System**

- The process to rebid the operation of Metro South and Metro Central Transfer Stations began during this fiscal year. The contracts are expected to take effect May 1, 1997.
- Capital improvements were initiated at Metro Central Transfer Station to facilitate the removal of dry waste beginning July 1996. This waste will be taken to a limited purpose landfill. An amount of not more than 50,000 tons per year will be diverted through this program.
- The fiber-based fuel line at Metro Central Transfer Station was improved through the addition of a new heating element. This heating element helps to fuse the plastic in the cubes. Production of fiber-based fuel increased significantly by the end of the fiscal year due to the change.
- Wood waste, including yard debris, was diverted from Metro Central Transfer Station to be used as hogged fuel. During FY 1995-96, approximately 18,000 tons were diverted for this purpose. Beginning July 1996, the same materials will be diverted from Metro South Transfer Station and taken to Metro Central to be used for the same purpose.
- Metro contracted with St. Vincent De Paul to remove reusables and wood from the wastestream at Metro South Transfer Station.
- A capital improvement planning effort began during FY 1995-96, with its initial focus being on improvements at the Metro South Transfer Station.

HOSS/RSWMP/SOP1118.RPT



**TABLE A-1 - METRO REGION YARD DEBRIS COLLECTION PROGRAMS**

Update: October 1996

| JURISDICTION                          | WEEKLY SERVICE | E/O WEEK SERVICE | OTHER                           | EXEMPTION PROGRAM | HAULER CONTAINER | CUSTOMER CONTAINER | IMPLEMENTED | LEAF PROGRAM |
|---------------------------------------|----------------|------------------|---------------------------------|-------------------|------------------|--------------------|-------------|--------------|
| Unin. Clackamas, Happy Valley         | X              |                  |                                 | X (annual fee)    | X (60 gal)       | X (32 gal)         | Yes: 1/92   |              |
| Lake Oswego                           | X              |                  |                                 | X (no fee)        | X (60 gal)       | X (32 gal)         | Yes: 10/92  |              |
| Milwaukie                             | X              |                  |                                 |                   | X (60 gal)       | X (32 gal)         | Yes: 4/92   |              |
| Gladstone                             | X <sup>5</sup> |                  |                                 |                   | X (60 gal)       | X (32 gal)         | Yes: 7/83   | X            |
| Oregon City                           | X              |                  |                                 |                   | X (60 gal)       | X                  | Yes: 1/80   |              |
| West Linn                             | X              |                  |                                 | X(no fee)         | X                | X                  | Yes:6/95    |              |
| Gresham†                              | X              |                  |                                 | X (1-time fee)    | X (60 gal)       | X (32 gal)         | Yes: 9/92   | X            |
| Troutdale†                            | X              |                  |                                 | X (1-time fee)    | X (60 gal)       | X (32 gal)         | Yes: 9/92   |              |
| Fairview†                             | X              |                  |                                 | X (1-time fee)    | X (60 gal)       | X (32 gal)         | Yes: 9/92   |              |
| Wood Village†                         | X              |                  |                                 | X (1-time fee)    | X (60 gal)       | X (32 gal)         | Yes: 9/92   |              |
| Banks                                 |                |                  | depots (outside Metro)          |                   |                  |                    |             |              |
| Beaverton <sup>4</sup>                |                | X                |                                 |                   | X (60 gal)       |                    | Yes: 10/94  |              |
| Cornelius† <sup>4</sup>               |                |                  | depots/compost bin distribution |                   |                  |                    |             |              |
| Durham <sup>4</sup>                   |                | X                |                                 |                   | X (60 gal)       |                    | Yes: 7/94** |              |
| Forest Grove† <sup>4</sup>            |                |                  | depots/home composting          |                   |                  |                    |             |              |
| Hillsboro† <sup>4</sup>               |                | X                |                                 |                   |                  | X(60 gal)          | Yes: 10/94  |              |
| King City <sup>2,4</sup>              |                |                  | depots                          |                   |                  |                    |             |              |
| North Plains                          |                |                  | depots (outside Metro)          |                   |                  |                    |             |              |
| Sherwood† <sup>4</sup>                |                | X <sup>3</sup>   |                                 |                   | X (60 gal)       |                    | Yes: 7/94   |              |
| Tigard <sup>4</sup>                   |                | X                |                                 |                   | X (60 gal)       |                    | Yes: 7/94   |              |
| Tualatin                              | X              |                  |                                 |                   | X (90 gal)       |                    | Yes: 10/91  |              |
| Wilsonville*                          | X*             |                  | X*                              | X (no fee)*       | X (60 gal)*      | X (35 gal)*        | Yes: 3/94   |              |
| Uninc. Washington County <sup>4</sup> |                | X                |                                 |                   |                  | X (32 gal)         | Yes: 1/94   |              |
| Johnson City                          | X              |                  |                                 |                   |                  | X (32 gal)         | Yes: 4/89   |              |
| Portland (USB)***                     |                | X                |                                 |                   | carts offered    | X (32 gal)         | Yes: 7/93   | X            |
| Maywood Park                          | X <sup>6</sup> |                  |                                 |                   | carts offered    | X (32 gal)         | Yes         |              |

\*Two collection events yearly.

