

HRS DOCUMENTATION RECORD—REVIEW COVER SHEET

Name of Site: Taylor Lumber and Treating

Contact Persons:

Integrated Assessment: Ecology and Environment, Inc.

Documentation Record: Mark Ader, U.S. Environmental Protection Agency, Seattle
Tara Karamas, Ecology & Environment, Inc., Seattle

Pathways, Components, or Threats Not Evaluated

The ground water migration pathway, and ground water-to-surface water component of the surface water migration pathway, were not included in the Hazard Ranking System (HRS) evaluation. These pathways/components were not included because a release to these media does not significantly affect the overall site score and because the overland/flood component of the surface water migration pathway, the soil exposure pathway, and the air migration pathway produce an overall site score well above the minimum required for the site to qualify for inclusion on the National Priorities List. These pathways are of concern to the U.S. Environmental Protection Agency (EPA) and may be evaluated during future investigations.

Site Summary

The Taylor Lumber and Treating (TLT) site is an active wood processing and treating business located approximately 1 mile west of Sheridan, Oregon. The wood treating facility began operating in autumn 1966. The wood treating facility's primary functions are to condition and pressure-treat wood products with preservatives in order to prolong the useful life of the products. Wood products treated at the facility include lumber, poles, pilings, posts, railroad ties, and plywood. Wood preserving chemicals, which historically have been used at this facility and are still in use, include petroleum-based creosote and pentachlorophenol (PCP) solutions. The wood treating chemicals are stored in aboveground storage tanks (ASTs) located in two separate tank farms. On February 26, 1999, EPA responded to a discharge of approximately 3,500 gallons of 5-percent PCP-enriched P-9 oil from the P-9 tank farm. An oily sheen was observed on the South Yamhill River during this incident. Then on September 10, 1999, START responded to a spill of approximately 27,448 gallons of reclaimed creosote and wastewater from the P-9 tank farm. The majority of the spilled creosote and wastewater was contained within the tank farm's secondary containment structure. However, a breach in the secondary containment was discovered when creosote oil was observed in the Rock Creek Road ditch. Product was observed to have flowed to within 100 feet of State Highway 18B before it stopped.

Stormwater runoff from the site is collected in a series of catch basins, storm drains, and ditches and is channeled to four outfalls (Nos. 001, 002, 003, and 005) under a National Pollutant Discharge Elimination System (NPDES) permit (No. 87487) that limits oil and grease, arsenic, copper, zinc, and PCP concentrations. All four outfalls discharge to drainage ditches that in turn discharge to the South Yamhill River. Sediment samples were collected at each of the four NPDES outfalls. Analytical results revealed the presence of several contaminants at significant concentrations. The following were detected at each of the

outfalls: up to 10 semivolatile organic compounds (SVOCs), including pentachlorophenol and pyrene; and several inorganics including, arsenic, copper, lead, and zinc. These substances were detected at concentrations meeting observed release criteria.

In June and August 1999, EPA conducted an Integrated Assessment (IA) of the Taylor Lumber and Treating facility. The IA was conducted in two phases. Phase I of the IA field sampling event was conducted from May 16 through June 11, 1999, and included surface and subsurface soil sampling, ground water sampling, surface water, and sediment sampling. Phase II of the IA consisted of an air-sampling event which was conducted from August 18 through August 30, 1999. Results of the IA documented the presence of several on-site sources of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substances including volatile organic compounds (VOCs), SVOCs, polychlorinated biphenyls (PCBs), metals, and dibenzo-p-dioxins/dibenzofurans (dioxins/furans). Further, many of these hazardous substances were documented to have migrated to surface water, soil, and air targets. Air contamination is documented up to 1 mile from the site. Actual contamination has also been documented in residential surface soils for up to a ½ mile of the site. Contaminants include barium, lead, mercury, zinc, cadmium, pyrene, bis(2-ethylhexyl)phthalate, and several dioxins.

HRS DOCUMENTATION RECORD

Name of Site: Taylor Lumber and Treating

EPA CERCLIS No.: ORD009042532

EPA Region: 10

Date Prepared: September 28, 2000

Street Address of Site: 22100 Southwest Rock Creek Road
Sheridan, Oregon 97378

County and State: Yamhill/Oregon

Topographic Map: Sheridan, Oregon Quadrangle, 7.5 Minute Series

Latitude: 45° 05' 50.0" North Longitude: 123° 25' 37" West
(reference point: the southeast corner of the largest site building, as depicted on the USGS topographic map)

Scores

Ground Water Pathway	0.00
Surface Water Pathway	100.00
Soil Exposure Pathway	24.73
Air Pathway	100.00
HRS SITE SCORE	71.78

SURFACE WATER OVERLAND FLOW/FLOOD MIGRATION COMPONENT SCORESHEET

SURFACE WATER OVERLAND FLOW/FLOOD MIGRATION COMPONENT Factor Categories and Factors DRINKING WATER THREAT		Maximum Value	Value Assigned
Likelihood of Release			
1.	Observed Release	550	550
2.	Potential to Release by Overland Flow		
2a.	Containment	10	0
2b.	Runoff	25	0
2c.	Distance to Surface Water	25	0
2d.	Potential to Release by Overland Flow (lines 2a)	500	0
3.	Potential to Release by Flood		
3a.	Containment (Flood)	10	0
3b.	Flood Frequency	50	0
3c.	Potential to Release by Flood (lines 3a x 3b)	500	0
4.	Potential to Release (lines 2d+3c)	500	0
5.	Likelihood of Release	550	550
Waste Characteristics			
6.	Toxicity/Persistence	*	10,000
7.	Hazardous Waste Quantity	*	100
8.	Waste Characteristics	100	32
Targets			
9.	Nearest Intake	50	50
10.	Population		
10a.	Level I Concentrations	**	21,320
10b.	Level II Concentrations	**	0
10c.	Potential Contamination	**	0
10d.	Population (lines 10a+10b+10c)	**	21,370
11.	Resources	5	5
12.	Targets (lines 9+10d+11)	**	21,375
13.	DRINKING WATER TARGETS SCORE	100	100

* Maximum value applies to waste characteristics category

** Maximum value not applicable

SURFACE WATER OVERLAND FLOW/FLOOD MIGRATION COMPONENT SCORESHEET

SURFACE WATER OVERLAND FLOW/FLOOD MIGRATION COMPONENT Factor Categories and Factors HUMAN FOOD CHAIN THREAT	Maximum Value	Value Assigned
Likelihood of Release		
14. Likelihood of Release (same value as line 5)	550	550
Waste Characteristics		
15. Toxicity/Persistence/Bioaccumulation	*	5 x 10 ⁸
16. Hazardous Waste Quantity	*	100
17. Waste Characteristics	1,000	320
Targets		
18. Food Chain Individual	50	45
19. Population		
19a. Level I Concentrations	**	0
19b. Level II Concentrations	**	0.03
19c. Potential Human Food Chain Contamination	**	0
19d. Population (lines 19a+19b+19c)	**	0.03
20. Targets (lines 18+19d)	**	45.03
HUMAN FOOD CHAIN THREAT SCORE	100	96.06

* Maximum value applies to waste characteristics category

** Maximum value not applicable

SURFACE WATER OVERLAND FLOW/FLOOD MIGRATION COMPONENT SCORESHEET

SURFACE WATER OVERLAND FLOW/FLOOD MIGRATION COMPONENT Factor Categories and Factors ENVIRONMENTAL THREAT	Maximum Value	Assigned Value
Likelihood of Release		
22. Likelihood of Release (same as line 5)	550	550
Waste Characteristics		
23. Ecosystem Toxicity/Persistence/Bioaccumulation	*	5 x 10 ⁸
24. Hazardous Waste Quantity	*	100
25. Waste Characteristics	1,000	320
Targets		
26. Sensitive Environments		
26a. Level I Concentrations	**	0
26b. Level II Concentrations	**	325
26c. Potential Contamination	**	0.05
26d. Sensitive Environments (lines 26a+26b+26c)	**	325.05
27. Targets	**	325.05
28. ENVIRONMENTAL THREAT SCORE	60	60.00
29. WATERSHED SCORE	100	100.00
30. SURFACE WATER OVERLAND FLOW/FLOOD COMPONENT SCORE	100	100.00

* Maximum value applies to waste characteristics category

** Maximum value not applicable

SOIL EXPOSURE PATHWAY SCORESHEET

SOIL EXPOSURE PATHWAY Resident Population Threat	Maximum Value	Value Assigned
Likelihood of Exposure		
1. Likelihood of Exposure	550	550
Waste Characteristics		
2. Toxicity/Persistence	*	10,000
3. Hazardous Waste Quantity	*	100
4. Waste Characteristics	100	32
Targets		
5. Resident Individual	50	50
6. Resident Population		
6a. Level I Concentrations	**	55.4
6b. Level II Concentrations	**	5.54
6c. Resident Population (lines 6a+6b)	**	60.94
7. Workers	15	5
8. Resources	5	0
9. Terrestrial Sensitive Environments	**	0
10. Targets (lines 5+6c+7+8+9)	**	115.94
11. RESIDENT POPULATION THREAT SCORE (lines 1 x 4 x 10/82,500)	100	24.73
22. SOIL EXPOSURE PATHWAY SCORE	100	24.73

* Maximum value applies to waste characteristics category

** Maximum value not applicable

AIR MIGRATION PATHWAY SCORESHEET

AIR MIGRATION PATHWAY	MAXIMUM VALUE	VALUE ASSIGNED
Likelihood of Release		
1. Observed Release	550	550
2. Potential to Release:		
2a. Gas Potential to Release	500	0
2b. Particulate Potential to Release	500	0
2c. Potential to Release (higher of lines 2a and 2b)	500	0
3. Likelihood of Release	550	550
Waste Characteristics		
4. Toxicity/Persistence	*	2,000
5. Hazardous Waste Quantity	*	100
6. Waste Characteristics	100	18
Targets		
7. Nearest Individual	50	50
8. Population		
8a. Level I Concentrations	**	2,115.7
8b. Level II Concentrations	**	240.99
8c. Potential Contamination	**	3.3
8d. Population (lines 8a+8b+8c)	**	2,359.99
9. Resources	5	0
10. Sensitive Environments		
10a. Actual Contamination	**	550
10b. Potential Contamination	**	0.2
10c. Sensitive Environments (lines 10a+10b)	**	500
11. Targets (lines 7+8d+9+10c)	**	2,909.99
12. AIR MIGRATION PATHWAY SCORE (lines 3x6x11)/82,500	100	100

* Maximum value applies to waste characteristics category

** Maximum value not applicable

WORKSHEET FOR COMPUTING HRS SITE SCORE

	S	S ²
1. Ground Water Migration Pathway Score (S _{GW})	Not Scored	0
2a. Surface Water Overland Flow/Flood Component (from HRS Table 4-1, line 30)	100.00	
2b. Ground Water to Surface Water Migration Component (from HRS Table 4-25, line 28)	Not Scored	
2c. Surface Water Migration Pathway Score (S _{SW}) Enter the larger of lines 2a and 2b as the pathway score	100.00	10,000.00
3. Soil Exposure Pathway Score (S _s)	24.73	611.57
4. Air Migration Pathway Score (S _a) (from HRS Table 6-1, line 12)	100.00	10,000.00
5. Total of S _{GW} ² + S _{SW} ² + S _s ² + S _A ²		20,611.57
6. HRS Site Score. Divide the value on line 5 by 4 and take the square root.	71.78	

REFERENCES

Reference

- | # | <u>Description of References</u> |
|---|--|
| 1 | <i>Federal Code of Regulations (CFR)</i> , Title 40, Part 300, Appendix A, Hazard Ranking System, 135 pages. |
| 2 | U.S. Environmental Protection Agency (EPA), June 1996, Superfund Chemical Data Matrix, EPA/540/R-96/028, Publication 9345.1-21, 24 pages. |
| 3 | U.S. Geological Survey (USGS), 1992 (revised from 1956), 7.5-Minute Series Quadrangle, Sheridan, Oregon; 1992 (revised from 1956), 7.5-Minute Series Quadrangle, Ballston, Oregon; 1979, 7.5-Minute Series Quadrangle, Grand Ronde, Oregon; 1979, 7.5-Minute Series Quadrangle, Niagara Creek, Oregon; 1992 (revised from 1979), 7.5-Minute Series Quadrangle, Stony Mountain, Oregon; 1992 (revised from 1979), 7.5-Minute Series Quadrangle, Muddy Valley, Oregon. |
| 4 | Ecology and Environment, Inc., May 1999 through August 1999, Field Logbooks (A through S) for the Taylor Lumber and Treating Integrated Assessment, Sheridan, Oregon, Logbook A, 49 pages; Logbook B, 36 pages; Logbook C, 101 pages; Logbook D, 45 pages; Logbook E, 49 pages; Logbook F, 45 pages; Logbook G, 3 pages; Logbook H, 48 pages; Logbook I, 21 pages; Logbook J, 49 pages; Logbook K, 17 pages; Logbook L, 49 pages; Logbook M, 16 pages; Logbook N, 43 pages; Logbook O, 11 pages; Logbook P, 10 pages; Logbook Q, 38 pages; Logbook R, 14 pages; Logbook S, 48 pages. |
| 5 | Ecology and Environment, Inc., July, 2000, Chain-of-Custody forms for the Taylor Lumber and Treating Integrated Assessment, Sheridan, Oregon, 282 pages. |
| 6 | Ecology and Environment, Inc., August 1999, Air Sampler Tracking Forms for the Taylor Lumber and Treating Integrated Assessment, Sheridan, Oregon, 49 pages. |
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| 8 | Ecology and Environment, Inc., July 2000, Integrated Assessment Report for the Taylor Lumber and Treating site, Sheridan, Oregon, 5107 pages. |
| 9 | Maul Foster & Alongi, Inc., April 1997, <i>Draft Phase I RCRA Facility Investigation Final Report, Taylor Lumber and Treating, Inc., Sheridan, Oregon</i> , USEPA ID No. ORD-009-04-2532, Civil Action No. 93-858-JO, USEPA Docket No. 10-94-0244 RCRA (Administrative Order on Consent), prepared for Taylor Lumber and Treating, Inc., Sheridan Oregon, 1183 pages. |

- 10 Ecology and Environment, Inc. (E & E), March 1990, *Listing Site Inspection for Taylor Lumber and Treating, Inc.*, TDD No. F108904-004, prepared for the EPA, Region 10, Seattle, Washington, 886 pages.
- 11 National Wetlands Inventory, 1994, 15-Minute Quadrangle, Ballston, Oregon; 1975, 15-Minute Quadrangle Grand Ronde, Oregon; 1976, 15-Minute, 1:62,500 scale Quadrangle Sheridan, Oregon; 1994, 15-Minute 1:24,000 scale Quadrangle Sheridan, Oregon.
- 12 U.S. Environmental Protection Agency, November 1996, *Using Qualified Data to Document an Observed Release and Observed Contamination*, OSWER 9285.7-14FS, 18 pages.
- 13 Oregon Department of Environmental Quality, January 1998, *Renewal of Air Contaminant Discharge Permit No. 36-7004*; Application No. 016613, Salem, Oregon, 26 pages.
- 14 Ecology and Environment, Inc., April 1999, *Taylor Lumber and Treating, Inc., Emergency Response Trip Report*, by the START under Contract No. 68-W6-0008, TDD No. 99-02-0021, prepared for the EPA, Region 10, Seattle, Washington, 26 pages.
- 15 Ecology and Environment, Inc., May 17, 1999, *Taylor Lumber and Treating, Inc., Sampling and Quality Assurance Plan*, by the START under Contract No. 68-W6-0008, Technical Directive Document (TDD) No. 99-03-0006, prepared for the U.S. Environmental Protection Agency (EPA), Region 10, Seattle, Washington, 593 pages.
- 16 Oregon State University (OSU), 1999, *Government Information Sharing Project*, University Information Services, Yamhill County Query, website <http://govinfo.kerr.orst.edu/stateis.html>, 3 pages.
- 17 Campos, Terry, 1999, Conservation Information Assistant, Oregon Natural Heritage Program, letter to Jeryl Kolb, Ecology and Environment, Inc., Seattle, Washington, 4 pages.
- 18 Bennett, Don, November 23, 1999, Northwest District Biologist, Oregon Department of Environmental Quality (ODEQ), personal communication with Lilin Li, Ecology and Environment, Inc., Seattle, Washington, 1 page.
- 19 Ecology and Environment, Inc., September 1999, *Emergency Response to Taylor Lumber and Treating, Inc.*, by the START under Contract No. 68-W6-0008, for the U.S. Environmental Protection Agency (EPA), Region 10, Seattle, Washington, 49 pages.
- 20 Ecology and Environment, Inc., August through September 1999, *Conversions for Air Sample Analytical Results (m³/min to an in-air concentration)*, Seattle, Washington, 224 pages.
- 21 U.S. Geologic Survey (USGS), 1999, *Historical Streamflow Daily Values for the South Yamhill*

River at McMinnville, Oregon (14194150), 3 pages.

- 22 Cowarden, Lewis, et. al., 1979, *Classification of Wetlands and Deepwater Habitats of the United States*, U.S. Fish and Wildlife Service, Northern Prairie Wildlife Research Center, Jamestown, North Dakota, 181 pages.
- 23 Oregon Department of Environmental Quality, February 22, 1995, *Taylor Lumber and Treating National Pollutant Discharge Elimination System Waste Discharge Permit*, 13 pages.
- 24 Ecology and Environment, Inc., January 2000, *Population Calculations for 0 to 4 miles from the Taylor Lumber and Treating site*, Sheridan, Oregon, 1 page.
- 25 Woodke, Mark, Ecology and Environment, Inc., September 2000, memorandum to Tara Karamas, Ecology and Environment, Inc., regarding the calculation of sample quantitation limits, 2 pages.
- 26 Wong, Amber, United States Environmental Protection Agency, September 26, 2000, memorandum to David Evans, United States Environmental Protection Agency, regarding a request for waiver of RCRA deferral for the Taylor Lumber and Treating site, 8 pages.
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SOURCE DESCRIPTION

2.2 SOURCE CHARACTERIZATION

Name and Description of the Source: Source 1 - Contaminated Soil

The Treatment Plant Facility (approximately 570 feet by 800 feet) includes the P-9 oil and ABC creosote tank farms, a peeler, retorts, drip pads, an evaporator, a spray pond, a shop, a solid PCP storage shed, and the old equipment storage area (Ref. 8, p. 6-2). The total area of exposed soil in this facility is approximately 300,000 square feet (Ref. 8, p. 6-2).

During the IA, a total of 27 surface soil and 108 subsurface soil samples were collected from 27 boreholes (TP-01 through TP-27) drilled in approximately 100-foot intervals in the Treatment Plant Facility area (Ref. 8, pp. 3-2, 6-2, and Figure 3-1). Boreholes were drilled to a maximum depth of 26 feet, and samples were collected from surficial soils (TP-01-SS-00 through TP-27-SS-00) and subsurface soils (TP-01-SB-04 through TP-27-SB-11) in 2-foot intervals (Ref. 8, pp. 6-2). In each borehole, both surface and subsurface soil samples were collected (Ref. 8, p. 3-2). Both surface and subsurface soil samples were collected using a dedicated acetate liner threaded into a nondedicated stainless steel GeoProbe™ soil sampler (Ref. 8, p. 3-2). The liner was removed from the sampler, and samples were extracted from the liner using dedicated stainless steel spoons (Ref. 8, p. 3-2). The GeoProbe™ soil sampler was decontaminated between sampling locations (Ref. 8, p. 3-2).

Further, surface soil samples OS-06-SS through OS-10-SS were collected using dedicated stainless steel spoons and bowls along the southern boundary of the Treatment Plant Facility area adjacent to a ditch next to Highway 18B and surface soil sample OS-11-SS was collected along the eastern boundary of the Treatment Plant Facility area adjacent to the Rock Creek Road ditch (Ref. 8, pp. 3-2, 3-3, 6-7 and Figure 3-1).

Visibly contaminated soil, odors, and elevated organic vapors were prevalent throughout this area (Ref. 8, p. 6-3). Visible oil (non-aqueous phase liquid [NAPL]) was observed in 13 subsurface soil samples collected from seven boreholes (TP-12, TP-14, TP-15, TP-16, TP-18, TP-19, and TP-26) at depths ranging from 6 to 20 feet bgs (Ref. 8, p. 6-3 and Table 3-1). The extent of NAPL observed in subsurface soils by EPA was similar to that observed by consultants for TLT during a Resource Conservation and Recovery Act (RCRA) Facility Investigation (FI) in 1996 (Ref. 8, p. 6-3 and Figure 3-3; Ref. 9, p. 64). The extent of NAPL in subsurface soils appears to encompass an area of approximately 125,000 square feet (250 feet by 500 feet) with an average thickness of approximately 4 feet (Ref. 8, p. 6-3). Based on these observations, the total volume of NAPL-impacted subsurface soils is approximately 18,500 cubic yards (Ref. 8, p. 6-3).

Samples were analyzed in varying combinations for VOCs (EPA Contract Laboratory Program Analytical Service [CLPAS] Method OLM03.2), low concentration SVOCs (Modified EPA Method 8270), pest/PCBs (EPA CLPAS Method OLM03.2), Target Analyte List (TAL) metals (EPA CLPAS Method ILM04.0), and

dioxins/furans (EPA Method 8290) (Ref. 8, pp. 3-6, 3-7, 3-13 through 3-23, and 4-1).

Sampling methods followed the standard operating procedures (SOP) contained in Appendix B of the SQAP (Ref. 8, p. 3-2; Ref. 15, Appendix B). Grass, leaves, and other vegetative material, rocks, and other debris unsuitable for analysis were removed from samples before they were placed into sample containers (Ref. 8, p. 3-2). The portion of each sample being collected for VOC analysis was placed directly into a sample container without homogenization efforts (Ref. 8, p. 3-2). Sample material for all other analyses was homogenized in dedicated stainless steel bowls prior to containerization (Ref. 8, p. 3-2). Dedicated stainless steel spoons and scoops were used to extract, homogenize, and place sampled material into sample containers (Ref. 8, p. 3-2). For samples submitted for dioxin/furan analysis, stainless steel spoons and bowls were pre-washed with hexane (Ref. 8, p. 3-2). All samples were stored on ice in coolers continuously maintained under chain of custody (Ref. 5; Ref. 7; Ref. 8, p. 3-2).

Location of the source, with reference to the site:

The source is located in the West Facility in the Treatment Plant Facility area and is defined by exposed soil areas using sample points TP-01 through TP-27, and points OS-06 through OS-11 (Ref. 8, Figure 3-1).

Containment

Release to Surface Water Via Overland Migration and/or Flood:

The source consists of exposed contaminated soils and, hence, does not have a maintained engineered cover (Ref. 8, p. 6-2). In addition, the containment for the retorts was observed by EPA to contain large cracks (Ref. 4, Logbook B, p. 15). Stormwater in the southern portion of the Treatment Plant Facility discharges via outfall No. 001 to the Southwest Rock Creek Road ditch after passing through a series of oil/water separators (Ref. 8, p. 7-3 and Figure 3-4; Ref. 23). Stormwater in this northern portion of this facility also discharges to the Southwest Rock Creek Road ditch via NPDES outfalls No. 002 and 003 (Ref. 8, pp. 7-3 and Figure 3-4; Ref. 23). The Southwest Rock Creek Road ditch discharges to the South Yamhill River south of the site (Ref. 8, pp. 2-4, 2-5, and Figure 3-4). Between 1994 and 1996, TLT violated discharge levels during several months for every established parameter (Ref. 27).