<sup>2</sup>Every-other-week curbside pickup or compost bins provided.

<sup>4</sup>Alternative to weekly collection meets regional equivalency standards during 1994-95. Programs are tested annually.

<sup>5</sup>Fees for yard debris collection service are included in the property tax base and are not reflected in garbage bills or rates. Residents may place up to four containers of yard debris by the curb per week for collection.

<sup>6</sup>The City of Maywood Park has weekly curbside collection seven months of the year. For the remaining five months, on-call service and one or two community collection events are available.

\*Charbonneau area has 3 programs: small lots = 35 gallon roll carts collected monthly on the first garbage day of the month; larger lots = 60 gallon carts collected weekly; and a no-fee exemption program for those residents with approved landscape service. All other city residents receive 60 gallon roll carts serviced weekly.

†These cities are located outside the metropolitan burn ban area. They may burn their yard waste.

‡A large percentage of the City of Gresham is located outside the metropolitan burn ban.

\*\*Durham has had a collection program since 1990. Significant changes were made in July of 1994.

\*\*\*Program currently does not meet regional standard; alternative practices will be implemented. Metro tested for equivalency in Spring 1996 and all programs met, the regional standards

**Table A-2 - MATERIALS COLLECTED IN CURBSIDE PROGRAMS  
1995-96**

Updated: November 1995

| JURISDICTION                                          | NEWS | OCC | MAGS | GLASS | TIN | ALUM | PLAS           | ASEPTIC | YD <sup>1</sup> | MWP | OIL | AEROSOL | METALS |
|-------------------------------------------------------|------|-----|------|-------|-----|------|----------------|---------|-----------------|-----|-----|---------|--------|
| Washington County                                     | X    | X   | X    | X     | X   | X    | X*             |         | X               | X** | X   | X       | X      |
| Clackamas County<br>(Sandy, Molalla,<br>Happy Valley) | X    | X   | X    | X     | X   | X    | X              | X       | X               | X   | X   | X       | X      |
| Portland                                              | X    | X   | X    | X     | X   | X    | X              | X       | X               | X   | X   | X       | X      |
| Lake Oswego                                           | X    | X   | X    | X     | X   | X    | X <sup>1</sup> | X       | X               |     | X   | X       | X      |
| Milwaukie                                             | X    | X   | X    | X     | X   | X    | X              | X       | X               | X   | X   | X       | X      |
| Gladstone                                             | X    | X   | X    | X     | X   | X    | X              | X       | X               | X   | X   | X       | X      |
| Oregon City                                           | X    | X   | X    | X     | X   | X    | X              | X       | X               | X   | X   | X       | X      |
| West Linn                                             | X    | X   | X    | X     | X   | X    | X              | X       | X               | X   | X   | X       | X      |
| Troutdale                                             | X    | X   | X    | X     | X   | X    | X              |         | X               | X   | X   | X       | X      |
| Gresham, Wood<br>Village, Fairview                    | X    | X   | X    | X     | X   | X    | X              |         | X               | X   | X   | X       | X      |

\*All areas except: rural Unincorporated Washington County, King City collects milk jugs only, Banks has no curbside plastics collection but has a monthly depot which collects all plastic bottles and scrap paper.

\*\*King City and Banks do not have curbside scrap paper collection. Banks has a monthly depot which accepts scrap paper.

<sup>1</sup>See attached yard debris collection program table for complete program information.

<sup>2</sup>Unincorporated areas of Washington County outside the urban services boundary will implement this service September 1, 1996.