Gas Release to Air

The source consists of exposed contaminated soils and, hence, does not have a maintained engineered cover (Ref. 8, p. 6-2). On-site soils were observed to be blowing and creating dust while the EPA was on site (Ref. 8, Appendix C, photograph 7.11).

Particulate Release to Air

The source consists of exposed contaminated soils and, hence, does not have a maintained engineered cover (Ref. 8, p. 6-2). On-site soils were observed to be blowing and creating dust while the EPA was on site (Ref. 8, Appendix C, photograph 7.11).

2.4.1 Hazardous Substances

During the IA, several background surface and subsurface soil samples were collected (Ref. 8, pp. 5-3 and 5-4, and Table 3-1). As a conservative measure of on-site contamination, only source sample results that were significant when compared to the background surface soil samples (as per observed release criteria for chemical analysis [Ref. 1, p. 51539]) were used in this documentation record. Further, source soil sample results from the Treatment Plant Facility were compared to the highest concentration per analyte for all background soil samples, regardless of sample depth or sample characteristics when determining whether a concentration was significant. The background soil samples used are WP-07-SS-00, BG-02-SS-00, BG-02-SB-02, BG-02-SB-04, BG-02-SB-06, BG-02-SB-08, BG-02-SB-10, BG-02-SB-12, BG-02-SB-14, BG-02-SB-16, and BG-02-SB-18 (Ref. 8, p. 5-4, Appendix E). Samples documenting significant concentrations of hazardous substances relative to background samples using the above techniques are listed in Table 1.

Table 1		
HAZARDOUS SUBSTANCES IN CONTAMINATED SOILS TREATMENT PLANT FACILITY		
Hazardous Substance	Sample Numbers	Reference (Page Number from Ref. 8)
Arsenic	TP-07-SS-00, TP-12-SS-00*, OS-09-SS*, OS-10-SS	pp. 6-19, 6-43
Cobalt	OS-06-SS, OS-08-SS, OS-09-SS, OS-10-SS, OS-11-SS	p. 6-43
Mercury	OS-09-SS	p. 6-43
2-Methylnaphthalene	TP-05-SS-00, TP-15-SS-00, TP-14-SB-04, TP-18-SB-10, TP-14-SB-13, TP-15-SB-13, TP-19-SB-14, OS-07-SS	pp. 6-19, 6-20, 6-21, 6-43
Acenaphthene	TP-15-SS-00, TP-14-SB-04, TP-18-SB-10, TP-14-SB-13, TP-15-SB-13, TP-19-SB-14	pp. 6-19, 6-20, 6-21
Acenaphthylene	TP-14-SB-13, TP-15-SB-13, TP-19-SB-14, OS-10-SS	pp. 6-21 and 6-43
Anthracene	TP-11-SS-00, TP-14-SB-04, TP-03-SB-06, TP-18-SB-10, TP-14-SB-13, TP-15-SB-13, TP-19-SB-14, OS-09-SS*, OS-10-SS	pp. 6-19, 6-20, 6-21, 6-43
Benzo(a)anthracene	TP-05-SS-00, TP-11-SS-00, TP-12-SS-00, TP-25-SS-00, TP-14-SB-04, TP-03-SB-06, TP-18-SB-10*, TP-14-SB-13, TP-15-SB-13, TP-19-SB-14, OS-09-SS, OS-10-SS	pp. 6-19, 6-20, 6-21, 6-43
Benzo(a)pyrene	TP-12-SS-00, TP-19-SS-00, TP-25-SS-00, TP-14-SB-04, TP-03-SB-06, TP-18-SB-10*, TP-14-SB-13, TP-15-SB-13*, TP-19-SB-14, OS-08-SS, OS-09-SS, OS-10-SS	pp. 6-19, 6-20, 6-21, 6-43

Table 1		
HAZARDOUS SUBSTANCES IN CONTAMINATED SOILS TREATMENT PLANT FACILITY		
Hazardous Substance	Sample Numbers	Reference (Page Number from Ref. 8)
Benzo(b)fluoranthene	TP-05-SS-00, TP-09-SS-00, TP-12-SS-00, TP-17-SS-00, TP-19-SS-00, TP-25-SS-00, TP-14-SB-04, TP-03-SB-06, TP-18-SB-10, TP-14-SB-13, TP-15-SB-13*, TP-19-SB-14, OS-08-SS, OS-09-SS, OS-10-SS	pp. 6-19, 6-20, 6-21, and 6-43
Benzo(k)fluoranthene	TP-14-SB-13, OS-08-SS, OS-09-SS, OS-10-SS	pp. 6-21 and 6-43
Chrysene	TP-05-SS-00, TP-09-SS-00, TP-11-SS-00, TP-12-SS-00, TP-17-SS-00, TP-19-SS-00, TP-25-SS-00, TP-14-SB-04, TP-03-SB-06, TP-18-SB-10, TP-14-SB-13, TP-15-SB-13, TP-19-SB-14, OS-08-SS, OS-09-SS, OS-10-SS	pp. 6-19, 6-20, 6-21
Dibenzofuran	TP-05-SS-00, TP-11-SB-04, TP-14-SB-04, TP-18-SB-10, TP-14-SB-13, TP-15-SB-13, TP-19-SB-14	pp. 6-19, 6-20, 6-21, 6-43
Fluoranthene	TP-05-SS-00, TP-11-SS-00, TP-12-SS-00, TP-17-SS-00, TP-19-SS-00, TP-25-SS-00, TP-14-SB-04, TP-03-SB-06, TP-05-SB-08, TP-18-SB-10, TP-14-SB-13, TP-15-SB-13, TP-19-SB-14, OS-08-SS, OS-09-SS*, OS-10-SS	pp. 6-19, 6-20, 6-21, 6-43
Fluorene	TP-15-SS-00, TP-14-SB-04, TP-18-SB-10, TP-14-SB-13, TP-15-SB-13, TP-19-SB-14	pp. 6-19, 6-20, 6-21
Indeno(1,2,3-cd)pyrene	TP-12-SS-00, TP-19-SS-00, TP-25-SS-00, TP-03-SB-06, TP-14-SB-13, TP-19-SB-14, OS-08-SS, OS-09-SS, OS-10-SS	pp. 6-19, 6-20, 6-21, 6-43
Naphthalene	TP-05-SS-00, TP-14-SB-04, TP-19-SB-12, TP-18-SB-10, TP-14-SB-13, TP-15-SB-13, TP-19-SB-14, OS-07-SS*	pp. 6-19, 6-20, 6-21, 6-43
PCP	TP-05-SS-00, TP-09-SS-00, TP-11-SS-00, TP-12-SS-00, TP-03-SB-04, TP-11-SB-04, TP-14-SB-04, TP-03-SB-06, TP-10-SB-06, TP-18-SB-10, TP-14-SB-13, TP-19-SB-14, OS-09-SS*, OS-10-SS	pp. 6-19, 6-20, 6-21, 6-43
Phenanthrene	TP-05-SS-00, TP-12-SS-00, TP-15-SS-00, TP-25-SS-00, TP-14-SB-04, TP-05-SB-08, TP-18-SB-10, TP-14-SB-13, TP-15-SB-13, TP-19-SB-14, OS-08-SS, OS-09-SS*, OS-10-SS	pp. 6-19, 6-20, 6-21, 6-43
Pyrene	TP-05-SS-00, TP-09-SS-00, TP-11-SS-00, TP-12-SS-00, TP-17-SS-00, TP-19-SS-00, TP-14-SB-04, TP-03-SB-06, TP-05-SB-08, TP-18-SB-10, TP-14-SB-13, TP-15-SB-13, TP-19-SB-14, OS-08-SS, OS-09-SS, OS-10-SS	pp. 6-19, 6-20, 6-21, 6-43
2,3,7,8-TCDD	OS-09-SS, OS-10-SS	p. 6-45

Table 1		
HAZARDOUS SUBSTANCES IN CONTAMINATED SOILS TREATMENT PLANT FACILITY		
Hazardous Substance	Sample Numbers	Reference (Page Number from Ref. 8)
2,3,7,8-TCDF	TP-01-SS-00, TP-05-SS-00, TP-09-SS-00, TP-11-SS-00, TP-14-SB-13, OS-09-SS, OS-10-SS	pp. 6-26, 6-28, 6-45
1,2,3,4,6,7,8-HpCDD	TP-01-SS-00, TP-05-SS-00, TP-07-SS-00, TP-09-SS-00, TP-11-SS-00, TP-12-SS-00, TP-15-SS-00, TP-19-SS-00, TP-14-SB-04, TP-14-SB-13, OS-06-SS, OS-07-SS, OS-08-SS, OS-09-SS, OS-10-SS, OS-11-SS	pp. 6-26, 6-27, 6-28, 6-45
1,2,3,4,6,7,8-HpCDF	TP-01-SS-00, TP-05-SS-00, TP-07-SS-00, TP-09-SS-00, TP-11-SS-00, TP-12-SS-00, TP-15-SS-00, TP-17-SS-00, TP-25-SS-00, TP-14-SB-04, TP-14-SB-13, OS-06-SS, OS-07-SS, OS-08-SS, OS-09-SS, OS-10-SS, OS-11-SS	pp. 6-26, 6-27, 6-28, 6-45
1,2,3,4,7,8-HxCDD	TP-01-SS-00, TP-05-SS-00, TP-07-SS-00, TP-15-SS-00, TP-14-SB-04, OS-06-SS, OS-07-SS, OS-08-SS, OS-09-SS, OS-10-SS, OS-11-SS	pp. 6-26, 6-27, 6-45
1,2,3,4,7,8-HxCDF	OS-08-SS, OS-09-SS, OS-10-SS	p. 6-45
1,2,3,7,8-PeCDD	TP-01-SS-00, TP-11-SS-00, TP-15-SS-00, TP-17-SS-00, TP-14-SB-04, OS-06-SS, OS-08-SS, OS-09-SS, OS-10-SS	pp. 6-26, 6-27, 6-45
1,2,3,7,8-PeCDF	TP-01-SS-00, TP-09-SS-00, TP-11-SS-00, TP-15-SS-00, TP-17-SS-00, TP-25-SS-00, TP-18-SB-10, TP-15-SB-13, OS-09-SS, OS-10-SS	pp. 6-26, 6-27, 6-28, 6-45
2,3,4,7,8-PeCDF	TP-01-SS-00, TP-05-SS-00, TP-11-SS-00, TP-15-SS-00, TP-17-SS-00, TP-21-SS-00, TP-25-SS-00, TP-18-SB-10, TP-15-SB-13, OS-06-SS, OS-09-SS, OS-10-SS	pp. 6-26, 6-27, 6-28, 6-45
2,3,7,8-TCDD TEQ	TP-01-SS-00, TP-05-SS-00, TP-07-SS-00, TP-09-SS-00, TP-11-SS-00, TP-12-SS-00, TP-15-SS-00, TP-17-SS-00, TP-19-SS-00, TP-25-SS-00, TP-14-SB-04, TP-14-SB-13, OS-06-SS, OS-07-SS, OS-08-SS, OS-09-SS, OS-10-SS, OS-11-SS	pp. 6-26, 6-27, 6-28, 6-45

* - The concentration was adjusted, if necessary, prior to determining whether the concentration was significant as per EPA Guidance Document, "Using Qualified Data to Document an Observed Release and Observed Contamination" (Ref. 12).

2.4.2 Hazardous Waste Quantity

2.4.2.1.1 Hazardous Constituent Quantity

There are insufficient data to document a hazardous constituent quantity; therefore a 0 is assigned for this source (Ref. 1, Section 2.4.2.1.1).

Hazardous Constituent Quantity Value: 0

2.4.2.1.2 Hazardous Wastestream Quantity

There are insufficient data to document a hazardous wastestream quantity; therefore a 0 is assigned for this source (Ref. 1, Section 2.4.2.1.2).

Hazardous Wastestream Quantity Value: 0

2.4.2.1.3 Source Volume

There are insufficient data to document a volume; therefore a 0 is assigned for this source (Ref. 1, Section 2.4.2.1.3).

Dimension of Source (yd³): 0

Volume Assigned Value: 0

2.4.2.1.4 Source Area

The total area of exposed soil in this facility was calculated by determining the area encompassed by sample locations TP-01 through TP-27 and locations OS-06 through OS-11 and the areas lying between these points. There are no permanent or impenetrable surfaces within this area. The area calculation was determined by utilizing an AutoCAD program and measuring the area between the sample locations described above. This area is approximately 112,004 square feet (Ref. 8, p. 6-2, Figure 3-1). The area measure was calculated as follows (Ref. 1, p. 51591):

$$112,004 \text{ ft.}^2 / 34,000 = 3.29$$

Area of Source (ft²): 112,004

Area Assigned Value: 3.29

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Source Hazardous Waste Quantity: 3.29

SOURCE DESCRIPTION

2.2 SOURCE CHARACTERIZATION

Name and Description of the Source: Source 2 - Contaminated Soil

The Treated Pole Storage Area is used to store poles after they have been treated with creosote in the retorts (Ref. 8, p. 6-4). Poles are transported from the retorts to this area by Pettibones (Ref. 8, p. 6-4). Poles are stacked on crossbeams so that they do not come in contact with the ground (Ref. 8, p. 6-4). Plastic sheeting is located under the poles in most areas, but the sheeting was observed by EPA to be torn in numerous places (Ref. 8, p. 6-4). Railroad tracks border this area on the north, and a railroad spur is located in this area for loading purposes (Ref. 8, p. 6-4). The treated pole storage area is an irregular area, approximately 570 feet by 800 feet, with a total area of approximately 450,000 square feet (Ref. 8, p. 6-4).

During the IA, a total of 14 surface and 37 subsurface soil samples were collected from 14 boreholes (PS-01 through PS-14) drilled in approximately 200-foot intervals in the Treated Pole Storage Area (Ref. 8, pp. 6-4, 6-5 and Figure 3-1). Boreholes were drilled to a maximum depth of 22 feet, and samples were collected from surficial soils (PS-01-SS-00 through PS-14-SS-00) and subsurface soils (PS-01-SB-04 through PS-14-SB-13) in 2-foot intervals (Ref. 8, p. 6-5). Both surface and subsurface soil samples from boreholes were collected using a dedicated acetate liner threaded into a nondedicated stainless steel GeoProbe™ soil sampler (Ref. 8, p. 3-2). The liner was removed from the sampler, and samples were extracted from the liner using dedicated stainless steel spoons (Ref. 8, p. 3-2). The GeoProbe™ soil sampler was decontaminated between sampling locations (Ref. 8, p. 3-2).

Further, surface soil samples OS-01-SS and OS-02-SS were collected using dedicated stainless steel spoons and bowls along the northern boundary of the Treated Pole Storage Area adjacent to the ditch south of the railroad tracks (Ref. 8, pp. 3-2, 3-3, 6-7, and Figure 3-1).

Samples were analyzed in varying combinations for VOCs (EPA CLPAS Method OLM03.2), low concentration SVOCs (Modified EPA Method 8270), pest/PCBs (EPA CLPAS Method OLM03.2), TAL metals (EPA CLPAS Method ILM04.0), and dioxins/furans (EPA Method 8290) (Ref. 8, pp. 3-6, 3-7, 3-11 through 3-13, and 4-1).

Sampling methods followed the SOP contained in Appendix B of the SQAP (Ref. 8, p. 3-2; Ref. 15, Appendix B). Grass, leaves, and other vegetative material, rocks, and other debris unsuitable for analysis were removed from samples before they were placed into sample containers (Ref. 8, p. 3-2). The portion of each sample being collected for VOC analysis was placed directly into a sample container without homogenization efforts (Ref. 8, p. 3-2). Sample material for all other analyses was homogenized in dedicated stainless steel bowls prior to containerization (Ref. 8, p. 3-2). Dedicated stainless steel spoons and scoops were used to extract, homogenize, and place sampled material into sample containers (Ref. 8, p. 3-2). For

samples submitted for dioxin/furan analysis, stainless steel spoons and bowls were pre-washed with hexane (Ref. 8, p. 3-2). All samples were stored on ice in coolers continuously maintained under chain of custody (Ref. 5; Ref. 7; Ref. 8, p. 3-2).

Location of the source, with reference to the site:

The source is located in the West Facility in the Treated Pole Storage Area and is defined by exposed soil areas using sample points PS-01 through PS-14, and points OS-01 and OS-02 (Ref. 8, Figure 3-1).

Containment

Release to Surface Water Via Overland Migration and/or Flood:

The source consists of exposed contaminated soils and, hence, does not have a maintained engineered cover (Ref. 8, p.6-5). Stormwater in this area discharges to the Southwest Rock Creek Road ditch after passing through NPDES outfalls No. 002 and 003 (Ref. 8, pp. 7-3 and Figure 3-4; Ref. 23). Stormwater in this area also discharges to Southwest Rock Creek Road ditch via the drainage ditch located south of the Willamette Pacific Railroad tracks which transect the TLT property (Ref. 8, pp. 7-4 and Figure 3-4). The Rock Creek Road ditch discharges to the South Yamhill River (Ref. 8, pp. 2-4, 2-5, and Figure 3-4).

Gas Release to Air:

The source consists of exposed contaminated soils and, hence, does not have a maintained engineered cover (Ref. 8, pp. 6-4, 6-5). On-site soils were observed to be blowing and creating dust while the EPA was on site (Ref. 8, Appendix C, photograph 7.11).

Particulate Release to Air:

The source consists of exposed contaminated soils and, hence, does not have a maintained engineered cover (Ref. 8, pp. 6-4, 6-5). On-site soils were observed to be blowing and creating dust while the EPA was on site (Ref. 8, Appendix C, photograph 7.11).

2.4.1 Hazardous Substances

During the IA, several background surface and subsurface soil samples were collected (Ref. 8, pp. 5-3 and 5-4, and Table 3-1). As a conservative measure of on-site contamination, only source surface soil sample results that were significant when compared to the background surface soil samples (as per observed release criteria for chemical analysis [Ref. 1, p. 51539]) were used in this documentation record. Further, source surface soil sample results from the Treated Pole Storage Area were compared to the highest concentration per analyte for all background surface soil samples, regardless of sample characteristics when determining whether a concentration was significant. The background soil samples used are WP-07-SS-00 and BG-02-SS-00 (Ref. 8, pp. 3-47 [Table 3-1], 5-4, and Appendix E). Samples documenting significant concentrations of hazardous substances relative to background samples using the above techniques are listed in Table 2.

Table 2		
HAZARDOUS SUBSTANCES IN CONTAMINATED SOILS		
TREATED POLE STORAGE AREA		
Hazardous Substance	Sample Numbers	Reference (Page Number from Ref. 8)
Arsenic	PS-01-SS-00, PS-03-SS-00, PS-13-SS-00, PS-14-SS-00*, OS-02-SS	pp. 6-30, 6-43
Zinc	PS-14-SS-00*	p. 6-30
2-Methylnaphthalene	PS-07-SS-00	p. 6-30
Acenaphthene	PS-07-SS-00, PS-13-SS-00	p. 6-30
Anthracene	PS-07-SS-00, OS-02-SS	pp. 6-30, 6-43
Benzo(a)anthracene	PS-01-SS-00, PS-03-SS-00, PS-07-SS-00, PS-13-SS-00, OS-02-SS	pp. 6-30, 6-43
Benzo(a)pyrene	PS-01-SS-00, PS-03-SS-00, PS-07-SS-00, PS-13-SS-00, OS-02-SS	pp. 6-30, 6-43
Benzo(b)fluoranthene	PS-01-SS-00, PS-03-SS-00, PS-07-SS-00, PS-13-SS-00, PS-14-SS-00, OS-01-SS, OS-02-SS	pp. 6-30, 6-43
Benzo(k)fluoranthene	PS-01-SS-00, PS-03-SS-00, PS-07-SS-00, PS-13-SS-00, OS-02-SS	pp. 6-30, 6-43
Chrysene	PS-01-SS-00, PS-03-SS-00, PS-07-SS-00, PS-13-SS-00, PS-14-SS-00, OS-01-SS, OS-02-SS	pp. 6-30, 6-43
Fluoranthene	PS-01-SS-00, PS-03-SS-00, PS-07-SS-00, PS-13-SS-00, PS-14-SS-00, OS-01-SS, OS-02-SS	pp. 6-30, 6-43

Table 2		
HAZARDOUS SUBSTANCES IN CONTAMINATED SOILS TREATED POLE STORAGE AREA		
Hazardous Substance	Sample Numbers	Reference (Page Number from Ref. 8)
Fluorene	PS-07-SS-00, PS-13-SS-00	p. 6-30
Indeno(1,2,3-cd)pyrene	PS-07-SS-00, PS-13-SS-00, OS-02-SS	pp. 6-30, 6-43
PCP	PS-01-SS-00, PS-03-SS-00, PS-07-SS-00, PS-13-SS-00, PS-14-SS-00, OS-02-SS	pp. 6-30, 6-43
Phenanthrene	PS-07-SS-00, PS-13-SS-00, OS-01-SS, OS-02-SS	pp. 6-30, 6-43
Pyrene	PS-01-SS-00, PS-03-SS-00, PS-07-SS-00, PS-13-SS-00, PS-14-SS-00, OS-01-SS, OS-02-SS	pp. 6-30, 6-43
2,3,7,8-TCDF	PS-13-SS-00	p. 6-30
1,2,3,4,6,7,8-HpCDD	PS-01-SS-00, PS-03-SS-00, PS-07-SS-00, PS-13-SS-00, PS-14-SS-00, OS-02-SS	pp. 6-30, 6-43
1,2,3,4,6,7,8-HpCDF	PS-01-SS-00*, PS-03-SS-00, PS-07-SS-00, PS-13-SS-00, PS-14-SS-00, OS-02-SS	pp. 6-30, 6-43
1,2,3,4,7,8-HxCDD	PS-13-SS-00, OS-02-SS	pp. 6-30, 6-43
1,2,3,7,8-PeCDD	PS-03-SS-00, PS-13-SS-00	p. 6-30
2,3,7,8-TCDD TEQ	PS-01-SS-00, PS-03-SS-00, PS-07-SS-00, PS-08-SS-00, PS-13-SS-00, PS-14-SS-00, OS-01-SS, OS-02-SS	pp.. 6-30, 6-43

* - The concentration was adjusted, if necessary, prior to determining whether the concentration was significant as per EPA Guidance Document, "Using Qualified Data to Document an Observed Release and Observed Contamination" (Ref. 12).

2.4.2 Hazardous Waste Quantity

2.4.2.1.1 Hazardous Constituent Quantity

There are insufficient data to document a hazardous constituent quantity; therefore a 0 is assigned for this source (Ref. 1, Section 2.4.2.1.1).