share/hoss/RSWMP/FY95-96/Curb9596.cht

**T. TABLE A-3 - SUMMARY OF 1995-96 LOCAL GOVERNMENT WASTE REDUCTION AND RECYCLING PROGRAMS\***

**Updated: September 1996**

| <b>Jurisdiction</b>      | <b>Single Family</b>                                                                                                                                                                                         | <b>Multi-Family</b>                                                                                                                                                                                           | <b>Yard Debris</b>                                                                                                                                                                         | <b>Commercial Recycling</b>                                                                                                                                                                                                          | <b>Construction/Demolition</b>                                                                                                                                                                                                                                                                                                      | <b>Promotion &amp; Education</b>                                                                                                                                                                                                |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Portland</b>          | Addition of curbside collection of phone books and all plastic bottles, bringing the number of curbside collected items to 14. Exploring the selective mixing of recyclables to increase recycling recovery. | Passage of mandatory recycling ordinance effective 1/96. Currently at 83% completion of recycling system installation.                                                                                        | Every other week program combined with composting and grasscycling promotion has been found to meet regional standards. Testing /evaluation performed by Metro in January 1996.            | Mandatory business recycling ordinance took effect 1/96. All commercial garbage customers received reporting forms in early 1996. City enforcement began 6/96. Yard debris added to list of commercial recycling services available. | Starting 1/96, all construction projects of \$25,000 or more must now recycle materials generated on job sites. Mandatory materials are rubble, land clearing debris, metals, corrugated and wood. Enforcement activities began 6/96. Over 500 Metro construction site recycling guides distributed through building permit center. | Wide variety of promotion and education including curbsider brochures, plastic bottle promotion, yard debris recycling, grasscycling, school presentations, neighborhood cleanups, commercial recycling promotions.             |
| <b>Clackamas County</b>  | Addition of curbside collection of scrap paper, aerosol cans and all plastic bottles 7/95. Exploring the selective mixing of recyclables to increase recovery.                                               | Several changes to collection have increased efficiency. Currently, 68% of multifamily residents have the opportunity to recycle.                                                                             | County in compliance. City of West Linn added weekly curbside collection 7/95.                                                                                                             | Began work on a packet of materials to be distributed to businesses to promote recycling and waste prevention. Flood slowed this effort.                                                                                             | Displays and handouts in building permit offices continue to generate builder interest. County working with haulers to address builders concerns about costs for recycling at construction sites.                                                                                                                                   | Wide variety of promotion and education including newsletters, flyers, displays, school programs, community organization presentations, and promotions at community events.                                                     |
| <b>Washington County</b> | Addition of curbside collection of, aerosol cans and all plastic bottles in most parts of the county 7/95. Phone books collected (seasonally 10/96-12/96) curbside and roadside throughout the county.       | Haulers continue to provide recycling services. Currently, 78% of multifamily residents have the opportunity to recycle; an 8% increase from last year. Seasonal phone book recycling made available on-call. | Every other week program combined with aggressive composting and grasscycling promotion has been found to meet regional standards. Testing /evaluation performed by Metro in January 1996. | Developed commercial recycling kit 12/95, over 200 kits distributed as of 6/96. Performed 439 business waste audits.                                                                                                                 | Recycling, salvage and recycled content being incorporated in the new county justice center. Provided construction site recycling workshop for all haulers and government members of the collective 06/96. Earth-Wise Building displays installed in five building permit centers throughout the county.                            | Wide variety of promotion and education including Waste Line newsletter, brochures, calendars, display racks, community events and recycling week, County Fair booth, Roar Fair, HHW collection, Christmas Tree recycling, etc. |

| Jurisdiction          | Single Family                                                                                           | Multi-Family                                                                                 | Yard Debris                                                                                    | Commercial Recycling                                                                                                                                                                                                                                                                       | Construction/Demolition                                                                                                                                                             | Promotion & Education                                                                                                                                                                                                                                                                                      |
|-----------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| East Multnomah County | Addition of curbside collection of phone books and all plastic bottles 7/95.                            | Haulers continue to provide recycling service. Currently 72% of MF complexes have recycling. | Weekly curbside collection is in compliance with regional standards.                           | Commercial program is being developed by newly hired commercial recycling coordinator.                                                                                                                                                                                                     | Cities ensured that construction site recycling occurred at both Fujitsu Electronics and LSI Logic. Earth-Wise Builders display installed in Greshams' building permit center 4/96. | Wide variety of promotion and education including: quarterly brochure to residential customers, multi-family education programs, spring clean-up event, yard debris and home composting information. Community events: Mt. Hood Medical Center's "one stop Kids Fair" and the Chambers' Vision 2000 event. |
| Troutdale             | Addition of curbside collection of all plastic bottles 7/95.                                            | 86% of MF complexes are provided with recycling collection systems.                          | Weekly curbside collection is in compliance with regional standards, annual collection event.  | 64% of businesses recycling at least one material, 33% two or more, 23% three or more, 19% four or more, 10% five or more. Promotion activities implemented.                                                                                                                               | Metro guides available at City Hall. Construction site recycling display was installed in the building permit center 7/95.                                                          | Wide variety of promotion and education materials including brochures, newsletters, etc.                                                                                                                                                                                                                   |
| Lake Oswego           | Addition of curbside collection of scrap paper and all plastic bottles 7/95-8/95.                       | 88% of the complexes have recycling collection services.                                     | Weekly curbside collection is in compliance with regional standards, annual collection event.  | Are working on implementing commercial plan fully.                                                                                                                                                                                                                                         | Permit center distributes Metro construction recycling guides.                                                                                                                      | Wide variety of promotion and education including coordinating joint publications with Clackamas County, brochures, City newsletter. Plastic bottle and scrap paper recycling promoted through mailing to all residential customers.                                                                       |
| Milwaukie             | Addition of curbside collection of all plastic bottles 7/95. Implemented a recycling-only service 7/95. | City has established recycling for 92% of multi-family complexes.                            | Weekly curbside collection is in compliance with regional standards, compost bin distribution. | Finished the 1st phase of commercial program; offered waste evaluations to 18% of all businesses. Targeted area strategy implemented. 75% of businesses in 1st target area have begun recycling. Commercial recycling packets updated- include BRAG information & Recycled Products Guide. | Permit center distributes Metro construction recycling guides. Earth-Wise Builders display installed in building permit center.                                                     | Wide variety of education and promotion including newsletter, brochures, mailings, displays, press releases, community events, Clackamas County Fair, etc.                                                                                                                                                 |

| Jurisdiction      | Buy Recycled                                                                                                                                                                                    | Technical Assistance                                                                                         | Funding                                                                                                 | Compliance with OAR 340                                            | Regional Coordination                                                                                                                                                                                       | Regional Program Planning                                                        |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Portland          | City has purchasing policy. Review conducted to increase recycled product purchasing.                                                                                                           | City provided technical assistance and expertise to other jurisdictions and Metro in several areas.          | 1994-95 Portland Solid Waste budget was \$2.3 million with a staff of 10. Funding from fees and grants. | In compliance with all applicable requirements of OAR Chapter 340. | City is an active partner in regional issues. Piloted curbside plastic recycling program, participated in BRAG, educational campaigns, compost bin sale events, etc.                                        | Actively participated in the development of RSWMP through SWAC and other forums. |
| Clackamas County  | Some resistance from purchasing, but good progress being made. Contract signed to purchase rerefined motor oil for county vehicles. Severe flooding made coordination of Buy Recycled difficult | County assisted Metro with Real Estate waste prevention project, grocery project and used motor oil project. | County funds 2.0 FTE one temporary FTE and office space and support for the Education Coordinator.      | In compliance with all applicable requirements of OAR Chapter 340. | County is an active partner in regional issues including BRAG, regional educational campaigns, Master Recycler Program, C&D recycling efforts, compost bin distribution, curbside plastics collection, etc. | Actively participated in the development of RSWMP through SWAC and other forums. |
| Washington County | All cities buy recycled materials, some have official policies.                                                                                                                                 | County assisted with YD study, MF research, YD facilities standards, targeted generator programs, etc.       | County administers funds for cities in the program, franchise fees and grants fund the programs.        | In compliance with all applicable requirements of OAR Chapter 340. | County is an active partner in regional issues including annual program planning, BRAG, YD facility standards, Green Schools, regional promotion campaigns, curbside YD collection study, etc.              | Actively participated in the development of RSWMP through SWAC and other forums. |

| Jurisdiction                        | Buy Recycled                                                                                                                                              | Technical Assistance                                                                           | Funding                                                    | Compliance with OAR 340                                            | Regional Coordination                                                                                                                            | Regional Program Planning                                                                                                   |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>East Multnomah County Cities</b> | City of Gresham buy recycled and procurement policy to be adopted 09/96.                                                                                  | Cities assisted with YD study, MF research, YD facility standards, etc.                        | Supported through city general fund and Metro grants.      | In compliance with all applicable requirements of OAR Chapter 340. | Cities are active partners in regional issues including annual program planning, BRAG, YD facility standards, regional promotion campaigns, etc. | Actively participated in the development of RSWMP through SWAC and other forums.                                            |
| <b>Troutdale</b>                    | City purchases a wide variety of recycled content supplies. City adopted a yard debris compost standard as alternative to hydroseeding.                   | City assisted with MF research, YD facility standards, MF zoning ordinance, etc.               | Supported through city funds and Metro grants.             | In compliance with all applicable requirements of OAR Chapter 340. | City is an active partner in regional issues including annual program planning, BRAG, regional promotion campaigns, YD facility standards, etc.  | City actively participated in SWAC meetings but has not had the resources to actively work on the development of the RSWMP. |
| <b>Lake Oswego</b>                  | City continues to purchase recycled content materials for offices and other facilities including 400-600 yards of yard debris compost purchased annually. | City worked with Metro in planning, research and implementation of pilot projects.             | City funds a staffing level of 1/2 FTE via franchise fees. | In compliance with all applicable requirements of OAR Chapter 340. | City is an active partner in regional issues including annual program planning, BRAG, regional promotion campaigns, YD facility standards, etc.  | City actively participated in SWAC meetings but has not had the resources to actively work on the development of the RSWMP. |
| <b>Milwaukie</b>                    | Have purchasing policy in place. Use recycled content materials whenever pricing allows.                                                                  | City has worked closely with Metro on several projects including C&D, organics, medical waste. | Program funded through Metro grants and franchise fees.    | In compliance with all applicable requirements of OAR Chapter 340. | City is an active partner in regional issues including annual program planning, BRAG, regional promotion campaigns, YD facility standards, etc.  | Actively participated in the development of RSWMP through SWAC and other forums.                                            |