Hazardous Constituent Quantity Value: 0

2.4.2.1.2 Hazardous Wastestream Quantity

There are insufficient data to document a hazardous wastestream quantity; therefore a 0 is assigned for this source (Ref. 1, Section 2.4.2.1.2).

Hazardous Wastestream Quantity Value: 0

2.4.2.1.3 Source Volume

There are insufficient data to document a volume; therefore a 0 is assigned for this source (Ref. 1, Section 2.4.2.1.3).

Dimension of Source (yd³): 0

Volume Assigned Value: 0

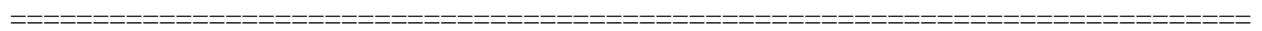
2.4.2.1.4 Source Area

The total area of contaminated soil in this area was determined using the area between the sample locations OS-01-SS, OS-02-SS, PS-01, PS-03, PS-07, PS-13 and PS-14. The area calculation was determined by utilizing an AutoCAD program and measuring the area between the sample locations described above. The area occupies approximately 72,487 square feet (Ref. 8, pp. 6-4 and Figure 3-1). The area is assigned as follows (Ref. 1, p. 51591):

$$72,487 \text{ ft.}^2 / 34,000 = 2.13$$

Area of Source (ft²): 72,487

Area Assigned Value: 2.13



Source Hazardous Waste Quantity: 2.13

SOURCE DESCRIPTION

2.2 SOURCE CHARACTERIZATION

Name and Description of the Source: Source 3 - Contaminated Soil

The White Pole Storage Area is located west of the Treatment Plant Facility (Source 2) and the Treated Wood Storage Area (Source 3) (Ref. 8, p. 6-6). Untreated poles are stored on cross-beams over exposed soil (Ref. 8, p. 6-6). Poles are transported to and from the Treatment Plant Facility area using Pettibones (Ref. 8, p. 6-6). Soils may have become contaminated from airborne particulate migration or by Pettibone traffic (Ref. 8, p. 6-6). The White Pole Storage Area is approximately 600 feet by 900 feet with a total area of approximately 530,000 square feet (Ref. 8, p. 6-6).

During the IA, a total of 14 surface and 34 subsurface soil samples were collected in this area (Ref. 8, p. 6-6). Thirteen borings (WP-01 through WP-13) were drilled in approximately 200-foot intervals in the White Pole Storage Area (Ref. 8, p. 6-6 and Figure 3-1). Boreholes were drilled to a maximum depth of 10 feet, and samples were collected from surficial soils (WP-01-SS-00 through WP-14-SS-00) and subsurface soils (WP-01-SB-04 through WP-13-SB-06) in 2-foot intervals (Ref. 8, p. 6-6). In addition, borehole BG-01, initially drilled as a background location (samples BG-01-SS-00 and BG-01-SB-04 through BG-01-SB-16), is included in this area and was drilled to a total depth of 18 feet (Ref. 8, p. 6-6 and Figure 3-1). Samples from this boring were found to contain significant contaminant concentrations (Ref. 8, p. 6-6). Areas of stained surficial soil were observed in the White Pole Storage Area (Ref. 8, p. 6-6 and Table 3-1). Both surface and subsurface soil samples from boreholes were collected using a dedicated acetate liner threaded into a nondedicated stainless steel GeoProbe™ soil sampler (Ref. 8, p. 3-2). The liner was removed from the sampler, and samples were extracted from the liner using dedicated stainless steel spoons (Ref. 8, p. 3-2). The GeoProbe™ soil sampler was decontaminated between sampling locations (Ref. 8, p. 3-2).

Further, surface soil samples OS-03-SS and OS-04-SS were collected using dedicated stainless steel spoons and bowls along the northern boundary of the White Pole Storage Area adjacent to the ditch south of the railroad tracks (Ref. 8, pp. 3-2, 3-3, 6-7, 6-8, and Figure 3-1).

Samples were analyzed in varying combinations for VOCs (EPA CLPAS Method OLM03.2), low concentration SVOCs (Modified EPA Method 8270), pest/PCBs (EPA CLPAS Method OLM03.2), TAL metals (EPA CLPAS Method ILM04.0), and dioxins/furans (EPA Method 8290) (Ref. 8, pp. 3-6, 3-7, 3-13, 3-23 through 3-25, and 4-1).

Sampling methods followed the SOP contained in Appendix B of the SQAP (Ref. 8, p. 3-2; Ref. 15, Appendix B). Grass, leaves, and other vegetative material, rocks, and other debris unsuitable for analysis were removed from samples before they were placed into sample containers (Ref. 8, p. 3-2). The portion of each sample being collected for VOC analysis was placed directly into a sample container without

homogenization efforts (Ref. 8, p. 3-2). Sample material for all other analyses was homogenized in dedicated stainless steel bowls prior to containerization (Ref. 8, p. 3-2). Dedicated stainless steel spoons and scoops were used to extract, homogenize, and place sampled material into sample containers (Ref. 8, p. 3-2). For samples submitted for dioxin/furan analysis, stainless steel spoons and bowls were pre-washed with hexane (Ref. 8, p. 3-2). All samples were stored on ice in coolers continuously maintained under chain of custody (Ref. 5; Ref. 7; Ref. 8, p. 3-2).

Location of the source with reference to the site:

The source is located in the West Facility in the White Pole Storage Area and is defined by exposed soil areas using sample points WP-01 through WP-14, and points OS-03 and OS-04 (Ref. 8, Figure 3-1).

Containment

Release to Surface Water Via Overland Migration and/or Flood:

The source consists of exposed contaminated soils and, hence, does not have a maintained engineered cover (Ref. 8, p. 2-10). Some stormwater in this area discharges to a ditch along Highway 18B after passing through NPDES outfall No. 005 (Ref. 8, pp. 7-3, 7-4, and Figure 3-4; Ref. 23). This ditch converges with the Southwest Rock Creek Road ditch which discharges to the South Yamhill River (Ref. 8, pp. 2-4, 2-5, 7-3, 7-4, and Figure 3-4). Some surface water from the northwestern portion of the White Pole Storage Area flows by sheet action north to a ditch along the south side of the Willamette Pacific Railroad tracks which transect the TLT property (Ref. 8, p. 7-4 and Figure 3-4). This ditch flows west and discharges to perennially flowing Rock Creek (Ref. 8, p. 7-4).

Gas Release to Air:

The source consists of exposed contaminated soils and, hence, does not have a maintained engineered cover (Ref. 8, p. 6-6). On-site soils were observed to be blowing and creating dust while the EPA was on site (Ref. 8, Appendix C, photograph 7.11).

Particulate Release to Air:

The source consists of exposed contaminated soils and, hence, does not have a maintained engineered cover (Ref. 8, p. 6-6). On-site soils were observed to be blowing and creating dust while the EPA was on site (Ref. 8, Appendix C, photograph 7.11).

2.4.1 Hazardous Substances

During the IA, several background surface and subsurface soil samples were collected (Ref. 8, pp. 5-3 and 5-4, and Table 3-1). As a conservative measure of on-site contamination, only source surface soil sample results that were significant when compared to the background surface soil samples (as per observed release criteria for chemical analysis [Ref. 1, p. 51539]) were used in this documentation record. Further, source surface soil sample results from the White Pole Storage Area were compared to the highest concentration per analyte for all background surface soil samples, regardless of sample characteristics when determining whether a concentration was significant. The background soil samples used are WP-07-SS-00 and BG-02-SS-00 (Ref. 8, pp. 3-47 [Table 3-1], 5-4, and Appendix E). Samples documenting significant concentrations of hazardous substances relative to background samples using the above techniques are listed in Table 3.

Table 3		
HAZARDOUS SUBSTANCES IN CONTAMINATED SOILS		
WHITE POLE STORAGE AREA		
Hazardous Substance	Sample Numbers	Reference (Page Number from Ref. 8)
Arsenic	BG-01-SS-00	p. 6-37
Cobalt	OS-03-SS, OS-04-SS	p. 6-43
Acenaphthene	WP-01-SS-00, WP-05-SS-00	p. 6-37
Acenaphthylene	OS-04-SS	p. 6-43
Anthracene	OS-04-SS	p. 6-43
Benzo(a)anthracene	OS-04-SS	p. 6-43
Benzo(a)pyrene	WP-01-SS-00, OS-04-SS	pp. 6-37, 6-43
Benzo(b)fluoranthene	WP-01-SS-00, OS-04-SS	pp. 6-37, 6-43
Benzo(k)fluoranthene	WP-01-SS-00, OS-04-SS	pp. 6-37, 6-43
Chrysene	WP-01-SS-00, OS-04-SS	pp. 6-37, 6-43
Dibenzofuran	OS-04-SS	p. 6-43
Fluoranthene	WP-01-SS-00, OS-04-SS	pp. 6-37, 6-43
Fluorene	WP-01-SS-00, OS-04-SS	pp. 6-37, 6-43
Indeno(1,2,3-cd)pyrene	OS-04-SS	p. 6-43
PCP	WP-02-SS-00, OS-04-SS	pp. 6-37, 6-43
Phenanthrene	WP-01-SS-00, OS-04-SS	pp. 6-37, 6-43

Table 3		
HAZARDOUS SUBSTANCES IN CONTAMINATED SOILS WHITE POLE STORAGE AREA		
Hazardous Substance	Sample Numbers	Reference (Page Number from Ref. 8)
Pyrene	WP-01-SS-00, OS-04-SS	pp. 6-37, 6-43
2,3,7,8-TCDD	WP-05-SS-00	p. 6-41
2,3,7,8-TCDF	WP-05-SS-00	p. 6-41
1,2,3,4,6,7,8-HpCDD	WP-05-SS-00, BG-01-SS-00, OS-04-SS	pp. 6-41, 6-45
1,2,3,4,6,7,8-HpCDF	WP-05-SS-00, BG-01-SS-00, OS-04-SS	pp. 6-41, 6-45
1,2,3,4,7,8-HxCDD	WP-05-SS-00, BG-01-SS-00, OS-04-SS	pp. 6-41, 6-45
1,2,3,7,8-PeCDD	WP-05-SS-00, BG-01-SS-00, OS-04-SS*	pp. 6-41, 6-45
1,2,3,7,8-PeCDF	WP-01-SS-00, WP-05-SS-00, BG-01-SS-00	p. 6-41
2,3,4,7,8-PeCDF	WP-05-SS-00, BG-01-SS-00	p. 6-41
2,3,7,8-TCDD TEQ	WP-05-SS-00, BG-01-SS-00	p. 6-41

* - The concentration was adjusted, if necessary, prior to determining whether the concentration was significant as per EPA Guidance Document, "Using Qualified Data to Document an Observed Release and Observed Contamination" (Ref. 12).

2.4.2 Hazardous Waste Quantity

2.4.2.1.1 Hazardous Constituent Quantity

There are insufficient data to document a hazardous constituent quantity; therefore a 0 is assigned for this source (Ref. 1, Section 2.4.2.1.1).

Hazardous Constituent Quantity Value: 0

2.4.2.1.2 Hazardous Wastestream Quantity

There are insufficient data to document a hazardous wastestream quantity; therefore a 0 is assigned for this source (Ref. 1, Section 2.4.2.1.2).

Hazardous Wastestream Quantity Value: 0

2.4.2.1.3 Volume

There are insufficient data to document a volume; therefore a 0 is assigned for this source (Ref. 1, Section 2.4.2.1.3).

Dimension of Source (yd³): 0

Volume Assigned Value: 0

2.4.2.1.4 Area

The total area of contaminated soil in Source 3 was determined from the area encompassed by sample locations OS-03-SS, OS-04-SS, WP-01, WP05, and BG-01. The area calculation was determined by utilizing an AutoCAD program and measuring the area between the sample locations described above. The area is 36,094 square feet (Ref. 8, pp. 6-6 and Figure 3-1). The area measure was calculated as follows (Ref. 1, p. 51591):

$$36,094 \text{ ft}^2 / 34,000 = 1.06$$

Area of Source (ft²): 36,094

Area Assigned Value: 1.06

=====
Source Hazardous Waste Quantity: 1.06

SOURCE DESCRIPTION

2.2 SOURCE CHARACTERIZATION

Name and Description of the Source: Source 4 - Pile

The Boiler Ash and Underground Storage Tank (UST) Bioremediated Soil Waste Pile consists of waste ash from the boiler and soil that was excavated during a UST removal and bioremediated for petroleum contamination (Ref. 8, p. 6-12, Appendix C, photograph 23.23). The pile is unlined and contains sparse to no vegetation (Ref. 8, p. 6-12). The total area of the pile is estimated to be 39,000 square feet (approximately 600 feet by 65 feet) (Ref. 8, p. 6-12).

During the IA, a total of four surface and 11 subsurface soil samples were collected from four boreholes (AP-01 through AP-04) drilled at approximately 200-foot intervals (Ref. 8, p. 6-12 and Figure 3-1). Boreholes were drilled to a maximum depth of 10 feet, and samples were collected from surficial soils (AP-01-SS-00 through AP-04-SS-00) and subsurface soils (AP-01-SB-04 through AP-04-SB-08) in 2-foot intervals (Ref. 8, p. 6-12). Stained soil, ash, and debris were prevalent in this area (Ref. 8, p. 6-12).

Samples were analyzed in varying combinations for VOCs (EPA CLPAS Method OLM03.2), low concentration SVOCs (Modified EPA Method 8270), pest/PCBs (EPA CLPAS Method OLM03.2), TAL metals (EPA CLPAS Method ILM04.0), and dioxins/furans (EPA Method 8290) (Ref. 8, pp. 3-6, 3-7, 3-9 through 3-11, and 4-1).

Sampling methods followed the SOP contained in Appendix B of the SQAP (Ref. 8, p. 3-2; Ref. 15, Appendix B). Grass, leaves, and other vegetative material, rocks, and other debris unsuitable for analysis were removed from samples before they were placed into sample containers (Ref. 8, p. 3-2). The portion of each sample being collected for VOC analysis was placed directly into a sample container without homogenization efforts (Ref. 8, p. 3-2). Sample material for all other analyses was homogenized in dedicated stainless steel bowls prior to containerization (Ref. 8, p. 3-2). Dedicated stainless steel spoons and scoops were used to extract, homogenize, and place sampled material into sample containers (Ref. 8, p. 3-2). For samples submitted for dioxin/furan analysis, stainless steel spoons and bowls were pre-washed with hexane (Ref. 8, p. 3-2). All samples were stored on ice in coolers continuously maintained under chain of custody (Ref. 5; Ref. 7; Ref. 8, p. 3-2).

Location of the source with reference to the site:

The Boiler Ash and UST Bioremediated Soil Waste Pile source is located in the West Facility, west of the White Pole Storage Area (Ref. 8, p. 6-11 and Figure 3-1).

Containment

Release to Surface Water Via Overland Migration and/or Flood:

The source consists of exposed contaminated soil and, hence, does not have a maintained engineered cover (Ref. 8, p. 6-12). EPA did not observe a liner beneath this source during their site visits (Ref. 4, Logbook D, p. 28). Stormwater from the northern portion of the Boiler Ash and UST Bioremediated Soil Waste Pile flows north to a ditch along the south side of the Willamette Pacific Railroad tracks which transect the TLT property (Ref. 8, p. 7-4 and Figure 3-4). This ditch flows west and discharges to perennially flowing Rock Creek (Ref. 8, p. 7-4).

Gas Release to Air:

The source consists of exposed contaminated soils and, hence, does not have a maintained engineered cover (Ref. 4, Logbook D, p. 29; Ref. 8, p. 6-12). On-site soils were observed to be blowing and creating dust while the EPA was on site (Ref. 8, Appendix C, photograph 7.11).

Particulate Release to Air:

The source consists of exposed contaminated soils and, hence, does not have a maintained engineered cover (Ref. 4, Logbook D, p. 29; Ref. 8, p. 6-12). On-site soils were observed to be blowing and creating dust while the EPA was on site (Ref. 8, Appendix C, photograph 7.11).

2.4.1. Hazardous Substances

During the IA, several background surface and subsurface soil samples were collected (Ref. 8, pp. 5-3 and 5-4, and Table 3-1). As a conservative measure of on-site contamination, only source sample results that were significant when compared to the background samples (as per observed release criteria for chemical analysis [Ref. 1, p. 51539]) were used in this documentation record. Further, source soil sample results from the Boiler Ash and UST Bioremediated Soil Waste Pile were compared to the highest concentration per analyte for all background soil samples collected from 0 to 4 feet bgs, regardless of sample depth or sample characteristics when determining whether a concentration was significant. The background soil samples used are WP-07-SS-00, BG-02-SS-00, BG-02-SB-02, and BG-02-SB-04 (Ref. 8, pp. 3-47, 3-48 [Table 3-1], Appendix E). Samples documenting significant concentrations of hazardous substances relative to background samples using the above techniques are listed in Table 4.

Table 4		
HAZARDOUS SUBSTANCES IN THE BOILER ASH AND UST BIOREMEDIATION SOIL WASTE PILE		
Hazardous Substance	Sample Numbers	Reference (Page Number from Ref. 8)
Arsenic	AP-01-SS-00, AP-03-SS-00	p. 6-61
Anthracene	AP-03-SS-00	p. 6-60
Benzo(a)anthracene	AP-03-SS-00	p. 6-60
Benzo(a)pyrene	AP-03-SS-00	p. 6-60
Benzo(b)fluoranthene	AP-01-SS-00, AP-03-SS-00	p. 6-60
Benzo(k)fluoranthene	AP-03-SS-00	p. 6-60
Chrysene	AP-03-SS-00, AP-04-SS-00	p. 6-60
Fluoranthene	AP-03-SS-00	p. 6-60
Indeno(1,2,3-cd)pyrene	AP-03-SS-00	p. 6-60
PCP	AP-03-SS-00	p. 6-60
Phenanthrene	AP-03-SS-00	p. 6-60
Pyrene	AP-03-SS-00	p. 6-60
1,2,3,4,6,7,8-HpCDD	AP-01-SS-00, AP-03-SS-00	p. 6-63
1,2,3,4,6,7,8-HpCDF	AP-01-SS-00, AP-03-SS-00	p. 6-63
1,2,3,4,7,8-HxCDF	AP-01-SS-00*	p. 6-63
2,3,7,8-TCDD TEQ	AP-01-SS-00, AP-03-SS-00	p. 6-63

* - The concentration was adjusted, if necessary, prior to determining whether the concentration was significant as per EPA Guidance Document, "Using Qualified Data to Document an Observed Release and Observed Contamination" (Ref. 12).

2.4.2 Hazardous Waste Quantity

2.4.2.1.1 Hazardous Constituent Quantity

There are insufficient data to document a hazardous constituent quantity; therefore a 0 is assigned for this source (Ref. 1, Section 2.4.2.1.1).

Hazardous Constituent Quantity Value: 0

2.4.2.1.2 Hazardous Wastestream Quantity

There are insufficient data to document a hazardous wastestream quantity; therefore a 0 is assigned for this source (Ref. 1, Section 2.4.2.1.2).

Hazardous Wastestream Quantity Value: 0

2.4.2.1.3 Volume

There are insufficient data to document a volume; therefore a 0 is assigned for this source (Ref. 1, Section 2.4.2.1.3)

Dimension of Source (yd³): 0

Volume Assigned Value: 0

2.4.2.1.4 Area

The total area of the pile is estimated to be 39,000 square feet (approximately 600 feet by 65 feet) (Ref. 4, Logbook D, p. 20; Ref. 8, p. 6-12). The area measure is calculated as follows (Ref. 1, p. 51591):

39,000 square feet / 13 = 3,000

Area of Source (ft²): 39,000

Area Assigned Value: 3,000

=====
Source Hazardous Waste Quantity: 3,000

SOURCE DESCRIPTION

2.2 SOURCE CHARACTERIZATION

Name and Description of the Source: Source 5 - Surface Impoundments

A series of four retaining ponds each followed by an oil/water separator are located in the Treatment Plant Facility area along the main stormwater ditch (Ref. 8, p. 6-14 and Figure 3-4). This ditch drains via NPDES outfall No. 001 to the west ditch along Southwest Rock Creek Road (Ref. 8, Figure 3-4; Ref. 23). The purpose of the retaining ponds is to retain oily stormwater and sediment through settling before the stormwater is passed through the oil/water separators (Ref. 8, p. 6-14). None of these ponds are lined, and all ponds are approximately 10 feet wide by 15 feet long and 2 feet deep (Ref. 8, p. 6-14).

It was decided during the field even that one sediment sample from three of the four retaining ponds would be collected (MD-01-SD, MD-02-SD, and MD-03-SD) (Ref. 8, p. 6-14 and Figure 3-4). All samples were observed by EPA to be black and oily with petroleum-like odors (Ref. 8, p. 6-14). Two surface water samples (MD-01-SW and MD-02-SW) were co-located with their corresponding sediment samples in the oil/water separator retaining ponds (Ref. 8, p. 6-15 and Figure 3-4). Surface water samples were observed to be oily (Ref. 8, p. 6-15).

Samples were analyzed in varying combinations for VOCs (EPA CLPAS Method OLM03.2), low concentration SVOCs (Modified EPA Method 8270), pest/PCBs (EPA CLPAS Method OLM03.2), TAL metals (EPA CLPAS Method ILM04.0), and dioxins/furans (EPA Method 8290) (Ref. 8, pp. 3-25 through 3-33, and 4-1).

Sampling methods followed the SOP contained in Appendix B of the SQAP (Ref. 8, p. 3-2; Ref. 15, Appendix B). Grass, leaves, and other vegetative material, rocks, and other debris unsuitable for analysis were removed from samples before they were placed into sample containers (Ref. 8, p. 3-2). The portion of each sample being collected for VOC analysis was placed directly into a sample container without homogenization efforts (Ref. 8, p. 3-2). Sample material for all other analyses was homogenized in dedicated stainless steel bowls prior to containerization (Ref. 8, p. 3-2). Dedicated stainless steel spoons and scoops were used to extract, homogenize, and place sampled material into sample containers (Ref. 8, p. 3-2). For samples submitted for dioxin/furan analysis, stainless steel spoons and bowls were pre-washed with hexane (Ref. 8, p. 3-2). All samples were stored on ice in coolers continuously maintained under chain of custody (Ref. 5; Ref. 7; Ref. 8, p. 3-2).

Sample collection began at the most downstream location and proceeded upstream to eliminate the potential for cross-contamination (Ref. 8, p. 3-4). Surface water samples were co-located with the sediment samples, when present, and were collected prior to the collection of sediment samples to eliminate cross-contamination (Ref. 8, p. 3-4). Surface water samples were collected by lowering dedicated sample containers into the water to a maximum depth of 1 foot, with the containers filling as

they descended (Ref. 8, p. 3-4). Sediment samples were collected using dedicated stainless steel spoons or trowels (Ref. 8, p. 3-4). The VOC aliquot was collected first followed by the remaining aliquots (Ref. 8, p. 3-4).