\*These tables are a brief summary of tasks accomplished during the Year 6 Program (fiscal year 1995-96). Complete and detailed information is presented in the individual reports submitted to Metro by local jurisdictions.

**TABLE A-4 - 1995-66 METRO CHALLENGE GRANT ALLOCATIONS**

Updated: June 1995

| LOCAL GOVERNMENT              | 1994 POPULATION <sup>1</sup> | % OF METRO POPULATION | FY95-96 ALLOCATION <sup>2</sup> |
|-------------------------------|------------------------------|-----------------------|---------------------------------|
| <b>Washington (\$159,440)</b> |                              |                       |                                 |
| Unincorporated                | 172,851                      | 13.62%                | \$74,498                        |
| Beaverton                     | 61,085                       | 4.81%                 | \$26,327                        |
| Hillsboro                     | 44,045                       | 3.47%                 | \$18,983                        |
| Tigard                        | 33,730                       | 2.66%                 | \$14,537                        |
| Tualatin                      | 17,450                       | 1.37%                 | \$7,521                         |
| Forest Grove                  | 14,295                       | 1.13%                 | \$6,161                         |
| Cornelius                     | 6,550                        | 0.52%                 | \$2,823                         |
| Wilsonville                   | 9,680                        | 0.76%                 | \$4,172                         |
| Sherwood                      | 4,615                        | 0.36%                 | \$1,989                         |
| King City                     | 2,155                        | 0.17%                 | \$929                           |
| North Plains                  |                              |                       | \$500                           |
| Durham                        |                              |                       | \$500                           |
| Gaston <sup>3</sup>           |                              |                       | \$0                             |
| Banks <sup>3</sup>            |                              |                       | \$500                           |
| <b>Portland (\$227,163)</b>   |                              |                       |                                 |
| Uninc. Mult. County           | 495,090                      | 39.01%                | \$213,382                       |
| Gresham                       | 31,975                       | 2.52%                 | \$13,781                        |
| Wood Village                  | 74,625                       | 5.88%                 | \$32,163                        |
| Fairview                      | 2,950                        | 0.23%                 | \$1,271                         |
| Troutdale                     | 3,740                        | 0.29%                 | \$1,612                         |
| Maywood Park                  | 10,495                       | 0.83%                 | \$4,523                         |
|                               |                              |                       | \$500                           |
| <b>Clackamas (\$98,659)</b>   |                              |                       |                                 |
| Unincorporated                | 170,379                      | 13.42%                | \$73,433                        |
| Oregon City                   | 17,545                       | 1.38%                 | \$7,562                         |
| Gladstone                     | 11,325                       | 0.89%                 | \$4,881                         |
| West Linn                     | 18,860                       | 1.49%                 | \$8,129                         |
| Sandy                         | 4,520                        | 0.36%                 | \$1,948                         |
| Molalla                       | 3,915                        | 0.31%                 | \$1,687                         |
| Happy Valley                  | 2,365                        | 0.19%                 | \$1,019                         |
| Milwaukie                     | 19,930                       | 1.57%                 | \$8,590                         |
| Lake Oswego                   | 32,940                       | 2.60%                 | \$14,197                        |
| Estacada                      | 2,045                        | 0.16%                 | \$881                           |
| Johnson City                  |                              |                       | \$500                           |
| Rivergrove                    |                              |                       | \$500                           |
| <b>TOTAL</b>                  | <b>1,269,155</b>             | <b>100.00%</b>        | <b>\$550,000</b>                |

<sup>1</sup> Derived from July 1994 Population Estimates, Center for Population Research, PSU.

<sup>2</sup> Standard minimum allocation for FY 1995-96 is \$500.00

<sup>3</sup> Gaston did not participate in the 1992-93, 93-94 or 94-95 program, therefore no funds are allocated for FY 1995-96.

**TABLE A-5 - METRO LOCAL GOVERNMENT CLEAN-UP PROGRAM  
SUMMARY OF PARTICIPANTS  
FY1995-96**

| Jurisdiction   | Metro's Contribution | Total Costs         | Number of Housholds | AMOUNT RECYCLED    |                    |                 | AMOUNT DISPOSED (tons) |
|----------------|----------------------|---------------------|---------------------|--------------------|--------------------|-----------------|------------------------|
|                |                      |                     |                     | Yard Debris (tons) | Scrap Metal (tons) | Number of Tires |                        |
| Beaverton      | \$2,402.83           | \$4,851.37          | 185                 | 5.47               | 0                  | 0               | 0                      |
| Clackamas Cty  | \$7,114.83           | \$18,250.00         | unknown             | 0                  | 0                  | 465             | 28.36                  |
| Fairview       | \$162.88             | \$723.77            | unknown             | 0                  | 0                  | 0               | 0                      |
| Gresham        | \$2,931.83           | \$12,953.00         | 2800                | 149.5              | 0                  | 66              | 68                     |
| Happy Valley   | \$108.83             | \$316.48            | unknown             | 4                  | 0.15               | 65              | 4.5                    |
| Johnson City   | \$86.33              | \$1,806.25          | 280                 | 0                  | 1.5                | 129             | 21.73                  |
| Lake Oswego    | \$1,303.83           | \$3,887.78          | unknown             | 40                 | 0                  | 253             | 0                      |
| Maywood Park   | \$86.83              | \$1,150.00          | 100                 | 28.75              | 0                  | 0               | 0                      |
| Milwaukie      | \$795.33             | \$5,812.85          | 400                 | 60                 | 2.38               | 194             | 102.77                 |
| Multnomah Cty  | \$445.47             | \$890.94            | unknown             | 0                  | 0                  | 36              | 0.11                   |
| North Plains   | \$86.83              | \$538.38            | 55                  | 0                  | 0                  | 24              | 10                     |
| Oregon City    | \$701.83             | \$13,277.45         | 386                 | 0                  | 0                  | 785             | 111.56                 |
| Portland       | \$19,357.83          | \$43,885.19         | 3477                | 136.28             | 87.25              | 3031            | 312                    |
| Sandy          | \$193.83             | \$2,569.00          | 400                 | 10                 | 6.25               | 132             | 22.61                  |
| Troutdale      | \$426.83             | \$1,790.32          | 220                 | 47                 | 0                  | 0               | 0                      |
| Washington Cty | \$12,085.83          | \$24,203.41         | 549                 | 0                  | 36.09              | 0               | 73.55                  |
| Wood Village   | \$131.83             | \$652.00            | 86                  | 42                 | 1.01               | 0               | 0                      |
| <b>Totals</b>  | <b>\$48,423.80</b>   | <b>\$137,558.19</b> | <b>8,938.00</b>     | <b>523.00</b>      | <b>134.63</b>      | <b>5,180.00</b> | <b>755.19</b>          |

HOSS/RSWMP/R95-96/CLEANUP.TBL

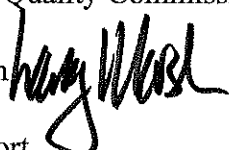


**TABLE A-7 - SUMMARY: FY 1995-96 METRO RECYCLING BUSINESS DEVELOPMENT GRANTS**

This is a selective matching grant program that provides essential financing for the development of innovative businesses that convert waste into new products. Grants can only be used to cover up to 50 percent of the direct monetary cost to implement projects, and at least 50 percent of the waste processed under a grant project must come from the Metro area.

| Company              | \$ Awarded | \$ Applicant is Committing | Project Summary                                                                                                                                                                                                                                                                                                                                                                                                  | Est. Tons of Targeted Material(s) Currently Disposed in Metro Area Annually. | Est. Annual Tonnage Impact on Metro Wastestream Within 5 Yrs. | Est. % Decrease in Metro Disposal of Targeted Material(s) Within 5 Yrs. | Other Solid Waste System Benefits                                                                                            |
|----------------------|------------|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|---------------------------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| NW EEE ZZZ Lay Drain | \$24,000   | \$53,100                   | A local, subsurface drainage system installation company founded in 1975 is purchasing apparatus to manufacture a patented, subsurface drainage system made using recovered expanded polystyrene plastic from commercial waste generators.                                                                                                                                                                       | 1,000                                                                        | 250                                                           | 25%                                                                     | Reduction of cross-contamination of other recyclable materials, particularly at MRFs.                                        |
| Re-Use-It            | \$37,500   | \$45,000                   | A local polyurethane foam recycling company has purchased equipment and made plant upgrades to enable it to densify and market polyethylene and polystyrene foam recovered from the Metro area. Products from this system are being sold to plastics manufacturers in Oregon and Washington as manufacturing feedstock.                                                                                          | 6,600                                                                        | 2,000                                                         | 30%                                                                     | Reduction of cross-contamination of other recyclable materials, particularly at MRFs.                                        |
| RB Rubber            | \$13,500   | \$60,000                   | A McMinnville-based molded rubber product manufacturer, wholesaler and retailer is buying an off-the-shelf machine for metering colored material into black rubber feedstock from tires to make colored resilient flooring for use in agricultural, athletic facility and other utility applications. This equipment will enable the grantee to expand its markets and increase the value-added to its products. | Tires are banned from landfills                                              | >4,800                                                        | N/A                                                                     | Diversifies limited markets for tires, thus helping to reduce the region's dependence on volatile tire derived fuel markets. |