Location of the source with reference to the site:

The retaining ponds are located along a ditch that flows south from the Treatment Plant Facility to the west Southwest Rock Creek Road ditch via NPDES outfall No. 001 (Ref. 8, Figure 3-4; Ref. 23).

Containment

Release to Surface Water Via Overland Migration and/or Flood:

The retaining ponds are unlined and discharge via oil/water separators and NPDES outfall No. 001 to the west Southwest Rock Creek Road ditch (Ref. 8, p. 6-14 and Figure 3-4; Ref. 23). This ditch in turn discharges to the South Yamhill River approximately 300 feet south of the site (Ref. 8, pp. 2-4, 2-5, and Figure 3-4).

Gas Release to Air:

Not scored.

Particulate Release to Air:

Not scored.

2.4.1. Hazardous Substances

During the IA, several background sediment samples were collected from stormwater ditches (Ref. 8, p. 5-5, Table 3-1). As a conservative measure of on-site contamination, only source sediment sample results that were significant when compared to the background samples (as per observed release criteria for chemical analysis [Ref. 1, p. 51539]) were used in this documentation record. Further, source sediment sample results from the retaining ponds were compared to the highest concentration per analyte for all background samples collected, regardless of sample location or sample characteristics when determining whether a concentration was significant. The background sediment samples used are RCD-12-SD, ND-02-SD, and SD-04-SD (Ref. 8, pp. 3-33 [Table 3-1], 5-5, and Appendix E). Since the background ditch locations were dry at the time of sampling, no background surface water ditch samples were collected during the IA (Ref. 8, p. 5-6). Sediment samples documenting significant concentrations of hazardous substances relative to background samples using the above techniques are presented below in Table 6. Since an appropriate, corresponding background surface water sample is not available for comparison of observed release criteria for chemical analysis for the retaining pond surface water samples, all analytical detections in these samples were used to document hazardous substances present in this source (Ref. 1, p. 51588). These hazardous substances are listed in Table 5.

Table 5		
HAZARDOUS SUBSTANCES IN RETAINING PONDS		
Hazardous Substance	Sample Numbers	Reference (Page Number from Ref. 8)
Arsenic	MD-01-SD, MD-02-SD, MD-03-SD, MD-01-SW, MD-02-SW	pp. 6-70, 6-72
Mercury	MD-02-SW	p. 6-72
Zinc	MD-01-SW, MD-02-SW	p. 6-72
2-Methylnaphthalene	MD-01-SD, MD-02-SD	p. 6-69
Acenaphthene	MD-01-SD	p. 6-69
Anthracene	MD-01-SD, MD-02-SD	p. 6-69
Benzo(a)anthracene	MD-01-SD, MD-03-SD	p. 6-69
Benzo(a)pyrene	MD-01-SD, MD-02-SD	p. 6-69
Benzo(b)fluoranthene	MD-01-SD, MD-02-SD, MD-03-SD	p. 6-69
Benzo(k)fluoranthene	MD-01-SD, MD-02-SD, MD-03-SD	p. 6-69
Chrysene	MD-01-SD, MD-02-SD, MD-03-SD	p. 6-69
Dibenzofuran	MD-01-SD	p. 6-69
Fluoranthene	MD-01-SD, MD-02-SD, MD-03-SD	p. 6-69

Table 5		
HAZARDOUS SUBSTANCES IN RETAINING PONDS		
Hazardous Substance	Sample Numbers	Reference (Page Number from Ref. 8)
Fluorene	MD-01-SD	p. 6-69
Indeno(1,2,3-cd)pyrene	MD-01-SD, MD-02-SD	p. 6-69
Naphthalene	MD-01-SD, MD-02-SD	p. 6-69
PCP	MD-02-SD	p. 6-69
Phenanthrene	MD-01-SD, MD-02-SD, MD-03-SD	p. 6-69
Pyrene	MD-01-SD, MD-02-SD, MD-03-SD	p. 6-69
2,3,7,8-TCDD	MD-01-SD	p. 6-71
2,3,7,8-TCDF	MD-01-SD	p. 6-71
1,2,3,4,6,7,8-HpCDD	MD-01-SD, MD-02-SD, MD-03-SD, MD-01-SW, MD-02-SW	pp. 6-71, 6-72
1,2,3,4,6,7,8-HpCDF	MD-01-SD, MD-02-SD, MD-03-SD, MD-01-SW, MD-02-SW	pp. 6-71, 6-72
1,2,3,4,7,8-HxCDD	MD-01-SD, MD-01-SW, MD-02-SW	pp. 6-71, 6-72
1,2,3,4,7,8-HxCDF	MD-02-SD, MD-01-SW, MD-02-SW	pp. 6-71, 6-72
1,2,3,7,8-PeCDD	MD-01-SD, MD-01-SW, MD-02-SW	pp. 6-71, 6-72
1,2,3,7,8-PeCDF	MD-02-SW	p. 6-72
2,3,4,7,8-PeCDF	MD-01-SD, MD-02-SW	pp. 6-71, 6-72
2,3,7,8-TCDD TEQ	MD-01-SD, MD-02-SD, MD-03-SD, MD-01-SW, MD-02-SW	pp. 6-71, 6-72

2.4.2 Hazardous Waste Quantity

2.4.2.1.1 Hazardous Constituent Quantity

There are insufficient data to document a hazardous constituent quantity; therefore a 0 is assigned for this source (Ref. 1, Section 2.4.2.1.1).

Hazardous Constituent Quantity Value: 0

2.4.2.1.2 Hazardous Wastestream Quantity

There are insufficient data to document a hazardous wastestream quantity; therefore a 0 is assigned for this source (Ref. 1, Section 2.4.2.1.2).

Hazardous Wastestream Quantity Value: 0

2.4.2.1.3 Volume

There are insufficient data to document a volume; therefore a 0 is assigned for this source (Ref. 1, Section 2.4.2.1.3).

Dimension of Source (yd³): 0

Volume Assigned Value: 0

2.4.2.1.4 Area

Each of the three retaining ponds are approximately 10 feet wide by 15 feet long and 2 feet deep (Ref. 8, p. 6-14). To be conservative, however, only the area measure is scored for HRS purposes. Therefore, the total area measure for the three ponds is $150 \times 3 = 450$ square feet. The area measure is calculated as follows (Ref. 1, p. 51591):

$$450 / 13 = 34.62$$

Area of Source (ft²): 450

Area Assigned Value: 34.62

=====
Source Hazardous Waste Quantity: 34.62

SITE SUMMARY OF SOURCE DESCRIPTIONS

Table 6				
Source Number	Source Hazardous Waste Quantity Value	Containment		
		Surface Water	Air Gas	Air Particulate
1. Contaminated Soil	3.29	10 ^a	10 ^b	10 ^b
2. Contaminated Soil	2.13	10 ^a	10 ^b	10 ^b
3. Contaminated Soil	1.06	10 ^a	10 ^b	10 ^b
4. Pile	3,000	10 ^a	10 ^b	10 ^b
5. Surface Impoundment	34.62	10 ^a	NS	NS

^a - Ref. 1, pp. 51609 and 51610.

^b - Ref. 1, pp. 51652 and 51653.

NS - Not scored.

SURFACE WATER OVERLAND FLOW/FLOOD

4.1 OVERLAND/FLOOD MIGRATION COMPONENT PATHWAY DESCRIPTION

4.1.1 Definition of Hazardous Substance Migration Path for Overland/Flood Component

Surface water runoff from the site is collected through a series of catch basins and open ditches across the site (Ref. 8, p. 2-4). In the west facility this water is channeled to four outfalls (Nos. 001, 002, 003, and 005) under a NPDES permit (No. 87487) that limits oil and grease, arsenic, copper, zinc, and PCP concentrations to monthly averages of 10 milligrams per liter (mg/L), 0.048 mg/L, 0.012 mg/L, 0.110 mg/L, and 0.013 mg/L, respectively (Ref. 8, p. 2-4; Ref. 23). Outfalls Nos. 001, 002, and 003 discharge to the Southwest Rock Creek Road ditch located on the east side of the treatment plant and treated pole storage area (Ref. 8, pp. 2-4 and 2-5, Figure 3-4). Outfall No. 001 discharges stormwater from the treatment plant that has been collected by four retaining ponds and piped through oil/water separators (Ref. 8, p. 7-3). Outfalls Nos. 002 and 003 discharge stormwater that has collected in ditches in the treated pole storage area and the northern portion of the treatment plant (Ref. 8, p. 7-3). Outfall No. 005 discharges some stormwater from the white pole storage to a ditch along Highway 18B (Ref. 8, p. 7-3). The Southwest Rock Creek Road ditch and the Highway 18B ditch converge prior to entering the South Yamhill River at approximately river mile (RM) 40 (Ref. 8, pp. 7-3, 7-4, Figures 3-4 and 3-5).

Some surface water from the northwestern portion of white pole storage area flows by sheet action north to a ditch along the south side of the Willamette Pacific Railroad tracks (Ref. 8, p. 7-4). Stormwater runoff from the northern portion of the boiler ash and UST bioremediated soil waste pile also flows into this ditch (Ref. 8, p. 7-4). This ditch flows west and discharges to Rock Creek which then flows south along the west and south boundaries of the site into the South Yamhill River at approximately RM 40 (Ref. 8, p. 7-4). This point is approximately 500 feet upstream of the Southwest Rock Creek Road ditch confluence with the South Yamhill River (Ref. 8, p. 7-4 and Figures 3-4 and 3-5).

Some surface water from the northeastern portion of the white pole storage area and the northern portion of the treated pole storage area also flows by sheet action north to the south railroad ditch (Ref. 8, p. 7-4). In this area, this ditch flows east and discharges into the Southwest Rock Creek Road ditch (Ref. 8, p. 7-4). A ditch, located on the north side of the Willamette Pacific Railroad tracks (north railroad ditch), drains the agricultural fields and the truck maintenance shop facility north of the white pole and treated pole storage areas (Ref. 8, p. 7-4 and Figure 3-4). This ditch also discharges to the Southwest Rock Creek Road ditch (Ref. 8, p. 7-4). The Southwest Rock Creek Road ditch then flows south into the South Yamhill River at RM 40 (Ref. 8, p. 7-3 and Figures 3-4 and 3-5).

In the east facility, surface water runoff from the sawmill facility, the northern portion of the end-painting facility, and the Sheridan Forest Products facility flows eastward through numerous ditches to the southeastward-flowing Sheridan Forest Products ditch (Ref. 8, p. 7-4). This ditch flows approximately 600 feet to its confluence with the South Yamhill River at approximately RM 41 (Ref. 8, p. 7-4 and Figures 3-4 and 3-5).

Since the on-site ditches have water flow only during rainy seasons, the probable point of entry (PPE) of contaminants into the surface water migration pathway consists of the points where the ditches enter perennially flowing water such as Rock Creek or the South Yamhill River (Ref. 8, p. 7-4). The most upstream PPE for the site is located on Rock Creek at the point that the ditch along the south side of the railroad tracks enters the creek (PPE 1), approximately 0.3 mile upstream of the creek's confluence with the South Yamhill River (Ref. 8, p. 7-4 and Figure 3-5). PPE 2 is located at the point that Rock Creek ditch enters the South Yamhill River (Ref. 8, Figure 3-5). PPE 3 is located at the point that the Sheridan Forest Products ditch enters the South Yamhill River, at RM 41 (Ref. 8, Figure 3-5).

From the site, the South Yamhill River generally flows east-northeast approximately 40 miles to its confluence with the North Yamhill River, northeast of McMinnville, Oregon (Ref. 3; Ref. 8, p. 7-5). At that point, the Yamhill River flows approximately 11.5 miles to its confluence with the Willamette River, near Dayton, Oregon (Ref. 8, p. 7-5). The 15-mile surface water pathway target distance limit (TDL) begins at the most upstream PPE in Rock Creek (PPE 1) and extends to the most downstream PPE in the South Yamhill River (PPE 5), and further extends 15 river miles downstream in the South Yamhill River to RM 56 (Ref. 1, p. 51605; Ref. 3; Ref. 8, p. 7-5, Figure 7-2). The South Yamhill River's average annual flow rate is approximately 2,650 cubic feet per second, measured at United States Geological Survey gaging station number 14194150, approximately 23 miles downstream of the site (Ref. 21). The average annual flow rate of Rock Creek is unknown (Ref. 8, p. 7-5).

The South Yamhill River is used as a source of drinking water, commercial food crop irrigation, and recreational boating and fishing (Ref. 8, p. 7-5, Appendix C, photographs 16.09 and 16.10). The City of Sheridan operates a municipal drinking water intake approximately 1.5 miles downstream of PPE 5 in the South Yamhill River (Ref. 8, p. 7-5 and Figure 3-5). The site lies within the 500-year flood plain of the South Yamhill River (Ref. 10, p. 78).

Migration from Sources to Ditches

The following section and accompanying tables demonstrate the migration of hazardous substance from site sources to targets via stormwater ditches and further delineates the overland flow migration pathway. These ditches are intermittent, and therefore, are not eligible as surface water bodies for HRS scoring (Ref. 1, Section 4.0.2).

During the IA, twenty-four samples were collected from stormwater ditches in the West Facility and a total of 11 downgradient sediment samples were collected from Rock Creek Road ditch (RCD-01-SD to RCD-11-SD) (Ref. 8, pp. 7-6, 7-7, and Figure 3-4). Of these samples, fifteen from the West Facility and nine from the Southwest Rock Creek Road ditch were collected from ditches that drain sources and are used in this documentation record. Samples used from the West Facility were collected from the following locations: the ditch south of the Willamette Pacific Railroad (south railroad ditch; SRD-01-SD through SRD-07-SD); the ditch on the western portion of the White Pole Storage Area (west ditch; WD-01-SD and WD-02-SD); the ditch in the eastern portion of the White Pole Storage Area (center ditch; CD-01-SD and CD-02-SD); a ponded area next to the drip pads in the treatment plant facility (PAD-01-SD); the ditch in the western portion of the Treated Pole Storage Area (main ditch; MD-04-SD and MD-05-SD); and the Valley Highway ditch, adjacent to Highway 18B, on the southern boundary of the White Pole Storage Area and Treatment Plant Facility (VHD-01-SD to VHD-04-SD) (Ref. 8, pp. 7-6, 7-7, and Figure 3-4). Sediment samples used from the Southwest Rock Creek Road ditch include: sample RCD-01-SD collected on the ditch approximately 20 feet upstream of the ditch's confluence with the South Yamhill River; sample RCD-02-SD collected immediately upstream of Highway 18B; sample RCD-03-SD collected at the confluence of the Southwest Rock Creek Road ditch and Valley Highway ditch; sample RCD-04-SD collected at the Treatment Plant Facility NPDES outfall No. 001; samples RCD-05-SD to RCD-08-SD collected at various ditch inputs to the Southwest Rock Creek Road ditch or from stained areas in the ditch east of the Treatment Plant Facility (sample RCD-06-SD was collected at NPDES outfall No. 0002/0003); and sample RCD-09-SD collected at the confluence of the south railroad ditch and the Southwest Rock Creek Road ditch (Ref. 8, p. 7-9 and Figure 3-4).

During the IA, two surface water samples, RCD-01-SW and RCD-02-SW, were collected from the Southwest Rock Creek Road ditch (Ref. 8, p. 7-10). Surface water samples were co-located with their corresponding sediment samples (Ref. 8, p. 7-10). Both samples were used in this documentation record.

Sediment and surface water samples were analyzed for VOCs (EPA CLPAS Method OLM03.2), low concentration SVOCs (Modified EPA Method 8270), pest/PCBs (EPA CLPAS Method OLM03.2), and TAL metals (EPA CLPAS Method ILM04.0) (Ref. 8, pp. 3-7, 3-35 through 3-39, and 4-1). All sediment samples were analyzed for total organic carbon (TOC) (EPA SW-846 Method 9060) (Ref. 8, pp. 3-7, 3-35 through 3-39, and 4-1). Selected sediment and surface water samples also were analyzed for dioxins/furans (EPA Method 8290) (Ref. 8, pp. 3-7, 3-35 through 3-39, and 4-1).

Sampling methods followed the SOP contained in Appendix B of the SQAP (Ref. 8, p. 3-2; Ref. 15, Appendix B). Grass, leaves, and other vegetative material, rocks, and other debris unsuitable for analysis were removed from samples before they were placed into sample containers (Ref. 8, p. 3-2). The portion

of each sample being collected for VOC analysis was placed directly into a sample container without homogenization efforts (Ref. 8, p. 3-2). Sample material for all other analyses was homogenized in dedicated stainless steel bowls prior to containerization (Ref. 8, p. 3-2). Dedicated stainless steel spoons and scoops were used to extract, homogenize, and place sampled material into sample containers (Ref. 8, p. 3-2). For samples submitted for dioxin/furan analysis, stainless steel spoons and bowls were pre-washed with hexane (Ref. 8, p. 3-2). All samples were stored on ice in coolers continuously maintained under chain of custody (Ref. 5; Ref. 7; Ref. 8, p. 3-2).

Sample collection began at the most downstream location and proceeded upstream to eliminate the potential for cross-contamination (Ref. 8, p. 3-4). Surface water samples were co-located with the sediment samples, when present, and were collected prior to the collection of sediment samples to eliminate cross-contamination (Ref. 8, p. 3-4). Surface water samples were collected by lowering dedicated sample containers into the water to a maximum depth of 1 foot, with the containers filling as they descended (Ref. 8, p. 3-4). Sediment samples were collected using dedicated stainless steel spoons or trowels (Ref. 8, p. 3-4). The VOC aliquot was collected first followed by the remaining aliquots (Ref. 8, p. 3-4).

During the IA, several background sediment samples were collected from stormwater ditches (Ref. 8, pp. 5-3 and 5-4, and Table 3-1). As a conservative measure of the migration of on-site contamination, only ditch sediment sample results that were significant when compared to the background samples were used in this documentation record. Further, ditch sediment sample results were compared to the highest concentration per analyte for all background samples collected, regardless of sample location or sample characteristics when determining whether a concentration was significant. The background sediment samples used are RCD-12-SD, ND-02-SD, and SD-04-SD (Ref. 8, pp. 3-33 [Table 3-1], 5-5, and Appendix E). Significant concentrations of hazardous substances in ditches draining site sources documents migration from these sources to surface water bodies. Ditch sediment samples documenting significant concentrations of hazardous substances relative to background samples using the above techniques are presented in Tables 7a through 7d below. No background surface water ditch samples were collected during the IA since the background ditch locations were dry at the time of sampling (Ref. 8, p. 5-6). For this reason, the background surface water sample collected from Rock Creek is used to document significant concentrations of hazardous substances in these ditch samples. The results of this evaluation are presented in Tables 8 and 9 below.

Table 7a

STORMWATER DITCH SEDIMENT SAMPLES

EPA Sample Number	99244540	99234420	99234418	99234419	99244521	99244522	99244523	99244524	99234417	99244527	99244529
Location ID Number	SD-04-SD	PAD-01-SD	MD-04-SD	MD-05-SD	CD-01-SD	CD-02-SD	WD-01-SD	WD-02-SD	ND-03-SD	NRD-03-SD	SRD-01-SD
	BACKGROUND										
Reference 8, Page(s)	E1026, E1027	E948, E949	E944, E945	E946, E947	E982, E983	E986, E987	E988, E989	E990, E991	E950, E951	E996, E997	E1000, E1001
SVOCs (µg/kg)											
2-Methylnaphthalene	100 U										
3- and 4-Methylphenol Coelution	200 U										
Acenaphthene	100 U		2000								
Acenaphthylene	100 U				200						
Anthracene	100 U	400	16000		500						200
Benzo(a)anthracene	100 U	1000	6000	200	2000		200	300			200
Benzo(a)pyrene	100 U	600	3000	100	1500		300	300			100
Benzo(b)fluoranthene	100 U	1800	5000	300	7300 JL		500	1100	100		300
Benzo(k)fluoranthene	100 U	700	4000	200	2200		300	800			100
Bis(2-ethylhexyl)phthalate	200 U				900						
Chrysene	100 U	2000	10000	500	7600 JL		400	1700	100		400
Dibenzofuran	200 U		2000								
Diethylphthalate	300 U										
Fluoranthene	100 U	2400	19000	600	9500 JL		500	2900		100	400
Fluorene	100 U		5000		300						
Indeno(1,2,3-cd)pyrene	100 U	200	2000		1200		400	200			100
Naphthalene	100 U										
Pentachlorophenol	500 U	1900	1100		1000	600	1100	2300			1100
Phenanthrene	100 U	1300	15000		4300		200	2000		100	300
Pyrene	100 U	1900	16000	600	6800 JL		800	3000		100	400

Key at end of table.

Table 7a (continued)

STORMWATER DITCH SEDIMENT SAMPLES

EPA Sample Number	99244540	99244530	99244531	99244533	99244534	99244535	99234432
Location ID Number	SD-04-SD	SRD-02-SD	SRD-03-SD	SRD-05-SD	SRD-06-SD	SRD-07-SD	VHD-01-SD
	BACKGROUND						
Reference 8, Page(s)	E1026, E1027	E1002, E1003	E1004, E1005	E1008, E1009	E1014, E1015	E1016, E1017	E844, E845
SVOCs (µg/kg)							
2-Methylnaphthalene	100 U						
3- and 4-Methylphenol Coelution	200 U						
Acenaphthene	100 U			1100			
Acenaphthylene	100 U			400			
Anthracene	100 U		300	1000			
Benzo(a)anthracene	100 U		300	4600 JL			
Benzo(a)pyrene	100 U		200	2700			200
Benzo(b)fluoranthene	100 U		900	9300 JL	300	100	300
Benzo(k)fluoranthene	100 U		400	2200	100		200
Bis(2-ethylhexyl)phthalate	200 U						
Chrysene	100 U	100	900	7600 JL	300		200
Dibenzofuran	200 U			500			
Diethylphthalate	300 U						
Fluoranthene	100 U	100	1000	13000 JL	100		200
Fluorene	100 U			1200			
Indeno(1,2,3-cd)pyrene	100 U		400	1400			100
Naphthalene	100 U			100			
Pentachlorophenol	500 U	600	1700				
Phenanthrene	100 U		200	10000 JL			
Pyrene	100 U	100	900	13000 JL	100		400

Key at end of table.

Table 7a (continued)

STORMWATER DITCH SEDIMENT SAMPLES						
EPA Sample Number	99244540	99234433	99234434	99234435	99244544	99244545
Location ID Number	SD-04-SD	VHD-02-SD	VHD-03-SD	VHD-04-SD	MSD-01-SD	MSD-02-SD
	BACKGROUND					
Reference 8, Page(s)	E1026, E1027	E814, E815	E850, E851	E852, E853	E1046, E1047	E1044, E1045
SVOCs ($\mu\text{g}/\text{kg}$)						
2-Methylnaphthalene	100 U					
3- and 4-Methylphenol Coelution	200 U					
Acenaphthene	100 U					
Acenaphthylene	100 U					
Anthracene	100 U			100		
Benzo(a)anthracene	100 U	100		300	100	
Benzo(a)pyrene	100 U	200		500		
Benzo(b)fluoranthene	100 U	200		1100	300	
Benzo(k)fluoranthene	100 U	200		500	200	600
Bis(2-ethylhexyl)phthalate	200 U					
Chrysene	100 U	200		900	200	700
Dibenzofuran	200 U					
Diethylphthalate	300 U					
Fluoranthene	100 U	200		600	200	600
Fluorene	100 U					
Indeno(1,2,3-cd)pyrene	100 U	200		500	100	
Naphthalene	100 U					
Pentachlorophenol	500 U			1800		
Phenanthrene	100 U			200	100	
Pyrene	100 U	400	300	1100	100	600

Key at end of table.

Table 7a (concluded)						
STORMWATER DITCH SEDIMENT SAMPLES						
EPA Sample Number	99244540	99244538	99244751	99244549	99234286	99234287
Location ID Number	SD-04-SD	SMD-01-SD	PPD-01-SD	EPD-03-SD	SD-02-SD	SD-03-SD
	BACKGROUND					
Reference 8, Page(s)	E1026, E1027	E1022, E1023	E1056, E1057	E1052, E1053	E868, E869	E866, E867
SVOCs (µg/kg)						
2-Methylnaphthalene	100 U		300		900	
3- and 4-Methylphenol Coelution	200 U				1400	1200
Acenaphthene	100 U				3700	
Acenaphthylene	100 U					
Anthracene	100 U		300		2800	
Benzo(a)anthracene	100 U		400	400	800	
Benzo(a)pyrene	100 U					
Benzo(b)fluoranthene	100 U		300			
Benzo(k)fluoranthene	100 U		200			
Bis(2-ethylhexyl)phthalate	200 U			400		
Chrysene	100 U		600	600	1100	
Dibenzofuran	200 U		200		2100	
Diethylphthalate	300 U					
Fluoranthene	100 U		1700	700	6400	400
Fluorene	100 U		100		3800	
Indeno(1,2,3-cd)pyrene	100 U					
Naphthalene	100 U		300		300	
Pentachlorophenol	500 U					
Phenanthrene	100 U		600	500	17000	300
Pyrene	100 U	400	1300	1400	4600	

Key:

EPA = United States Environmental Protection Agency.
 ID = Identification.
 J = The analyte was positively identified. The associated numerical result is an estimate.
 L = Low bias.
 µg/kg = Microgram per kilogram.
 SVOCs = Semivolatile organic compounds.
 U = The analyte was not detected. The associated numerical result is the sample quantitation limit.

Table 7b

STORMWATER DITCH SEDIMENT SAMPLES

EPA Sample Number	99244540	99234420	99234418	99244521	99244523	99244524	99244525	99244526	99244527	99244528	99244529
Location ID Number	SD-04-SD	PAD-01-SD	MD-04-SD	CD-01-SD	WD-01-SD	WD-02-SD	NRD-01-SD	NRD-02-SD	NRD-03-SD	NRD-04-SD	SRD-01-SD
	BACKGROUND										
Reference 8, Page(s)	E308	E242	E240	E309	E360	E361	E362	E363	E364	E365	E366
Inorganics (mg/kg)											
Arsenic	8.5	138	79.8	36.6	29.2	26.8	35.8	36.2		28.5	58.4
Cadmium	0.14 U										
Copper	61.9	549	329								
Lead	11.7 JK (17 AC)				61.5						
Mercury	0.09 U				0.43	0.24	0.55	0.43	0.47	0.49	0.39
Selenium	1.5 JBL (1.70 U)				2.5	2.6	2.4		2.1	2.5	1.9
Zinc	270 JL (400 AC)							1280			

Key at end of table.

Table 7b (continued)

STORMWATER DITCH SEDIMENT SAMPLES

EPA Sample Number	99244540	99244530	99244531	99244532	99244533	99244534	99244535	99234432	99234433	99234434
Location ID Number	SD-04-SD	SRD-02-SD	SRD-03-SD	SRD-04-SD	SRD-05-SD	SRD-06-SD	SRD-07-SD	VHD-01-SD	VHD-02-SD	VHD-03-SD
	BACKGROUND									
Reference 8, Page(s)	E308	E367	E368	E369	E370	E371	E303	E252	E253	E254
Inorganics (mg/kg)										
Arsenic	8.5	400	69.6	23.0	58.5	69.8	17.5	28.3	25.4	139
Cadmium	0.14 U								1.5	
Copper	61.9					197 JL				303 JL
Lead	11.7 JK (17 AC)							135 JL	93.8 JL	
Mercury	0.09 U	0.30	0.36	0.49	8.5	0.40				
Selenium	1.5 JBL (1.70 U)	2.3	1.6	3.1	2.0	2.2	1.8 JL			
Zinc	270 JL (400 AC)									1860

Key at end of table.

Table 7b (continued)

STORMWATER DITCH SEDIMENT SAMPLES						
EPA Sample Number	99244540	99234435	99244544	99244545	99244543	99244546
Location ID Number	SD-04-SD	VHD-04-SD	MSD-01-SD	MSD-02-SD	SMD-04-SD	EPD-01-SD
BACKGROUND						
Reference 8, Page(s)	E308	E255	E353	E354	E352	E355
Inorganics (mg/kg)						
Arsenic	8.5	57.5	34.9	22.1	26.0	23.8
Cadmium	0.14 U					
Copper	61.9					
Lead	11.7 JK (17 AC)					58.4 JL
Mercury	0.09 U					
Selenium	1.5 JBL (1.70 U)		1.8 JL			
Zinc	270 JL (400 AC)					

Key at end of table.

Table 7b (concluded)						
STORMWATER DITCH SEDIMENT SAMPLES						
EPA Sample Number	99244540	99244548	99244549	99244750	99244752	99244537
Location ID Number	SD-04-SD	EPD-02-SD	EPD-03-SD	EPD-04-SD	WL-01-SD	ED-03-SD
	BACKGROUND					
Reference 8, Page(s)	E308	E346	E347	E348	E330	E305
Inorganics (mg/kg)						
Arsenic	8.5	25.4		26.4	26.7 JL	31.8
Cadmium	0.14 U					
Copper	61.9					
Lead	11.7 JK (17 AC)	66.5 JL	68.2 JL			
Mercury	0.09 U	0.20			0.19 JL	
Selenium	1.5 JBL (1.70 U)				3.4	3.2 JL
Zinc	270 JL (400 AC)					

Key:

- AC = Adjusted Concentration (Ref. 12).
- B = Analyte detected below the Contract Required Detection Limits, but at or above the instrument detection limits.
- EPA = United States Environmental Protection Agency.
- ID = Identification.
- J = The analyte was positively identified. The associated numerical result is an estimate.
- K = Unknown bias.
- L = Low bias.
- mg/kg = Milligram per kilogram.
- U = The analyte was not detected. The associated numerical result is the sample quantitation limit.

Table 7c			
STORMWATER DITCH SEDIMENT SAMPLES			
EPA Sample Number	99244540	99244548	99234287
Location ID Number	SD-04-SD	EPD-02-SD	SD-03-SD
	BACKGROUND		
	E4399, E4400	E2736	E1565
VOCs (µg/kg)			
2-Butanone	18 UJK (180 U AC)		
Acetone	18 UJK (180 U AC)	180 JL	
Toluene	18 U		50

Key:

AC	= Adjusted Concentration (Ref. 12).
EPA	= United States Environmental Protection Agency.
ID	= Identification.
J	= The analyte was positively identified. The associated numerical result is an estimate.
K	= Unknown bias.
L	= Low bias.
µg/kg	= Microgram per kilogram.
VOCs	= Volatile organic compounds.
U	= The analyte was not detected. The associated numerical result is the sample quantitation limit.

Table 7d								
STORMWATER DITCH SEDIMENT SAMPLES								
EPA Sample Number	99244540	99234420	99234418	99244546	99244752	99244537	99234285	99234286
Location ID Number	SD-04-SD	PAD-01-SD	MD-04-SD	EPD-01-SD	WL-01-SD	ED-03-SD	SD-01-SD	SD-02-SD
	BACKGROUND							
Reference 8, Page(s)	E2169	E2139	E2137	E2320, E2321	E2022, E2023	E2167	E2209, E2210	E2211
Dioxin/Furans (ng/kg)								
1,2,3,4,6,7,8-HpCDD	7.696	38704	21946	40955.35	132.973 JL	284.002	23.712	29.057
1,2,3,4,6,7,8-HpCDF	0.562 U	6123	4658	1542.493	13.465 JL	27.007	3.71	3.026
1,2,3,4,7,8,9-HpCDF	0.794 U	277.705	67.422	56.324				
1,2,3,4,7,8-HxCDD	0.921 U					7.503		
1,2,3,4,7,8-HxCDF	0.648 U			61.847 JH (6.18 AC)				
1,2,3,6,7,8-HxCDD	0.784 U	483.66	137.855	549.087 JH (54.91 AC)	5.075 JK (0.5075 AC)	20.649	2.567	
1,2,3,7,8,9-HxCDD	0.873 U	279.606	91.66	301.544 JH (30.15 AC)		17.133		
1,2,3,7,8,9-HxCDF	0.828 U	23.78						
1,2,3,7,8-PeCDD	0.752 U	47.739	15.188	208.792				
1,2,3,7,8-PeCDF	0.477 U	34.058		85.648				
2,3,4,6,7,8-HxCDF	0.589 U	157.493						
2,3,4,7,8-PeCDF	0.481 U	17.961						
2,3,7,8-TCDD	0.705 U		0.888	12.138				
2,3,7,8-TCDF	0.601 U	5.301	1.704	39.049				

Key:

- AC = Adjusted Concentration (Ref. 12).
- EPA = United States Environmental Protection Agency.
- ID = Identification.
- J = The analyte was positively identified. The associated numerical result is an estimate.
- H = High bias.
- K = Unknown bias.
- L = Low bias.
- ng/kg = Nanogram per kilogram.
- U = The analyte was not detected. The associated numerical result is the sample quantitation limit.

Table 7e			
STORMWATER DITCH SURFACE WATER SAMPLES			
EPA Sample Number	99234430	99234284	99234288
Sample ID Location	RC-03-SW	SD-01-SW	SD-03-SW
	BACKGROUND		
Reference 8, Page	E72	E66	E67
Inorganics (µg/L)			
Arsenic	4.2 U		10.6
Lead	1.9 U	3.7	4.0
Manganese	20.7	329	3810
Mercury	0.24	5.6	

Key:

EPA = United States Environmental Protection Agency.

ID = Identification.

ug/L = Microgram per liter.

U = The analyte was not detected. The associated numerical result is the sample quantitation limit.

Table 8

ROCK CREEK DITCH SEDIMENT SAMPLES

EPA Sample Number	99244540	99234402	99234404	99234405	99234406	99234407	99234408	99234409	99234410	99234411
Location ID Number	SD-04-SD	RCD-01-SD	RCD-02-SD	RCD-03-SD	RCD-04-SD	RCD-05-SD	RCD-06-SD	RCD-07-SD	RCD-08-SD	RCD-09-SD
Description	BACKGROUND									
Reference 8, Page(s)	E1026, E1027, E308, E2169	E800, E801, E293, E2388	E826, E827, E2133	E834, E835, E259	E836, E837, E260	E842, E843, E261	E816, E817, E262	E818, E819, E263	E820, E821, E264	E822, E823
SVOCs (µg/kg)										
3- and 4-Methylphenol Coelution	200 U									1700
Acenaphthene	100 U	1000								1100
Anthracene	100 U		100	600	400	400	200	100		2500
Benzo(a)anthracene	100 U			500	400	400	300	200	300	9000 JL
Benzo(a)pyrene	100 U		100	400	600	1800	400	100		4000
Benzo(b)fluoranthene	100 U	1000	300	800	1600	2400	1000	400	400	12000 JL
Benzo(k)fluoranthene	100 U		200	600	700	1200	500	200	300	5200 JL
Bis(2-chloroethyl)ether	200 U					2000				
Chrysene	100 U	1000	200	800	800	1100	600	300	500	13000 JL
Dibenzofuran	200 U	2000								900
Fluoranthene	100 U	2000	200	700	500	700	600	200	500	11000 JL
Fluorene	100 U	1000								2000
Indeno(1,2,3-cd)pyrene	100 U		200	500	900	800	300			1400
Pentachlorophenol	500 U		1000	2000	3000	4000	1700	900		
Phenanthrene	100 U						100		200	7500 JL
Pyrene	100 U	2000	200	700	600	1000	600	200	400	11000 JL
Inorganics (mg/kg)										
Arsenic	8.5	34.0		445	437	58.9	130	87.7	57.0	
Copper	61.9			211 JL		219 JL	236 JL	261 JL		
Nickel	29.6					152				
Dioxin/Furan (ng/kg)										
1,2,3,4,6,7,8-HpCDD	7.696	135613	294.02							
1,2,3,4,6,7,8-HpCDF	0.562 U	3999.653	29.697							
1,2,3,4,7,8,9-HpCDF	0.794 U	338.912								
1,2,3,4,7,8-HxCDD	0.921 U	135.868	1.821							
1,2,3,4,7,8-HxCDF	0.648 U	1241.42 JK (124.1 AC)								
1,2,3,6,7,8-HxCDD	0.784 U	1910.792	9.421							
1,2,3,6,7,8-HxCDF	0.563 U	172.468								
1,2,3,7,8,9-HxCDD	0.873 U	410.959	3.473							
1,2,3,7,8,9-HxCDF	0.828 U	107.154								
1,2,3,7,8-PeCDD	0.752 U	33.595								
1,2,3,7,8-PeCDF	0.477 U	55.759	0.683							
2,3,4,6,7,8-HxCDF	0.589 U	251.613								
2,3,4,7,8-PeCDF	0.481 U	70.456								

Key:

- AC = Adjusted Concentration (Ref. 12).
- EPA = United States Environmental Protection Agency.
- ID = Identification.
- J = The analyte was positively identified. The associated numerical result is an estimate.
- K = Unknown bias.
- L = Low bias.
- mg/kg = Milligram per kilogram.
- ng/kg = Nanogram per kilogram.
- ug/kg = Microgram per kilogram.
- SVOCs = Semivolatile organic compounds.
- U = The analyte was not detected. The associated numerical result is the sample quantitation limit.

Table 9

**ROCK CREEK DITCH
SURFACE WATER SAMPLES**

EPA Sample Number	99234430	99234401	99234403
Sample ID Location	RC-03-SW	RCD-01-SW	RCD-02-SW
	BACKGROUND		
Reference 8, Page(s)	E72, E1924, E1925, E2145, E2146	E79, E1930, E1931, E2041	E56, E1936, E1937, E2131, E2132
SVOCs (µg/L)			
Bis(2-ethylhexyl)phthalate	10 U	370	10 JK (100 AC)
Inorganics (µg/L)			
Arsenic	4.2 U	11.6	11.1
Lead	1.9 U	2.8 JBK	3.7
Manganese	20.7	49.8	189
Zinc	3.6 JBL (SQL= 20 U)	8.6 JBK	24.9
Dioxin/Furans (pg/L)			
1,2,3,4,6,7,8-HpCDD	4.555 U	1160.087	622.738
1,2,3,4,6,7,8-HpCDF	2.13 U	157.208	81.971
1,2,3,4,7,8-HxCDD	2.32 U	9.681	6.016 U
1,2,3,6,7,8-HxCDD	2.172 U	45.9	18.886 U
1,2,3,7,8,9-HxCDD	2.125 U	20.55	12.545 U

Key:

- AC = Adjusted Concentration (Ref. 12).
- B = Analyte detected below the Contract Required Detection Limits, but at or above the instrument detection limits.
- EPA = United States Environmental Protection Agency.
- ID = Identification.
- J = The analyte was positively identified. The associated numerical result is an estimate.
- H = High bias.
- K = Unknown bias.
- L = Low bias.
- mg/L = Milligram per liter.
- pg/L = Picogram per liter.
- SLQ = Sample quantitation limit.
- SVOCs = Semivolatile organic compounds.
- U = The analyte was not detected. The associated numerical result is the sample quantitation limit.

4.1.2.1 LIKELIHOOD OF RELEASE

4.1.2.1.1 Observed Release

Direct Observation

On February 26, 1999, EPA responded to a discharge of approximately 3,500 gallons of 5-percent PCP-enriched P-9 oil from the P-9 tank farm (Ref. 14, pp. 3 and 4). The solution flowed overland across the treated pole storage yard and collected in on-site drainage ditches (Ref. 14, p. 4). Solution which collected in the on-site drainage system passed through a series of oil/water separators before discharging into the Rock Creek Road drainage ditch, which drains to the South Yamhill River (Ref. 14, p. 4). An oily sheen was observed on the South Yamhill River during this incident (Ref. 14, p. 4). Surface water samples were collected upstream and downstream by TLT at the NPDES outfalls to the Rock Creek Road drainage ditch and at the City of Sheridan's drinking water intake (approximately 1.5 miles downstream of the outfall) (Ref. 14, p. 8). The samples were submitted to a commercial laboratory for PAH and PCP analysis following EPA Method 8270 (Ref. 14, p. 8). Analysis of these samples indicated the presence of PCP and benzo(a)pyrene at concentrations exceeding the Safe Drinking Water Act (SDWA) maximum contaminant levels (MCLs) (Ref. 14, p. 10 and Appendix D).

Chemical Analysis

Migration from Ditches to Targets

During the IA, a total of 13 sediment samples were collected from the South Yamhill River (YR-01-SD to YR-04-SD, YR-07-SD to YR-10-SD, and YR-12-SD to YR-16-SD); one sediment sample (YR-06-SD) was collected from an unnamed creek/stormwater ditch that flows into the South Yamhill River approximately 0.5 mile downstream of PPE 5; and two sediment samples were collected from Rock Creek (RC-01-SD and RC-02-SD) (Ref. 8, p. 7-10 and Figure 3-5). Samples were collected from the following locations: sample YR-SD-01 was collected approximately 50 feet downstream of the City of Sheridan's municipal drinking water intake; sample YR-SD-02 from the intake at approximately RM 42.5; sample YR-03-SD from approximately 50 feet downstream of the confluence with an unnamed creek/stormwater ditch located approximately 0.5 mile downstream of PPE 3; sample YR-04-SD at the confluence with the unnamed creek/stormwater ditch at approximately RM 41.5; sample YR-06-SD in the unnamed stream/stormwater ditch at approximately 20 feet upstream of its confluence with the South Yamhill River; samples YR-07-SD and YR-08-SD from 70 feet and 10 feet, respectively, downstream of the railroad trestle that crosses the South Yamhill River at approximately RM 41.4; sample YR-09-SD from approximately 50 feet downstream of the confluence with the Sheridan Forest Products ditch; sample YR-10-SD at the confluence with the Sheridan Forest Products ditch at PPE 3; sample YR-12-SD from approximately 60 feet downstream of the confluence of the east ditch at approximately RM 40.5; sample YR-13-SD from approximately 50 yards downstream of the confluence with the Southwest Rock Creek Road ditch; sample YR-14-SD at the confluence with the Southwest Rock Creek Road ditch (PPE 2); sample YR-15-SD from approximately 50 yards downstream of the confluence with Rock Creek; YR-16-SD at the confluence with Rock Creek at approximately RM 40; sample RC-01-SD in Rock Creek

approximately 100 feet upstream of its confluence with the South Yamhill River; and sample RC-02-SD from Rock Creek northwest of the site approximately 100 feet downstream of the confluence of the south railroad ditch at PPE 1, approximately 0.3 mile upstream of the confluence with the South Yamhill River (Ref. 8, pp. 7-10 and 7-11).

Also, during the IA, eight surface water samples were collected from the South Yamhill River (YR-02-SW, YR-04-SW, YR-07-SW, YR-08-SW, YR-10-SW, YR-12-SW, YR-14-SW, and YR-16-SW), and one surface water sample was collected from Rock Creek (RC-01-SW) (Ref. 8, p. 7-12). Surface water samples were co-located with their corresponding sediment samples (Ref. 8, p. 7-12).

Sediment and surface water samples were analyzed for VOCs (EPA CLPAS Method OLM03.2), low concentration SVOCs (Modified EPA Method 8270), pest/PCBs (EPA CLPAS Method OLM03.2), and TAL metals (EPA CLPAS Method ILM04.0) (Ref. 8, pp. 3-7, 3-39 through 3-41, and 4-1). All sediment samples were analyzed for TOC (EPA SW-846 Method 9060) (Ref. 8, pp. 3-7, 3-39 through 3-41, and 4-1). Selected sediment and surface water samples also were analyzed for dioxins/furans (EPA Method 8290) (Ref. 8, pp. 3-7, 3-39 through 3-41, and 4-1).

Sampling methods followed the SOP contained in Appendix B of the SQAP (Ref. 8, p. 3-2; Ref. 15, Appendix B). Grass, leaves, and other vegetative material, rocks, and other debris unsuitable for analysis were removed from samples before they were placed into sample containers (Ref. 8, p. 3-2). The portion of each sample being collected for VOC analysis was placed directly into a sample container without homogenization efforts (Ref. 8, p. 3-2). Sample material for all other analyses was homogenized in dedicated stainless steel bowls prior to containerization (Ref. 8, p. 3-2). Dedicated stainless steel spoons and scoops were used to extract, homogenize, and place sampled material into sample containers (Ref. 8, p. 3-2). For samples submitted for dioxin/furan analysis, stainless steel spoons and bowls were pre-washed with hexane (Ref. 8, p. 3-2). All samples were stored on ice in coolers continuously maintained under chain of custody (Ref. 5; Ref. 7; Ref. 8, p. 3-2).

Sample collection began at the most downstream location and proceeded upstream to eliminate the potential for cross-contamination (Ref. 8, p. 3-4). Surface water samples were co-located with the sediment samples and were collected prior to the collection of sediment samples to eliminate cross-contamination (Ref. 8, p. 3-4). Surface water samples were collected by lowering dedicated sample containers into the water to a maximum depth of 1 foot, with the containers filling as they descended (Ref. 8, p. 3-4). Sediment samples were collected using dedicated stainless steel spoons or trowels (Ref. 8, p. 3-4).

Surface water samples from the municipal drinking water intake in the South Yamhill River were collected at the depth of the intake (approximately 1.5 feet below the water surface) by lowering the sample bottle to depth and then opening the sample container (Ref. 8, p. 3-4). An EkmanTM dredge was used to collect the sediment sample at this location, since the 6-foot depth to bottom prevented the use of hand-held sampling equipment (Ref. 8, p. 3-4). The dredge was decontaminated prior to sampling (Ref. 8, p. 3-4).