Date: January 10, 1997

To: Environmental Quality Commissioners  
From: Langdon Marsh   
Subject: Director's Report

### **DEQ and Dept. of Agriculture Work on 401 Options**

A federal district court judge ruled in November that the US Forest Service must get state 401 Water Quality Certification before issuing or renewing grazing permits for 1997. This ruling may be appealed, but to date there has been no action or stay. Therefore DEQ and ODA are working jointly to develop and general or "universal" 401 Certification we can provide for people requesting grazing permits. Ag will take the lead in developing conditions. We expect about 30 permit renewal requests to come in early this year, but the USFS has more than 500 permits outstanding. The current proposed approach would be through an emergency rule process we hope to have in place by late February. Longer term, assuming the ruling stands, will require close coordination with the Forest Service.

### **Kinross Court Case Continues**

A Multnomah County Circuit Court judge has denied the State motion to dismiss in the Kinross v. State of Oregon suit regarding the permit denial. The case will go forward for summary judgment with motions expected by spring.

### **Talent Irrigation District Settlement Discussions Underway**

DEQ representatives scheduled a meeting with TID representatives in December for settlement discussions regarding a May, 1996, pesticide spill into Bear Creek near Medford. ODFW estimated loss of 92,000 fish and filed a natural resource damage claim against TID as apparent responsible party for \$356,000. DEQ also issued a \$50,000 penalty.

The December meeting got a rough start when a quorum of the TID board and a newspaper reporter arrived to participate in the discussion. DEQ staff informed them that this was not an announced public meeting, but a discussion about resolution of ongoing litigation. Ultimately, the board members and reporter left and discussion continued with TID manager and attorneys. No agreement reached. A subsequent article by the reporter mentioned the public meeting misunderstanding and also highlighted the TID desire to merge the two agency penalties into one discussion.

TID representatives will meet with the ODFW assistant AG later this month to discuss settlement. A DEQ representative will attend, but this does not mean we have decided to merge the two claims. He will monitor the conversation, however, and stay alert for options they may lead to a combined settlement.

### **303 (d) List Amendments Nearly Complete, Outreach Effort Grows**

We hope to have the amended 303(d) list submitted to EPA by the end of this month, and we now turn additional attention to outreach on related issues. It's clear that confusion about the temperature standard is one issue we must continue to deal with. We now plan to conduct an ongoing series of "forums" to discuss temperature standard concerns and questions as well as other issues that may come up. The first forum is tentatively scheduled for February 19 and will be broadcast over EdNet so we can encourage participation statewide in a moderated panel discussion.

We expect funding discussions on the Governor's Healthy Streams and Coastal Salmon programs to come early in the session. These discussions would include the 19 new FTE proposed for DEQ. The beverage tax funding base has not received universal support.

### **Legislation**

I've attached the final list of agency legislation that will be introduced. The number is down considerably from the original concept list. The NPS Tax Credit, for example, did not make the cut during the Dept. of Administrative Services review process. I've also attached a list of committee chairs for your information. Once again, I remind you that your assistance will be appreciated during the legislation.

### **Netherlands Trip Offers Insights**

I learned a great deal on a recent three-day tour of The Netherlands. There will be opportunities to translate some of the environmental management and regulation approaches they use to our needs. That said, I also gained appreciation of how much better off we actually are than a country where there really is no "natural" environment left.

The trip was also time well spent with Oregon government and industry representatives where we all focused our attention on innovation. This agency continues to work toward incentive-based options for future environmental regulation such as the so-called "Green Permits" and the Environmental Stewardship Project. We may see some industry-introduced legislation this session that brings discussion of such approaches to a more visible level.