Two background sediment and co-located surface water samples were collected: one set from Rock Creek (RC-03-SD/SW), approximately 70 feet upstream of the railroad trestle, and one set from the South Yamhill River (YR-17-SD/SW), approximately 0.6 mile upstream of the TLT facility (Ref. 8, pp. 5-5, 5-6, and Figure 3-5). As mentioned above, one sample set (YR-05-SD/SW) was collected from an unnamed creek or stormwater ditch (not influenced by the site), which flows into the South Yamhill River approximately 3 miles downstream of the site, to determine potential contamination contributions to the river from this creek/ditch (Ref. 8, pp. 5-5 and 5-6). This sample set was collected immediately above the confluence with the South Yamhill River (Ref. 8, p. 5-6). Samples collected from Rock Creek were evaluated using only the background Rock Creek samples. Samples collected from the South Yamhill River upstream of the confluence of the unnamed creek/stormwater ditch outfall were evaluated using only the background samples collected from the South Yamhill River (YR-17-SD/SW). South Yamhill River samples collected downstream of this creek/ditch were evaluated using both the South Yamhill River background samples and the samples from the creek/ditch. The background sediment sample matrices matched the downstream sample matrices (Ref. 8, p. 5-5). Hazardous substances meeting observed release criteria in sediment samples and surface water samples are presented in Tables 10 and 11, respectively. Sample quantitation limits were calculated for all samples and analytes and are presented in Tables 10 and 11 (Ref. 25).

Table 10

SOUTH YAMHILL RIVER AND ROCK CREEK SEDIMENT SAMPLES

EPA Sample Number	99234428	99224226	99224219	99224229	99234280	99234431	99234429
Location ID Number	YR-17-SD	YR-05-SD	YR-01-SD	YR-07-SD	YR-14-SD	RC-03-SD	RC-02-SD
	BACKGROUND					BACKGROUND	
Reference 8, Page(s)	E828, E829, E290	E794, E795, E144	E140	E11	E798, E799, E292	E840, E841, E251	E250
SVOCs (µg/kg)							
Acenaphthene	100 U	100 U			200 (SQL= 100)	100 U	
Benzo(a)pyrene	100 U	100 U			100 (SQL= 100)	100 U	
Benzo(b)fluoranthene	100 U	100 U			200 (SQL= 100)	100 U	
Chrysene	100 U	100 U			100 (SQL= 100)	100 U	
Fluoranthene	100 U	100 U			200 (SQL= 100)	100 U	
Fluorene	100 U	100 U			100 (SQL= 100)	100 U	
Phenanthrene	100 U	100 U			100 (SQL= 100)	100 U	
Pyrene	100 U	100 U			200 (SQL= 100)	100 U	
Inorganics (mg/kg)							
Antimony	18.0 U	17.5 UJK (8 U AC)		25.3 JL (SQL= 18.1)		20.3 UJK (40 U AC)	
Arsenic	8.5 (SQL= 3.0)	7.3 JH (SQL= 3.0)			60.0 (SQL= 13.3)	18.2 (SQL= 3.45 U)	108 (SQL= 3.33)
Mercury	0.08 U	0.09 JBK (SQL= 0.15 U)	0.32 (SQL= 0.20 U)			0.18 U	

Key:

- AC = Adjusted Concentration (Ref. 12).
 B = Analyte detected below the Contract Required Detection Limits, but at or above the instrument detection limits.
 EPA = United States Environmental Protection Agency.
 ID = Identification.
 J = The analyte was positively identified. The associated numerical result is an estimate.
 H = High bias.
 K = Unknown bias.
 L = Low bias.
 mg/kg = Milligram per kilogram.
 µg/kg = Microgram per kilogram.
 SQL = Sample quantitation limit.
 SVOCs = Semivolatile organic compounds.
 U = The analyte was not detected. The associated numerical result is the sample quantitation limit.

Table 11

SOUTH YAMHILL RIVER SURFACE WATER SAMPLES

EPA Sample Number	99234427	99224225	99224220	99234427	99224228	99234279	99234423
Location ID Number	YR-17-SW	YR-05-SW	YR-02-SW	YR-17-SW	YR-07-SW	YR-14-SW	YR-16-SW
	BACKGROUND			BACKGROUND			
Reference 8, Page(s)	E71	E41	E39	E71	E42	E78	E69
Inorganics (mg/L)							
Lead	2.5 JBK (SQL= 3 U)	1.9 U		2.5 JBK (SQL= 3 U)			17.8 (SQL= 3)
Manganese	10.1 JBK (SQL= 15 U)	1040 JH (SQL= 15)		10.1 JBK (SQL= 15 U)			23.0 (SQL= 15)
Mercury	0.35 (SQL= 0.2)	0.47 JL (0.7 AC)	2.7 JL (SQL= 0.2)	0.35 (SQL= 0.2)	9.2 JL (SQL= 0.2)	8.7 (SQL= 0.2)	

Key:

- AC = Adjusted Concentration (Ref. 12).
- B = Analyte detected below the Contract Required Detection Limits, but at or above the instrument detection limits.
- EPA = United States Environmental Protection Agency.
- ID = Identification.
- J = The analyte was positively identified. The associated numerical result is an estimate.
- H = High bias.
- K = Unknown bias.
- L = Low bias.
- mg/L = Milligram per liter.
- SLQ = Sample quantitation limit.
- U = The analyte was not detected. The associated numerical result is the sample quantitation limit.

Attribution

In 1989, the EPA performed a Listing Site Inspection (LSI) of the TLT site (Ref. 8, p. 2-6; Ref. 10, p. 1). As part of this inspection, 17 ground water, 19 sediment, 3 surface water, 72 soil, and 50 air samples were collected in order to evaluate the site's potential for inclusion on the National Priorities List (Ref. 3, p. 2-6; Ref. 10, p. ix). Soil, ground water, sediment, and surface water samples were analyzed for inorganic compounds and base/neutral and acid extractable organic compounds (BNA) included on the EPA Target Compound List through the EPA Contract Laboratory Program (CLP) (Ref. 8, p. 2-6; Ref. 10, p. ix). Air samples were analyzed for inorganic analytes, BNAs, and PCP by a commercial laboratory following EPA Methods 6000/7000 series and TO-13 (Ref. 8, p. 2-6; Ref. 10, pp. ix, 20).

Analytical results indicated elevated levels of arsenic, copper, magnesium, mercury, nickel, sodium, zinc, BNAs, and PCP in on-site surface soil samples, on-site drainage ditch sediment samples, and roadside ditch sediment samples (Ref. 8, p. 2-6; Ref. 10, pp. 36 through 38, 43 through 45, 47, 63, 71, 91 through 93). On-site borehole samples, collected 4 to 5 feet below ground surface (bgs), contained elevated levels of arsenic, copper, polynuclear aromatic hydrocarbons (PAHs), and PCP (Ref. 8, p. 2-6; Ref. 10, pp. 36, 38, 63). Surface and subsurface soils near the former lagoon and south of the treatment plant contained high concentrations of metals, including arsenic (Ref. 8, p. 2-6; Ref. 10, pp. 35, 36, 63). In addition, stained soil was observed next to the end-painting facility and found to contain elevated concentrations of PCP, BNAs, and metals (Ref. 8, p. 2-6; Ref. 10, pp. 13, 14, 19, 22, 91, 92). Ground water samples collected from on-site monitoring wells and piezometers contained elevated levels of arsenic, copper, nickel, zinc, BNAs, and PCP (Ref. 8, p. 2-6; Ref. 10, pp. 39 through 41, 66, 93). A ground water sample collected from one off-site domestic well (no longer utilized for domestic purposes) contained elevated levels of nickel and zinc (Ref. 8, p. 2-7; Ref. 10, pp. 35, 39 through 41, 66, 91, 92, 93). Air sample data, collected over a six-day period, indicated elevated levels of arsenic, copper, magnesium, zinc, SVOCs, and PCP (Ref. 8, p. 2-7; Ref. 10, pp. 42, 48, 49, 74, 79, 92). Some of the air samples contained concentrations of PCP that exceeded the Occupational Safety and Health Administration (OSHA) permissible exposure limits (PELs) (Ref. 8, p. 2-7; Ref. 10, p. 74). Soil samples collected from nearby residences contained elevated levels of arsenic, copper, and zinc (Ref. 8, p. 2-7; Ref. 10, pp. 38, 93).

In 1997, a consultant for TLT completed a Phase I RCRA Facility Investigation. In the treated wood storage area, 76 shallow soil samples, 8 subsurface soil samples, and 6 ground water samples were collected. Samples were analyzed for Chlorinated Phenolics (EPA Method 8151M), Total Analyte List (TAL) Metals (EPA Method 6010/7060), and PAHs (EPA Method 8270) (Ref. 9, pp. 80 through 84). Subsurface soil samples were also analyzed for PAH/PCP screening (EPA Method 8015M) (Ref. 9, p. 83). In the Treating Plant area, 118 subsurface soil samples and 72 ground water samples were collected and analyzed for Chlorinated Phenolics (EPA Method 8151M), and PAHs (EPA Method 8270) (Ref. 9, pp. 115 through 119, 122 through 125). Subsurface soil samples were also analyzed for PAH/PCP screening (EPA Method 8015M) and Total Analyte List (TAL) Metals (EPA Method 6010/7060) (Ref. 9, pp. 115 through 119, 134). Sixteen sediment samples were also collected in drainage ditches and analyzed for Chlorinated Phenolics (EPA Method 8151M), Total Analyte List (TAL) Metals (EPA Method 6010/7060), PAHs (EPA Method 8270), and PAH/PCP screening (EPA Method 8015M) (Ref. 9, p. 109).

Analytical results for the treated wood area indicated the presence of PAHs, PCP, chlorinated phenolics, arsenic, chromium, copper, and zinc in shallow soil samples (Ref. 9, pp. 86 through 99). Arsenic, chromium, copper, and zinc were also detected in the subsurface soil samples (Ref. 9, p. 104). Ground water samples contained PAHs, PCP, and chlorinated phenolics (Ref. 9, pp. 105 through 108). Analytical results for the treating plant storage area indicated the presence of PAHs, chlorinated phenolics, PCP, arsenic, chromium, copper, and zinc in subsurface soil samples (Ref. 9, pp. 126 through 134). PAHs, PCP, and chlorinated phenolics were detected at elevated levels in the ground water (Ref. 9, pp. 139 through 153). The sediment sample results indicated the presence of PAHs, PCP, chlorinated phenolics, arsenic, chromium, copper, and zinc (Ref. 9, pp. 110 through 114).

On February 26, 1999, EPA responded to a discharge of approximately 3,500 gallons of 5-percent PCP-enriched P-9 oil from the P-9 tank farm (Ref. 14, p. 3). The tank farm is located in the West Facility north and south of the retort area (Ref. 8, p. 2-3, Figure 2-2). The solution flowed overland across the treated pole storage yard and collected in on-site drainage ditches (Ref. 14, p. 4). Solution which collected in the on-site drainage system passed through a series of oil/water separators before discharging into the Rock Creek Road drainage ditch, which drains to the South Yamhill River (Ref. 14, p. 4). An oily sheen was observed on the South Yamhill River during this incident (Ref. 14, p. 4).

On September 10, 1999, EPA responded to a spill of approximately 27,448 gallons of reclaimed creosote and wastewater from the P-9 tank farm (Ref. 19, pp. 3, 12). The creosote and wastewater spilled when the legs of one tank pushed through the concrete floor in the tank pad, causing the tank to tip over into two other adjacent tanks, spilling the contents of all three tanks (Ref. 19, p. 3). The majority of the spilled creosote and wastewater was contained within the tank farm's secondary containment structure (Ref. 19, p. 3). However, a breach in the secondary containment was discovered when creosote oil was observed in the Rock Creek Road ditch (Ref. 19, pp. 3, 5, and 7). Creosote and wastewater had leaked out of the secondary containment structure and flowed to the Rock Creek Road ditch through buried utility trenches (Ref. 19, pp. 3, 13). Product was observed to have flowed to within 100 feet of State Highway 18B before it stopped (Ref. 19, p. 4). A total of 2,637 cubic yards of contamination soil was excavated from the tank farm area, Rock Creek Road ditch, and the utility corridor (Ref. 19, pp. 9, 15). Soils were removed from the spill area based on obvious visual contamination (Ref. 19, p. 8). However, confirmation samples were not collected (Ref. 19, p. 8).

A salvage business is located on Rock Creek Road towards the south end of the TLT facility (Ref. 8, p. 7-13, Figure 3-4). Contaminants associated with salvage businesses are similar to those found on the TLT site. One surface soil sample (SO-03-SS) was collected from the yard of the residence located on the property of the salvage business and analytical results revealed the presence of several SVOCs, metals, PCBs, and dioxins (Ref. 8, pp. 7-91, 7-93, 7-97, 7-99). Runoff from the salvage business would flow overland into a drainage ditch located on the east side of Rock Creek Road directly in front of the salvage business property (Ref. 8, Figure 3-4). This drainage ditch does not discharge into any surface water body. However, Rock Creek Road ditch is located on the west side of Rock Creek Road (Ref. 8, Figure 3-4). It is unlikely that runoff from the salvage business would migrate into the Rock Creek Road ditch. If runoff discharged from the salvage business into Rock Creek Road ditch, the contamination detected in the South Yamhill River is at least in part attributable to the TLT site.

Other Potential Sources

A section of the Willamette Pacific Railroad transects the northern portion of the West Facility (Ref. 8, Figure 2-2). During the IA, sediments were collected from ditches next to the railroad tracks to characterize potential on-site contamination attributable to the Willamette Pacific Railroad (Ref. 8, p. 7-8). Contaminants associated with railroad operations would be expected to be present in adjacent ditch sediments at consistent and similar concentrations (Ref. 8, p. 7-8). Concentrations of contaminants in sediments collected from the south railroad ditch, adjacent to contaminated source soils in the treated pole storage area, were compared to ditch sediments collected from two ditches (the north railroad ditch and the sawmill maintenance facility ditch), in areas relatively unimpacted by on-site sources (Ref. 8, p. 7-8). Elevated concentrations of SVOCs (including PCP), mercury, arsenic, selenium, and copper were detected in sediments in the south railroad ditch (Ref. 8, p. 7-8). These constituents were only detected randomly and at lower concentrations in the north railroad ditch and sawmill maintenance ditch, as follows: no SVOCs were detected at elevated concentrations in the north railroad ditch, but sediments here did contain elevated concentrations of arsenic, mercury, and selenium; copper and one SVOC was detected in the sawmill maintenance facility ditch sediments (Ref. 8, p. 7-8). For these reasons, it is unlikely that activities associated with the railroad contribute significantly to on-site stormwater ditch sediment contamination (Ref. 8, p. 7-8). Metals detected at elevated concentrations in the north railroad ditch sediments may be attributable to the source soils through runoff, aerial deposition, or unknown site practices (Ref. 8, p. 7-8).

Hazardous Substances Released:

The substances found in the observed releases by direct observation and chemical analysis are: Antimony, Arsenic, Mercury, Acenaphthene, Benzo(a)pyrene, Benzo(b)fluoranthene, Chrysene, Fluoranthene, Fluorene, Lead, Manganese, PCP, Phenanthrene, Pyrene.

4.1.2.2 WASTE CHARACTERISTICS

4.1.2.2.1 Toxicity/Persistence

Table 12 below provides Drinking Water Threat Waste Characteristics Factor Values for a partial list of those analytes associated with Sources 1 through 5 and/or attributable to the site.

DRINKING WATER THREAT WASTE CHARACTERISTICS FACTOR VALUES					
Hazardous Substance	Source(s)	Toxicity Factor Value^a	Persistence Factor Value^b	Toxicity/Persistence Value (Table 4-12)	Reference (Page Number from Ref. 2, Part 3)
Arsenic	1, 2, 3, 4, 5	10,000	1	10,000	B-2
Mercury	1, 5	10,000	0.4	4,000	B-13
Zinc	2, 5	10	1	10	B-20
2-Methylnaphthalene	1, 2, 5	---	0.4	---	B-14
Acenaphthene	1, 2, 3, 5	10	0.4	4	B-1
Acenaphthylene	1, 3	---	0.4	---	B-1
Anthracene	1, 2, 3, 4, 5	10	1	10	B-2
Benzo(a)anthracene	1, 2, 3, 4, 5	1,000	1	1,000	B-2
Benzo(a)pyrene	1, 2, 3, 4, 5	10,000	1	10,000	B-2
Benzo(b)fluoranthene	1, 2, 3, 4, 5	1,000	1	1,000	B-3
Benzo(k)fluoranthene	1, 2, 3, 4, 5	100	1	100	B-3
Chrysene	1, 2, 3, 4, 5	10	1	10	B-5
Dibenzofuran	1, 2, 3, 5	—	1	---	B-7
Fluoranthene	1, 2, 3, 4, 5	100	1	100	B-10
Fluorene	1, 2, 3, 5	100	1	100	B-10
Indeno(1,2,3-cd)pyrene	2, 3, 4, 5	1,000	1	1,000	B-12
Naphthalene	1, 5	100	0.4	40	B-14
PCP	1, 2, 3, 4, 5	100	1	100	B-16
Phenanthrene	1, 2, 3, 4, 5	---	1	---	B-16
Pyrene	1, 2, 3, 4, 5	100	1	100	B-17
2,3,7,8-TCDD	1, 3, 5	10,000	1	10,000	B-18

DRINKING WATER THREAT WASTE CHARACTERISTICS FACTOR VALUES					
Hazardous Substance	Source(s)	Toxicity Factor Value^a	Persistence Factor Value^b	Toxicity/Persistence Value (Table 4-12)	Reference (Page Number from Ref. 2, Part 3)
2,3,7,8-TCDF	1, 2, 3, 5	10,000	1	10,000	B-18
1,2,3,4,6,7,8-HpCDD	1, 2, 3, 4, 5	10,000	1	10,000	B-11
1,2,3,4,6,7,8-HpCDF	1, 2, 3, 4, 5	10,000	1	10,000	B-11
1,2,3,4,7,8-HxCDD	1, 2, 3, 4, 5	10,000	1	10,000	B-11
1,2,3,4,7,8-HxCDF	1, 4, 5	10,000	1	10,000	B-11
1,2,3,7,8-PeCDD	1, 2, 3, 4	10,000	1	10,000	B-16
1,2,3,7,8-PeCDF	1, 3, 5	10,000	1	10,000	B-16
2,3,4,7,8-PeCDF	1, 3, 5	10,000	1	10,000	B-16

a - Fresh water values (Ref. 2)

b - River persistence values (Ref. 2)

The hazardous substances with the highest toxicity/persistence factor value are arsenic, benzo(a)pyrene, 2,3,7,8-TCDD, 2,3,7,8-TCDF, 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8-HxCDD, 1,2,3,4,7,8-HxCDF, 1,2,3,7,8-PeCDD, 1,2,3,7,8-PeCDF, 2,3,4,7,8-PeCDF.

Toxicity/Persistence Factor Value: 10,000

4.1.2.2.2 Hazardous Waste Quantity

Source No.	Source Hazardous Waste Quantity Value (Section 2.4.2.1.5)	Is Source Hazardous Constituent Quantity Data Complete? (yes/no)
1. Contaminated Soil	3.29	No
2. Contaminated Soil	2.13	No
3. Contaminated Soil	1.06	No
4. Pile	3,000	No
5. Surface Impoundments	34.62	No

Sum of values: 3,041.1

Hazardous Waste Quantity Factor Value (Ref. 1, p. 51591): 100

4.1.2.2.3 Waste Characteristics Factor Category Value

Toxicity/persistence factor value x hazardous waste quantity factor value: 1×10^6
 [(10,000 x 100) = 10^6 , capped at 10^8]

Waste Characteristics Factor Category Value: 32

4.1.2.3 DRINKING WATER TARGETS

4.1.2.3.1 Nearest Intake

Location of Nearest Drinking Water Intake:

The City of Sheridan operates a municipal drinking water intake approximately 1.5 miles downstream of PPE 3 in the South Yamhill River (Ref. 8, p. 7-5 and Figure 3-5). This intake is subject to Level I concentrations (see section 4.1.2.3.2.2 of this document). Therefore, a nearest intake factor value of 50 is assigned (Ref. 1, Section 4.1.2.3.1).



Nearest Intake Factor Value: 50

4.1.2.3.2 Population

4.1.2.3.2.2 Level I Concentrations

Surface water sample YR-02-SW contains a concentration of mercury above the health based benchmark (Ref. 2, Part 1; Ref. 8, p. E39). This sample was collected at the surface water intake for the City of Sheridan (Ref. 8, pp. 7-10 and 7-12).

Hazardous Substance	Sample Number	Concentration	Benchmark	Reference
Mercury	YR-02-SW	2.7 JL mg/kg	0.011 mg/kg	Ref. 2, Part 1; Ref. 8, p. E39

The City of Sheridan’s municipal surface water intake serves 2,132 people (Ref. 8, p. 7-5). This includes approximately 3,166 local residents and 400 prison workers and 1,764 inmates at a federal prison near the city (Ref. 8, p. 7-5). Considering the surface water contributes 40 percent to the total supply, the apportioned population served by surface water is calculated to be 2,132 people (5,330 x 40 percent = 2,132). The Stone Mountain spring supplies the remaining 60 percent of the total system water supply (Ref. 8, p. 7-5). The total number of people served by this intake is multiplied by 10 to achieve a Level I concentrations value of 21,320 (Ref. 1, p. 51614)

Level I Concentrations: 21,320

4.1.2.3.3 Level II Concentrations

Not scored.

4.1.2.3.2.4 Potential Contamination

Not scored.

4.1.2.3.3 Resources

Twenty-seven irrigation intakes also have been identified within the 15-mile TDL (Ref. 8, p. 7-5 and Figure 7-2).

Resources Factor Value: 5

4.1.2.3.4 Drinking Water Targets Factor Category

Summing the values for the nearest intake (50), Level I concentrations (21,320), and resources factor value (5) yields a targets factor category value of 21,375.

4.1.2.4 Drinking Water Threat Score

The drinking water threat score is the product of likelihood of release (550), waste characteristics (32) and the targets factor category value (21,375) (Ref. 1, p. 51617). This product is then divided by 82,500 to achieve the drinking water threat score, subject to a maximum of 100 (Ref. 1, p. 51617).

$$550 \times 32 \times 21,375 / 82,500 = 4,560$$

Drinking Water Threat Score: 100

4.1.3.2 WASTE CHARACTERISTICS**4.1.3.2.1 Toxicity/Persistence/Bioaccumulation Factor**

Table 13 below provides Human Food Chain Threat Waste Characteristics Factor Values for a partial list of those analytes associated with Sources 1 through 5 and/or attributable to the site.

Table 13						
HUMAN FOOD CHAIN THREAT WASTE CHARACTERISTICS FACTOR VALUES						
Hazardous Substance	Source(s)	Toxicity Factor Value^a	Persistence Factor Value^b	Bioaccumulation Factor Value^c	Toxicity/Persistence/Bioaccumulation Value (Table 4-16)	Reference (Page Number from Ref. 2, Part 3)
Arsenic	1, 2, 3, 4, 5	10,000	1	5	50,000	B-2
Cobalt	1, 3	1	1	0.5	0.5	B-6
Mercury	1, 5	10,000	0.4	50,000	2 x 10 ⁸	B-13
Zinc	2, 5	10	1	500	5,000	B-20
2-Methylnaphthalene	1, 2, 5	---	0.4	5,000	---	B-14
Acenaphthene	1, 2, 3, 5	10	0.4	500	2,000	B-1
Acenaphthylene	1, 3	---	0.4	500	---	B-1
Anthracene	1, 2, 3, 4, 5	10	1	5,000	50,000	B-2
Benzo(a)anthracene	1, 2, 3, 4, 5	1,000	1	50,000	5 x 10 ⁷	B-2
Benzo(a)pyrene	1, 2, 3, 4, 5	10,000	1	50,000	5 x 10 ⁸	B-2
Benzo(b)fluoranthene	1, 2, 3, 4, 5	1,000	1	50,000	5 x 10 ⁷	B-3
Benzo(k)fluoranthene	1, 2, 3, 4, 5	100	1	50,000	5 x 10 ⁶	B-3
Chrysene	1, 2, 3, 4, 5	10	1	500	5,000	B-5
Dibenzofuran	1, 2, 3, 5	—	1	500	---	B-7
Fluoranthene	1, 2, 3, 4, 5	100	1	5,000	5 x 10 ⁵	B-10
Fluorene	1, 2, 3, 5	100	1	5,000	5 x 10 ⁵	B-10

Table 13						
HUMAN FOOD CHAIN THREAT WASTE CHARACTERISTICS FACTOR VALUES						
Hazardous Substance	Source(s)	Toxicity Factor Value^a	Persistence Factor Value^b	Bioaccumulation Factor Value^c	Toxicity/Persistence/Bioaccumulation Value (Table 4-16)	Reference (Page Number from Ref. 2, Part 3)
Indeno(1,2,3-cd)pyrene	1, 2, 3, 4, 5	1,000	1	50,000	5 x 10 ⁷	B-12
Naphthalene	1, 5	100	0.4	500	20,000	B-14
PCP	1, 2, 3, 4, 5	100	1	500	50,000	B-16
Phenanthrene	1, 2, 3, 4, 5	---	1	50	---	B-16
Pyrene	1, 2, 3, 4, 5	100	1	50	5,000	B-17
2,3,7,8-TCDD	1, 3, 5	10,000	1	5,000	5 x 10 ⁷	B-18
2,3,7,8-TCDF	1, 2, 3, 5	10,000	1	50,000	5 x 10 ⁸	B-18
1,2,3,4,6,7,8-HpCDD	1, 2, 3, 4, 5	10,000	1	50,000	5 x 10 ⁸	B-11
1,2,3,4,6,7,8-HpCDF	1, 2, 3, 4, 5	10,000	1	50,000	5 x 10 ⁸	B-11
1,2,3,4,7,8-HxCDD	1, 2, 3, 5	10,000	1	50,000	5 x 10 ⁸	B-11
1,2,3,4,7,8-HxCDF	1, 4, 5	10,000	1	50,000	5 x 10 ⁸	B-11
1,2,3,7,8-PeCDD	1, 2, 3, 5	10,000	1	50,000	5 x 10 ⁸	B-16
1,2,3,7,8-PeCDF	1, 3, 5	10,000	1	50,000	5 x 10 ⁸	B-16
2,3,4,7,8-PeCDF	1, 3, 5	10,000	1	50,000	5 x 10 ⁸	B-16

- a - Fresh water values (Ref. 2).
- b - River persistence values (Ref. 2).
- c - Fresh water values (Ref. 2).

The hazardous substances with the highest toxicity/persistence/bioaccumulation factor value are 2,3,7,8-TCDF, 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8-HxCDD, 1,2,3,4,7,8-HxCDF, 1,2,3,7,8-PeCDD, 1,2,3,7,8-PeCDF, 2,3,4,7,8-PeCDF.

Toxicity/Persistence/Bioaccumulation Factor Value: 5 x 10⁸

4.1.3.2.2 Hazardous Waste Quantity

Source No.	Source Hazardous Waste Quantity Value (Section 2.4.2.1.5)	Is Source Hazardous Constituent Quantity Data Complete? (yes/no)
1. Contaminated Soil	3.29	No
2. Contaminated Soil	2.13	No
3. Contaminated Soil	1.06	No
4. Pile	3,000	No
5. Surface Impoundments	34.62	No

Sum of values: 3,041.1

Hazardous Waste Quantity Factor Value: 100
Ref. 1, p. 51591

4.1.3.2.3 Waste Characteristics Factor Category Value

Toxicity/persistence factor value x hazardous waste quantity factor value: 1×10^6
 $[(10,000 \times 100) = 10^6, \text{ capped at } 10^8]$

(Toxicity/persistence x hazardous waste quantity) x food chain bioaccumulation factor value: 1×10^{10}
 $(10^6 \times 5 \times 10^4 = 5 \times 10^{10}, \text{ capped at } 1 \times 10^{12})$

=====

Waste Characteristics Factor Category Value: 320
Ref. 1, p. 51592

4.1.3.3 Human Food Chain Threat-TargetsActual Food Chain Contamination

Contamination of a watershed which contains a fishery has been established by the presence of hazardous substances with bioaccumulation factor values of 500 or greater in an observed release by chemical analysis (Ref. 1, p. 51620).

Table 14			
BIOACCUMULATION FACTOR VALUES FOR HAZARDOUS SUBSTANCES MEETING OBSERVED RELEASE CRITERIA			
Hazardous Substance	Bioaccumulation Factor Value	Location	Reference
Mercury	50,000	YR-01-SD, YR-02-SW, YR-07-SW, YR-14-SW	See Tables 12 and 13; Ref. 2, Part 3
Acenaphthene	500	YR-14-SD	
Benzo(a)pyrene	50,000	YR-14-SD	
Benzo(b)fluoranthene	50,000	YR-14-SD	
Chrysene	500	YR-14-SD	
Fluoranthene	5,000	YR-14-SD	
Fluorene	5,000	YR-14-SD	
2,3,7,8-TCDF	50,000	YR-14-SD	
1,2,3,4,6,7,8-HpCDD	50,000	YR-08-SW	

Closed Fisheries

Referenced documents do not report any fishery as closed due to adverse effects by hazardous substances attributable to the site.

4.1.3.3.1 Food Chain Individual

Although recreational fishing is common on the South Yamhill River, harvest records are not kept (Ref. 8, p. 7-5). During the IA field event, EPA observed recreational fishing in the South Yamhill River at the confluence of the South Yamhill River and Rock Creek (approximately RM 40) (Ref. 8, pp. 7-5 and 7-6, Appendix C, photographs 16.09 and 16.10). This area of the river is subject to Level II concentrations (see Tables 8, 9, 10 and 11). Therefore, the food chain individual factor is assigned a value of 45 (Ref. 1, p. 51620)

Food Chain Individual Factor Value: 45
Ref. 1, p. 51620

4.1.3.3.2 Population

4.1.3.3.2.1 Level I Concentrations

Not scored.

4.1.3.3.2.2 Level II Concentrations

Although recreational fishing is common on the South Yamhill River, harvest records are not kept (Ref. 8, p. 7-5). During the IA field event, EPA observed recreational fishing in the South Yamhill River at the confluence of the South Yamhill River and Rock Creek (approximately RM 40) (Ref. 8, pp. 7-5 and 7-6, Appendix C, photographs 16.09 and 16.10). This area of the river is subject to Level II concentrations (see Tables 8, 9, 10, and 11). For HRS scoring purposes, it is estimated that greater than 1 pound of fish per year is harvested from the zone of actual contamination. Therefore, the human food chain population is assigned a value of 0.03 (Ref. 1, Table 4-18).

=====
Level I Concentrations Factor Value: 0
Level II Concentration Factor Value: 0.03
Ref. 1, Table 4-18

4.1.3.3.2.3 Potential Human Food Chain Contamination

Not scored.

Potential Human Food Chain Contamination Factor Value: 0

4.1.3.3.3 Targets Factor Category Value

Summing the Human Food Chain Individual factor value and the Population factor value produces a Targets Factor Category Value of 45.03.

The human food chain threat score is the product of likelihood of release (550), multiplied by the waste characteristics (320), multiplied by the human food chain targets factor category value (45.03) (Ref. 1, p. 51621). This product is then divided by 82,500 to achieve the human food chain threat score, subject to a maximum of 100 (Ref. 1, p. 51617).

$$550 \times 320 \times 45.03 / 82,500 = 96.06$$

Human Food Chain Threat Score: 96.06

4.1.4.2 WASTE CHARACTERISTICS

4.1.4.2.1 Ecosystem Toxicity/Persistence/Ecosystem Bioaccumulation

Table 15 below provides Environmental Threat Waste Characteristics Factor Values for a partial list of those analytes associated with Sources 1 through 5 and attributable to the site.

ENVIRONMENTAL THREAT WASTE CHARACTERISTICS FACTOR VALUES						
Hazardous Substance	Source(s)	Ecosystem Toxicity Factor Value^a	Persistence Factor Value^b	Ecosystem Bioaccumulation Factor Value^c	Toxicity/Persistence/Bioaccumulation Value (Table 4-16)	Reference (Page Number from Ref. 2, Part 3)
Arsenic	1, 2, 3, 4, 5	10	1	500	5,000	B-2
Cobalt	1, 3	---	1	5,000	---	B-6
Mercury	1, 5	10,000	0.4	50,000	2×10^8	B-13
Zinc	2, 5	10	1	500	5,000	B-20
2-Methylnaphthalene	1, 2, 5	1,000	0.4	5,000	2×10^6	B-14
Acenaphthene	1, 2, 3, 5	10,000	0.4	500	2×10^8	B-1
Acenaphthylene	2, 4	---	0.4	500	---	B-1
Anthracene	1, 2, 3, 4, 5	10,000	1	5,000	5×10^7	B-2
Benzo(a)anthracene	1, 2, 3, 4, 5	10,000	1	50,000	5×10^8	B-2
Benzo(a)pyrene	1, 2, 3, 4, 5	10,000	1	50,000	5×10^8	B-2
Benzo(b)fluoranthene	1, 2, 3, 4, 5	---	1	50,000	---	B-3
Benzo(k)fluoranthene	1, 2, 3, 4, 5	---	1	50,000	---	B-3
Chrysene	1, 2, 3, 4, 5	1,000	1	5,000	5×10^6	B-5
Dibenzofuran	1, 2, 3, 5	100	1	500	50,000	B-7
Fluoranthene	1, 2, 3, 4, 5	10,000	1	500	5×10^6	B-10
Fluorene	1, 2, 3, 5	1,000	1	5,000	5×10^6	B-10

Table 15						
ENVIRONMENTAL THREAT WASTE CHARACTERISTICS FACTOR VALUES						
Hazardous Substance	Source(s)	Ecosystem Toxicity Factor Value^a	Persistence Factor Value^b	Ecosystem Bioaccumulation Factor Value^c	Toxicity/Persistence/Bioaccumulation Value (Table 4-16)	Reference (Page Number from Ref. 2, Part 3)
Indeno(1,2,3-cd)pyrene	1, 2, 3, 4, 5	---	1	50,000	---	B-12
Naphthalene	1, 5	1,000	0.4	500	2×10^5	B-14
PCP	1, 2, 3, 4, 5	100	1	5,000	5×10^5	B-16
Phenanthrene	1, 2, 3, 4, 5	1,000	1	5,000	5×10^6	B-16
Pyrene	1, 2, 3, 4, 5	10,000	1	50	5×10^5	B-17
2,3,7,8-TCDD	1, 3, 5	10,000	1	5,000	5×10^7	B-18
2,3,7,8-TCDF	1, 2, 3, 5	---	1	50,000	---	B-18
1,2,3,4,6,7,8-HpCDD	1, 2, 3, 4, 5	---	1	50,000	---	B-11
1,2,3,4,6,7,8-HpCDF	1, 2, 3, 4, 5	---	1	50,000	---	B-11
1,2,3,4,7,8-HxCDD	1, 2, 3, 5	---	1	50,000	---	B-11
1,2,3,4,7,8-HxCDF	1, 4, 5	---	1	50,000	---	B-11
1,2,3,7,8-PeCDD	1, 2, 3, 5	10,000	1	50,000	5×10^8	B-16
1,2,3,7,8-PeCDF	1, 3, 5	---	1	50,000	---	B-16
2,3,4,7,8-PeCDF	1, 3, 5	---	1	50,000	---	B-16

a - Fresh water values (Ref. 2).

b - River persistence values (Ref. 2).

c - Fresh water values (Ref. 2).

The hazardous substances with the highest ecosystem toxicity/persistence/bioaccumulation factor value are benzo(a)pyrene, benzo(a)anthracene, and 1,2,3,7,8-PeCDD.

Ecosystem Toxicity/Persistence/Bioaccumulation Factor Value: 5×10^8

4.1.4.2.2 Hazardous Waste Quantity

Source No.	Source Hazardous Waste Quantity Value (Section 2.4.2.1.5)	Is Source Hazardous Constituent Quantity Data Complete? (yes/no)
1. Contaminated Soil	3.29	No
2. Contaminated Soil	2.13	No
3. Contaminated Soil	1.06	No
4. Pile	3,000	No
5. Surface Impoundments	34.62	No

Sum of values: 3,041.1

Hazardous Waste Quantity Factor Value (Ref. 1, p. 51591): 100

4.1.4.2.3 Waste Characteristics Factor Category Value

Ecosystem toxicity/persistence factor value x hazardous waste quantity factor value: 1×10^6
 $[(10,000 \times 100) = 10^6, \text{ capped at } 10^8]$

(Ecosystem toxicity/persistence x hazardous waste quantity) x ecosystem bioaccumulation factor value: 1×10^{10}
 $(10^6 \times 5 \times 10^4 = 5 \times 10^{10}, \text{ capped at } 1 \times 10^{12})$

=====

Waste Characteristics Factor Category Value: 320
 Ref. 1, p. 51592

4.1.4.3 Targets

4.1.4.3.1.1 Level I Concentrations

Although several hazardous substances exceed the Ambient Water Quality Criteria (AWQC) values, as illustrated in Reference 2, all sensitive environments will be scored as exposed to Level II concentrations. The AWQC values have changed since Reference 2 was previously updated in 1996, therefore, these values may not be current.

4.1.4.3.1.2 Level II Concentrations

Sensitive Environments

The area of Level II concentrations on the South Yamhill River within the TDL is a habitat and a critical migratory corridor for federal-listed threatened species: wild winter steelhead; and critical habitat and critical migratory corridor for state-listed endangered species: coho salmon (Ref. 17; Ref. 18).

Sensitive Environment Targets			
Sensitive Environment	Location	Sensitive Environment Value	Reference
Habitat for federal-listed species: Wild winter steelhead	Yamhill River	75	Ref. 1, p. 51624, Table 4-23; Ref. 17; Ref. 18
Critical migratory pathway for federal-listed species: Wild winter steelhead	Yamhill River	75	
Critical migratory pathway for state-listed species: Coho salmon	Yamhill River	75	
Critical habitat for state-listed species: Coho salmon	Yamhill River	50	
Total		325	

Level II Concentrations Factor Value: 325

4.1.4.3.1.3 Potential Contamination

Sensitive Environments

Not scored.

Wetlands

It is estimated from National Wetlands Inventory maps that 25 miles of wetland frontage that meet the 40 CFR criteria exist within 15 miles downstream of the site in the zone of potential contamination (Ref. 11). Therefore, 500 is assigned as the wetlands value. To achieve the potential contamination factor value, the wetlands value would be multiplied by a dilution factor of 0.001 and then divided by 10 (Ref. 1, Section 4.1.4.3.1.3).

$$500 \times 0.001 / 10 = 0.05$$

=====
Potential Contamination Factor Value: 0.05

4.1.4.3.1.4 Targets Factor Category Value

Summing the Sensitive Environments and Wetlands factor values produces a Targets Factor Category Value of 325.05

Targets Factor Category Value: 325.05

4.1.4.4 Environmental Threat Score

The environmental threat score is the product of likelihood of release (550), waste characteristics (320), and the targets factor category value (325.05) (Ref. 1, p. 51626). This product is then divided by 82,500 to achieve the environmental threat score, subject to a maximum of 60 (Ref. 1, p. 51626).

$$550 \times 320 \times 325.05 / 82,500 = 693.44$$

Environmental Threat Score: 60.00

SOIL EXPOSURE PATHWAY

5.0.1 GENERAL CONSIDERATIONS

On-site soil samples contain significant concentrations of SVOCs, inorganic compounds, pesticides/PCBs, and dioxins. Access to on-site contamination is restricted (Ref. 9, p. 9). Contaminants from on-site surficial soils may have migrated from the site through the air pathway as re-entrained dust (Ref. 8, p. 9-4). Prevailing winds at the site are from the west and southwest (Ref. 8, p. 9-4). Large clouds of dust were observed by the START to be blowing from areas of observed surficial contamination in the west facility and entering the residential community to the east of the site (Ref. 4, Logbook I, p. 4; Ref. 8, p. 9-4). Residential surface soil samples were collected from yards of residents located up to 1 mile east of the west facility sources (Ref. 8, p. 9-4). However, only those samples collected within a quarter mile were used for HRS scoring purposes.

A total of 4 surface soil samples were collected from 4 residential yards within a ¼-mile radius of the site (Ref. 8, Table 3-1). In general, samples were collected from roof drip lines or below gutter down spouts in exposed soil areas. Area Letters A through D correspond to the four residential surface soil samples. Area Letter A corresponds to residence 1 and sample SO-01-SS. Sample SO-01-SS was collected from a residence within 0.25 mile of site sources (Ref. 8, p. 7-13). This sample was collected at the southeast corner of the house in the landscaping bed directly in the drip line of the rain gutter (Ref. 4, Logbook F, p. 2). Area Letter B corresponds to residence 2 and sample SO-02-SS. Sample SO-02-SS was collected from a residence within 0.25 mile of site sources, directly east of the site across Rock Creek Road (Ref. 8, p. 7-13). This sample was collected from the southwest corner of the house, adjacent to the front door, which is next to the drain spout (Ref. 4, Logbook F, p. 2). Area Letter C corresponds to residence 4 and sample SO-04-SS. Sample SO-04-SS was collected from a residence within 0.25 mile of site sources (Ref. 8, p. 7-13). This sample was collected from the east side of the house at the southwest corner (Ref. 4, Logbook F, p. 8). Area Letter D corresponds to residence 5 and sample SO-05-SS. Sample SO-05-SS was collected from a residence within 0.25 mile of site sources (Ref. 8, p. 7-13). This sample was collected along the south (front) side of the house in the gutter drip line (Ref. 4, Logbook F, p. 2).

Two background samples (BG-02-SS and WP-07-SS) are used for scoring purposes. Sample BG-02-SS was collected in an open field north of the boiler ash and bioremediated soil waste pile and was considered to be out of the range of influence of the TLT facility (Ref. 8, p. 5-4, Figure 3-1). The soil matrix of this sample matched the surface soil samples collected from native soil (Ref. 8, pp. 3-45, 3-47). Sample WP-07-SS was collected in the white pole storage area (Ref. 8, p. 5-3, Figure 3-1). This background soil type is comprised of fill material (Ref. 8, pp. 3-28, 5-3, and 5-4). Residential soil samples were compared to both of these backgrounds to be conservative. The concentrations detected in surface soil sample BG-02-SS were generally lower than those detected in surface soil sample WP-07-SS. In addition, concentrations of inorganics in sample BG-02-SS are generally lower than regional levels of inorganics in soil in the northwestern United States. Therefore, the highest concentration of the two background samples was used to establish a background level for comparison residential surface soil samples. This comparison is illustrated in the table titled "Residential Areas of Contamination." Sample quantitation limits were calculated for all samples and analytes and are presented in the following table (Ref. 25).

Residential Areas of Contamination							
EPA Sample Number	99244621	99214150	99214215	99214216	99224208	99224203	
CLP Inorganic Number	MJAG44	MJAF90	MJR309	MJR310	MJQ617	MJAG82	
CLP Organic Number	JP235	JP553	JP132	JP133	JP258	JP253	Page(s) from
Sample Location	BG-02-SS	WP-07-SS	SO-01-SS	SO-02-SS	SO-04-SS	SO-05-SS	Reference 8
Description	BACKGROUND		Area Letter A	Area Letter B	Area Letter C	Area Letter D	
Inorganics (mg/kg)							
Barium	148 (SQL= 56.2)	190 (SQL= 45.3)	784 (SQL= 60.5)				pp. E115, E175, E340
Cadmium	1.4 U	0.79 U		1.4 (SQL= 1.4)	1.6 (SQL= 1.41)		pp. E340, E115, E176, E94
Lead	11.8 JL (17 AC) (SQL= 0.84)	4.9 (SQL= 0.68)	464 (SQL= 4.5)	96.1 (SQL= 0.84)	142 (SQL= 0.85)		pp. E340, E115, E175, E176, E94
Mercury	0.07 U	0.07 JBK (0.08 U)	0.42 (SQL= 0.12 U)		0.11 JL (SQL= 0.113 U)	0.4 (SQL= 0.13)	pp. E340, E115, E175, E94, E167
Zinc	58.2 JL (87 AC) (SQL= 5.6)	81.1 (SQL= 4.5)	682 (SQL= 6.05)	1140 (SQL= 5.6)	348 (SQL= 5.63)		pp. E340, E115, E175, E176, E94
SVOCs (ug/kg)							
Bis(2-ethylhexyl)phthalate	200 U	200 U				500	pp. E1071, E1072, E695, E696, E697, E698
Pyrene	100 U	70 JQK (100 U)			200		pp. E697, E698, E1071, E1072, E494, E495
Dioxin/Furans (ng/kg)							
1,2,3,4,6,7,8-HpCDD	10.338 JK (103.38 AC) (SQL= 0.52)	876.591 (SQL= 0.206)		3926.717 JL			pp. E2085, E2086, E2322, E2113
1,2,3,4,6,7,8-HpCDF	0.780 JK (7.8 AC) (SQL= 0.37)	75.485 (SQL= 4.323)	330.604 (33.06 AC)	401.398			pp. E2085, E2086, E2322, E2111, E2113
1,2,3,4,7,8,9-HpCDF	0.520 UJK (5.20 U AC)	6.169 U		19.541			pp. E2085, E2086, E2322, E2113
1,2,3,7,8,9-HxCDD	0.432 UJL (4.32 AC)	25.229 (SQL= 0.151)		140.142			pp. E2085, E2086, E2322, E2113
1,2,3,4,7,8-HxCDF	0.436 UJL (4.36 U AC)	33.903 U		121.774			pp. E2085, E2086, E2322, E2113
1,2,3,6,7,8-HxCDD	0.377 UJL (3.77 U AC)	47.578 (SQL= 0.132)		214.746			pp. E2085, E2086, E2322, E2113
1,2,3,7,8-PeCDD	0.469 UJL (4.69 U AC)	5.209 (SQL= 0.264)		37.675			pp. E2085, E2086, E2322, E2113
2,3,4,7,8-PeCDF	0.321 UJL (3.21 U AC)	1.033 (SQL= 0.265)		6.289			pp. E2085, E2086, E2322, E2113
2,3,7,8-TCDF	0.206 UJL	0.1740		1.728 (SQL= 0.443 U)			pp. E2085, E2086, E2322, E2113

Key:

AC = Adjusted concentration (Ref. 12).
CLP = Contract Laboratory Program.
EPA = United States Environmental Protection Agency.
J = The analyte was positively identified. The associated numerical value is an estimate.
K = Unknown bias.
L = Low bias.
SQL = Sample quantitation limit.
U = The analyte was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.
mg/L = Micrograms per liter.