### **Composting Facility Rules**

We have extended the comment deadline on this rulemaking process to May 2, 1997. This will give us additional time to work with people who commented during the hearings or in writing in November. Two primary issues that came out of the public review process included how the

proposed rules would affect on-farm composting, and how the proposed solid waste rules would mesh with existing water quality rules. We will be meeting with interested parties on these and other issues over the next few months. Tentative EQC action would be in July, 1997.

### **House Committees**

#### **Ways and Means Subcommittee on**

##### **Natural Resources:**

Denny Jones, Chair (R)  
Larry Sowa (D)  
Ken Messerle (R)  
Terry Thompson (D)  
Ben Westlund (R)

#### **Ag. and Natural Resources**

Starr, Chair  
Thompson, Vice-Chair  
Luke  
Messerle  
Schrader  
Wells  
Uherbelau

#### **Energy and Environment**

Leslie Lewis, Chair  
Shields, Vice-Chair  
Fahey  
Lehman  
Luke  
Simmons  
Welsh

#### **Water Policy**

Messerle, Chair  
Josi, Vice-Chair  
Bowman  
Corcoran  
Harper  
Kruse  
Welsh

### **Senate Committees**

#### **Agriculture and Natural Resources**

Sen. Bob Kintigh - Chair  
Sen. Bill Fisher - Vice-Chair  
Sen. Bill Dwyer  
Sen. Ted Ferrioli  
Sen. Gary George  
Sen. Veral Tarno  
Sen. Thomas Wilde

#### **Trade and Economic Development Committee**

Sen. John Lim - Chair  
Sen. Joan Dukes - Vice-Chair  
Sen. Bill Fisher  
Sen. Gary George  
Sen. Avel Gordly  
Sen. Marylin Shannon

#### **Water and Land Use Committee**

Sen. Veral Tarno - Chair  
Sen. Bob Kintigh - Vice-Chair  
Sen. Ginny Burdick  
Sen. Ted Ferrioli  
Sen. Bill Fisher  
Sen. Dave Nelson  
Sen. Thomas Wilde

#### **Ways and Means Committee (Full)**

Sen. Gene Timms - Co-Chair  
Sen. Lenn Hannon  
Sen. Jeannette Hamby  
Sen. John Lim  
Sen. Randy Miller  
Sen. Eileen Qutub  
Sen. Shirley Stull  
Sen. Mae Yih

#### **Sub-Natural Resources Committee**

Sen. Bill Dwyer  
Sen. Ted Ferrioli  
Sen. Bob Kintigh

## DEQ Legislative Concepts 1997

### General

#### **Environmental Receipts Authority**

**HB 2120**

Gives the Department authority to receive a fee to perform a service that is outside the regular pattern of business or that is an unfunded activity. Examples would be 401 certification for a large dredge and fill project or a low priority TMDL.

#### **Sanitarians Registration Board**

**SB 185**

Exempts DEQ staff, except those in the on-site sewage program, from requirements of the Sanitarians Registration Board.

### Water Quality

#### **Emergency Fee Waivers**

**HB 2177**

Give the Environmental Quality Commission authority to waive fees related to septic tanks in a declared "state of emergency."

#### **WPCF Permits**

**HB 2178**

Remove the requirement for five year renewal for Water Quality WPCF permits. The renewal time would be set by rule. Require review at certain periods with possible reopener when needed such as following an enforcement action. Assess a fee for review to make the proposal revenue neutral.

### Air Quality

#### **Golf Cart Exemption for Vehicle Test**

**LC 820**

Exempt golf carts and all terrain vehicles from emissions testing. DMV will not issue registrations without a DEQ certificate and DEQ does not have facilities to test golf carts.

#### **Modify Vehicle Test Fee**

**LC 825**

Modify the fee requirement to allow collection of a fee for each vehicle test performed. Currently a fee is charged only when the Certificate of Compliance is issued, cars that fail the test are not charged. DEQ may wish to charge on a per test basis in whole or in part for the new enhanced test.

## **Waste Management and Cleanup**

### **Underground Tanks**

**SB 145**

Increases tank fee to pay for existing staff and program. Require heating oil tanks to be emptied of oil when changing to another heat source.

### **Toxic Use Reduction Program/Hazardous Waste Fees**

**SB 146**

Allows recovery of costs for specific activities such as TSD permitting and modification, corrective actions, and recycling determinations. Updates Toxic Use Reduction Law to allow flexibility in planning and reporting.

### **Recycling Program Modification**

**SB 144**

Changes state law in the following areas: local recycling program elements and recovery rates, commercial recycling, recovery rate reporting, markets development, and education.

### **Spill Prevention and Response Improvements and Fee Increase**

**HB 2114**

Increases specific fees on vessels and coastal facilities that handle oil to pay for existing spill planning staff. Adds "prevention" to statutes governing oil spill planning and response.