Table 18 provides the corresponding Source Number and area value as assigned in Ref. 1, Table 5-2 for Area Letter A through I. Table 18 is in Section 5.1.2.2 of this document. The description, location, and hazardous substances associated with these areas of contamination are described in Section 2.2 for each contaminated soil source described in this document. Below are the hazardous waste quantity calculations for Area Letter E through I.

- Area Letter E is Source No. 1.
The total area of contaminated soil is 112,004 square feet (Ref. 8, pp. 6-2 and Figure 3-1).

The source is then assigned a value for area using the Tier D equation for contaminated soil (Ref. 1, Table 5-2). The Tier D equation for contaminated soil is Area (A) divided by 34,000.

$$112,004 \text{ ft}^2 \div 34,000 = 3.29$$

Area Assigned Value: 3.29
- Area Letter F is Source No. 2.
The total area of contaminated soil is 72,487 square feet (Ref. 8, pp. 6-2 and Figure 3-1).

The source is then assigned a value for area using the Tier D equation for contaminated soil (Ref. 1, Table 5-2). The Tier D equation for contaminated soil is Area (A) divided by 34,000.

$$72,487 \text{ ft}^2 \div 34,000 = 2.13$$

Area Assigned Value: 2.13
- Area Letter G is Source No. 3.
The total area of exposed soil is 36,040 square feet (Ref. 8, pp. 6-2 and Figure 3-1).

The source is then assigned a value for area using the Tier D equation for contaminated soil (Ref. 1, Table 5-2). The Tier D equation for contaminated soil is Area (A) divided by 34,000.

$$36,040 \text{ ft}^2 \div 34,000 = 1.06$$

Area Assigned Value: 1.06
- Area Letter H is Source No. 4
The total area of the pile is estimated to be 39,000 square feet (approximately 600 feet by 65 feet) (Ref. 4, Logbook D, p. 20; Ref. 8, p. 6-12). The area measure is calculated as follows (Ref. 1, p. 51591):

$$39,000 \text{ square feet} / 13 = 3,000$$

Area Assigned Value: 3,000
- Area Letter I is Source No. 5
Each of the three retaining ponds are approximately 10 feet wide by 15 feet long (Ref. 8, p. 6-14) which equates to an area of 450 square feet. The area measure is calculated as follows (Ref. 1, p. 51591):

$$450 \text{ square feet} / 13 = 34.62$$

Area Assigned Value: 34.62

5.1.1 LIKELIHOOD OF EXPOSURE

As presented in Section 5.0.1, observed contamination is documented at 4 residences (samples SO-01-SS, SO-02-SS, SO-04-SS, and SO-05-SS). All sample locations documenting observed contamination are within the property boundary and within 200 feet of the respective residences (Ref. 8, p. 7-13). In general, samples were collected from roof drip lines or below gutter down spouts in exposed soil areas (Ref. 8, p. 7-13).

Since there is observed contamination within the property boundary and within 200 feet of at least one residence, the likelihood of exposure factory category value for the resident population threat is assigned a value of 550 (Ref. 1, p. 51646).



Likelihood of Exposure Factor Category Value: 550

5.1.2 WASTE CHARACTERISTICS

5.1.2.1 Toxicity

Table 17 below provides Resident Population Threat Waste Characteristics for a partial list of those analytes associated with sources and/or attributable to the site.

Table 17			
RESIDENT POPULATION THREAT WASTE CHARACTERISTICS FACTOR VALUES			
Hazardous Substance	Area of Observed Contamination	Toxicity Factor Value	Reference (Page Number from Ref. 2, Part 3)
Arsenic	E, F, G	10,000	B-2
Cobalt	A, B, C, E, G	1	B-6
Mercury	A, C, D, E	10,000	B-13
Zinc	A, B, C, F	10	B-20
2-Methylnaphthalene	E, F	---	B-14
Acenaphthene	E, F, G	10	B-1
Acenaphthylene	E, G	---	B-1
Anthracene	E, F, G	10	B-2
Benzo(a)anthracene	E, F, G	1,000	B-2
Benzo(a)pyrene	E, F, G	10,000	B-2
Benzo(b)fluoranthene	E, F, G	1,000	B-3
Benzo(k)fluoranthene	E, F, G	100	B-3
Chrysene	E, F, G	10	B-5
Dibenzofuran	E, G	—	B-7
Fluoranthene	E, F, G	100	B-10
Fluorene	E, F, G	100	B-10
Indeno(1,2,3-cd)pyrene	E, F, G	1,000	B-12
Naphthalene	E	100	B-14
PCP	E, F, G	100	B-16
Phenanthrene	E, F, G, H, I	---	B-16
Pyrene	E, F, G	100	B-17
2,3,7,8-TCDD	A, B, D, E, G	10,000	B-18
2,3,7,8-TCDF	A, B, D, E, F, G	10,000	B-18
1,2,3,4,6,7,8-HpCDD	B, E, G	10,000	B-11
1,2,3,4,6,7,8-HpCDF	A, B, D, E, G	10,000	B-11

Table 17			
RESIDENT POPULATION THREAT WASTE CHARACTERISTICS FACTOR VALUES			
Hazardous Substance	Area of Observed Contamination	Toxicity Factor Value	Reference (Page Number from Ref. 2, Part 3)
1,2,3,4,7,8-HxCDD	B, E, G	10,000	B-11
1,2,3,4,7,8-HxCDF	B, E, H, I	10,000	B-11
1,2,3,7,8-PeCDD	B, E, G	10,000	B-16
1,2,3,7,8-PeCDF	B, E, G	10,000	B-16
2,3,4,7,8-PeCDF	B, E, G	10,000	B-16

The hazardous substances with the highest toxicity factor value are arsenic, mercury, benzo(a)pyrene, 2,3,7,8-TCDF, 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8-HxCDD, 1,2,3,4,7,8-HxCDF, 1,2,3,7,8-PeCDD, 1,2,3,7,8-PeCDF, 2,3,4,7,8-PeCDF.

Toxicity Factor Value: 10,000

5.1.2.2 Hazardous Waste Quantity

Table 18 Summary of Areas of Contamination		
Area Letter	Source No.	Soil Exposure Pathway Area Value
A through D	Residential Samples 1, 2, 4, and 5	> 0
E	1	3.29
F	2	2.13
G	3	1.06
H	4	3,000
I	5	34.62
	Total	3,042.12

Hazardous waste quantity values for the areas of observed contamination associated with the 4 residences (Area Letter A through D) and Area Letters E through I is 3,041.1. A hazardous waste quantity greater than 100 and less than 10,000 receives a hazardous waste quantity factor value of 100 (Ref. 1, Table 2-6). The hazardous waste quantity factor value was, therefore, assigned a value of 100 (Ref. 1, Section 2.4.2.2 and 5.1.2.2).

5.1.2.3 Waste Characteristics

Multiplying the toxicity factor value of 10,000 by the hazardous waste quantity factor value of 100 equals 1×10^6 , which produces a waste characteristics factor category value of 32 for the resident population threat (Ref. 1, Table 2-7).

=====

Waste Characteristics Factory Category Value: 32

Attribution

In 1989, the EPA performed a Listing Site Inspection (LSI) of the TLT site (Ref. 8, p. 2-6; Ref. 10, p. 1). As part of this inspection, 17 ground water, 19 sediment, 3 surface water, 72 soil, and 50 air samples were collected in order to evaluate the site's potential for inclusion on the National Priorities List (Ref. 3, p. 2-6 ; Ref. 10, p. ix). Soil, ground water, sediment, and surface water samples were analyzed for inorganic compounds and base/neutral and acid extractable organic compounds (BNA) included on the EPA Target Compound List through the EPA Contract Laboratory Program (CLP) (Ref. 8, p. 2-6; Ref. 10, p. ix). Air samples were analyzed for inorganic analytes, BNAs, and PCP by a commercial laboratory following EPA Methods 6000/7000 series and TO-13 (Ref. 8, p. 2-6; Ref. 10, pp. ix, 20).

Analytical results indicated elevated levels of arsenic, copper, magnesium, mercury, nickel, sodium, zinc, BNAs, and PCP in on-site surface soil samples, on-site drainage ditch sediment samples, and roadside ditch sediment samples (Ref. 8, p. 2-6; Ref. 10, pp. 36 through 38, 43 through 45, 47, 63, 71, 91 through 93). On-site borehole samples, collected 4 to 5 feet below ground surface (bgs), contained elevated levels of arsenic, copper, polynuclear aromatic hydrocarbons (PAHs), and PCP (Ref. 8, p. 2-6; Ref. 10, pp. 36, 38, 63). Surface and subsurface soils near the former lagoon and south of the treatment plant contained high concentrations of metals, including arsenic (Ref. 8, p. 2-6; Ref. 10, pp. 35, 36, 63). In addition, stained soil was observed next to the end-painting facility and found to contain elevated concentrations of PCP, BNAs, and metals (Ref. 8, p. 2-6; Ref. 10, pp. 13, 14, 19, 22, 91, 92). Ground water samples collected from on-site monitoring wells and piezometers contained elevated levels of arsenic, copper, nickel, zinc, BNAs, and PCP (Ref. 8, p. 2-6; Ref. 10, pp. 39 through 41, 66, 93). A ground water sample collected from one off-site domestic well (no longer utilized for domestic purposes) contained elevated levels of nickel and zinc (Ref. 8, p. 2-7; Ref. 10, pp. 35, 39 through 41, 66, 91, 92, 93). Air sample data, collected over a six-day period, indicated elevated levels of arsenic, copper, magnesium, zinc, SVOCs, and PCP (Ref. 8, p. 2-6; Ref. 10, pp. 42, 48, 49, 74, 79, 92). Some of the air samples contained concentrations of PCP that exceeded the Occupational Safety and Health Administration (OSHA) permissible exposure limits (PELs) (Ref. 8, p. 2-7; Ref. 10, p. 74). Soil samples collected from nearby residences contained elevated levels of arsenic, copper, and zinc (Ref. 8, pp. 2-6 and 2-7; Ref. 10, pp. 38, 93).

In 1997, a consultant for TLT completed a Phase I RCRA Facility Investigation. In the treated wood storage area, 76 shallow soil samples, 8 subsurface soil samples, and 6 ground water samples were collected. Samples were analyzed for Chlorinated Phenolics (EPA Method 8151M), Total Analyte List (TAL) Metals (EPA Method 6010/7060), and PAHs (EPA Method 8270) (Ref. 9, pp. 80 through 84). Subsurface soil samples were also analyzed for PAH/PCP screening (EPA Method 8015M) (Ref. 9, p. 83). In the Treating Plant area, 118 subsurface soil samples and 72 ground water samples were collected and analyzed for Chlorinated Phenolics (EPA Method 8151M), and PAHs (EPA Method 8270) (Ref. 9, pp. 115 through 119, 122 through 125). Subsurface soil samples were also analyzed for PAH/PCP screening (EPA Method 8015M) and Total Analyte List (TAL) Metals (EPA Method 6010/7060) (Ref. 9, pp. 115 through 119, 134). Sixteen sediment samples were also collected in drainage ditches and analyzed for Chlorinated Phenolics (EPA Method 8151M), Total Analyte List (TAL) Metals (EPA Method 6010/7060), PAHs (EPA Method 8270), and PAH/PCP screening (EPA Method 8015M) (Ref. 9, p. 109).

Analytical results for the treated wood area indicated elevated levels of PAHs, PCP, chlorinated phenolics, arsenic, chromium, copper, and zinc in shallow soil samples (Ref. 9, pp. 86 through 99). Arsenic, chromium, copper, and zinc were also detected at elevated levels in the subsurface soil samples (Ref. 9, p. 104). Ground water samples contained elevated levels of PAHs, PCP, and chlorinated phenolics (Ref. 9, pp. 105 through 108). Analytical results for the treating plant storage area indicated elevated levels of PAHs, chlorinated

phenolics, PCP, arsenic, chromium, copper, and zinc in subsurface soil samples (Ref. 9, pp. 126 through 134). PAHs, PCP, and chlorinated phenolics were detected at elevated levels in the ground water (Ref. 9, pp. 139 through 153). The sediment sample results indicated elevated levels of PAHs, PCP, chlorinated phenolics, arsenic, chromium, copper, and zinc (Ref. 9, pp. 110 through 114).

In total, 14 residences were sampled during the IA; however, only 4 of those residences are used for scoring. These 4 residences are located within 0.25 mile of site sources and are generally adjacent to the site. The remaining residences were located greater than 0.25 mile from site sources, therefore, to be conservative, these sample results are not presented in this HRS documentation record.

A salvage business is located on Rock Creek Road towards the south end of the TLT facility (Ref. 8, p. 7-13, Figure 3-4). Contaminants associated with salvage businesses are similar to those found on the TLT site. One surface soil sample (SO-03-SS) was collected from the yard of the residence located on the property of the salvage business and analytical results revealed the presence of several SVOCs, metals, PCBs, and dioxins (Ref. 8, pp. 7-91, 7-93, 7-97, 7-99). However, this sample was not used in scoring. It is unlikely that contaminants detected in the surface soil sample collected from the salvage business would migrate to other residences. If contaminants from the salvage business did become entrained in air and deposited in residential yards, the contamination detected in the residential yards is at least in part attributable to the TLT site.

5.1.3 TARGETS

5.1.3.1 Residential Individual

Observed contamination is documented on the property and within 200 feet of 4 properties in Area Letter A through E. As presented in Table 19, reported hazardous substance concentrations exceed health-based benchmarks at 2 of the residences and therefore, subject to Level I concentrations (Ref. 1, Section 2.5).

Since there is at least one resident subject to Level I concentrations, the resident individual factor is assigned a value of 50 (Ref. 1, Section 5.1.3.1).

Table 19 Residential Soil Sample Concentrations Exceeding Health Based Benchmarks				
Sample Number	Hazardous Substance	Hazardous Substance Concentration (ug/kg) ^a	Benchmark - Cancer Risk ^b	Reference
SO-01-SS	TCDF	0.0863*	0.004**	Ref. 8, pp. E2112
SO-02-SS	TCDF	0.144*	0.004**	Ref. 8, pp. E2114

* Converted from ng/kg to ug/kg

** Converted from mg/kg to ug/kg

b - Ref. 2

Resident Individual Factor Value: 50

5.1.3.2 Resident Population

5.1.3.2.1 Level I Concentrations

Two residential soil sample had concentrations that met observed release criteria and that exceeded a health-based benchmark (see Table 19). Several attempts were made to obtain actual population counts; however, actual populations were not available. Therefore, the average number of persons per household for the Yamhill county was used to calculate population. The average number of persons per household in Yamhill County is 2.77 (Ref. 16). The total number of resident individuals subject to Level I concentrations is 5.54. Multiplying this sum by 10 produces a Level I concentrations factor value of 55.4 (Ref. 1, p. 51647).

Level I Concentrations Factor Value: 55.4

5.1.3.2.2 Level II Concentrations

Two residential soil samples had concentrations that met observed release criteria but that did not exceed a health-based benchmark. The average number of persons per household in Yamhill County is 2.77 (Ref. 16). The total number of residents subject to Level II concentrations is 5.54. The Level II concentration factor, therefore, is assigned a value of 5.54 (Ref. 1, Section 5.1.3.2.2).



Level II Concentration Factor Value: 5.54

5.1.3.3 Workers

There are 98 people employed at the TLT facility (Ref. 8, p. 7-12; Ref. 4, Logbook A, p. 8). The workers factor, therefore, is assigned a value of 5 (Ref. 1, Table 5-4).

Workers Factor Value: 5

5.1.3.4 Resources

Commercial agriculture, silviculture, or livestock production/grazing are not known to occur within the areas of observed contamination. The resources factor, therefore, is assigned a value of 0 (Ref. 1, Section 5.1.3.4).

Resources Factor Value: 0

5.1.3.5 Terrestrial Sensitive Environments

Terrestrial sensitive environments are not present on the areas of observed contamination. The terrestrial sensitive environments factor, therefore, is assigned a value of 0 (Ref. 1, Section 5.1.3.5).

Terrestrial Sensitive Environments Factor Value: 0

5.1.3.6 Resident Population Factor Category

Summing the values for the resident individual factor (50), Level I concentrations factor (55.4), Level II concentrations (5.54), and workers factor (5) yields a targets factor category value of 115.94 for the resident population threat.

Resident Population Targets Factor Category Value: 115.94

5.1.4 Resident Population Threat Score

The resident population threat score is the product of likelihood of exposure (550), multiplied by the waste characteristics (32), multiplied by the resident population targets (115.94) (Ref. 1, Section 5.1.4). This product is then divided by 82,500 to achieve the resident population threat score, subject to a maximum of 100 (Ref. 1, Section 5.1.4).

$$550 \times 32 \times 115.94 / 82,500 = 24.73$$

Resident Population Threat Score: 24.73

5.2 Nearby Population Threat

The nearby population threat was not scored at this time because it would not have a significant impact on the soil exposure pathway score.

6.0 AIR PATHWAY

The TLT facility operates under an Oregon Department of Environmental Quality Air Contaminant Discharge Permit (No. 36-7004) (Ref. 10, p. 4; Ref. 13). The permit regulates the emissions of sulfur dioxide, carbon monoxide, nitrogen dioxide, suspended particulates, and volatile organic compounds, which are limited to 8.9 tons per year (T/Y), 94.0 T/Y, 52.9 T/Y, 50.1 T/L, and 23.4 T/L, respectively (Ref. 13, p. 5). The site is located in an area that is in attainment for all pollutants, as specified by the state of Oregon, and is not located within 100 kilometers of a Class I area quality protection area (Ref. 13, p. 11).

The prevailing wind direction at the TLT site is from westerly to southwesterly and generally follows the Yamhill River Valley with speeds averaging from 5 to 10 mph. The area experiences a diurnal shift in wind direction at night and in the early morning hours. During the night, the prevailing wind direction is easterly and northeasterly (Ref. 10, p. 78). The City of Sheridan is located within 1 mile downwind (east) of the site (Ref. 3; Ref. 8, Figure 3-6). Contaminants from on-site surface soils in the west facility could have migrated to downwind targets such as residential soils, wetlands, and the South Yamhill River through wind entrainment and re-deposition of particulate matter (Ref. 8, p. 9-5).

-Basis for chemical analysis

Samples that were analyzed for metals were collected using General Metal Works, Inc. Model 2000™ high volume (Hi-vol) air samplers (Ref. 8, p. 3-5). The Hi-vol samplers were operated at a flow rate of approximately 40 cubic feet per minute for seven consecutive 24-hour periods (Ref. 8, pp. 3-5). Samples that were analyzed for carcinogenic polynuclear aromatic hydrocarbons (cPAHs) and PCP were collected using General Metal Works, Inc. PS-1™ samplers (Ref. 8, p. 3-5). The PS-1 samplers were operated at the highest attainable flow-rate, but did not exceed 400 cubic meters total sample volume (Ref. 8, p. 3-5). The PS-1 samplers were operated over the same sample periods as the Hi-vol samplers (Ref. 4, Logbooks Q and S; Ref. 8, pp. 3-5, 7-15).

A total of 76 air samples (38 Hi-vol metals samples and 38 PS-1 SVOC samples) were collected from seven station locations (A1 through A7) over seven consecutive 24-hour sampling periods from August 22 through August 28, 1999 (Ref. 8, pp. 7-15, 7-16). One Hi-vol metals sample and one PS-1 SVOC sample was collected from each station location for each 24-hour sampling period (Ref. 8, p. 7-15). Ambient air samples were analyzed for cPAHs, PCP, arsenic, chromium, and lead (Ref. 8, p. 3-5). All air samplers were sited to conform with the probe siting criteria for ambient air samplers (40 CFR Part 58; Appendix E) which is summarized as follows: Sampler inlets were positioned 2 meters above the ground surface and at least 25 meters from the nearest traffic lane of any roadway (Ref. 8, p. 3-4). Samplers were placed as far away from any structures as feasible, optimally at a distance of twice the structure's height (Ref. 8, p. 3-4). Electrical power sources were used for all samplers (Ref. 8, p. 3-4). TLT installed electrical outlets at three sampler locations for use by EPA (Ref. 8, p. 3-4).

Air station A1 was located within ¼ mile of the site at a residence directly east of the TLT retorts, on the east side of Rock Creek Road (Ref. 4, Logbook Q, p. 2; Ref. 4, Logbook S, p. 18; Ref. 8, Figure 3-6). Station A2 was located on-site at the northeast corner of the treated pole storage yard and station A3 was located on-site at the southeast corner of the treatment plant facility (Ref. 4, Logbook Q, p. 2; Ref. 4, Logbook S, p. 18; Ref. 8, Figure 3-6). Station A4 was placed in an empty field on the east side of Chip Mill Road, approximately 0.3 mile east of the treatment plant facility (Ref. 4, Logbook Q, p. 2; Ref. 4, Logbook S, p. 18; Ref. 8, Figure 3-6). Station A5 was located at the residence adjacent and

approximately 300 feet west of the white pole storage area (Ref. 4, Logbook Q, p. 2; Ref. 4, Logbook S, p. 18; Ref. 8, Figure 3-6). Station A6 was located at a residence adjacent to Highway 18B and the Willamette Pacific Railroad approximately 0.8 mile west of the white pole storage area (Ref. 4, Logbook Q, p. 2; Ref. 4, Logbook S, p. 18; Ref. 8, Figure 3-6). Finally, station A7 was located near the main gate to the Delphian school property, approximately 0.70 mile northwest of the boiler ash and UST bioremediated soil waste pile (Ref. 4, Logbook Q, p. 2; Ref. 4, Logbook S, p. 18; Ref. 8, Figure 3-6).

Downwind sample locations were determined based on daily site wind direction and speed measurements. Downwind stations and corresponding samples were designated as follows (Ref. 6; Ref. 8, p. 7-16):

- On August 22, 1999, downwind stations were A1 through A6 (samples H1082299 through H6082299 and P1082299 through P6082299);
- On August 23, 1999, downwind stations were A1 through A5 (samples H1082399 through H5082399 and P1082399 through P5082399);
- On August 24, 1999, downwind stations were A1 through A5 and A7 (samples H1082499 through H5082499, H7082499, P1082499 through P5082499, and P7082499);
- On August 25, 1999, downwind stations were A1 through A4 (samples H1082599 through H4082599 and P1082599 through P4082599);
- On August 26, 1999, downwind stations were A1 through A5 and A7 (samples H1082699 through H5082699, H7082699, P1082699 through P5082699, and P7082699);
- On August 27, 1999, downwind stations were A1 through A6 (samples H1082799 through H6082799 and P1082799 through P6082799); and
- On August 28, 1999, downwind stations were A1 through A5 (samples H1082899 through H5082899 and P1082899 through P5082899).

Background Samples:

Upwind sample locations were determined based on daily site wind direction and speed measurements. Upwind stations and corresponding samples were designated as follows (Ref. 6; Ref. 8, pp. 5-7, 5-8):

- On August 22, 1999, upwind station was A7 (sample H7082299 and P7082299);
- On August 23, 1999, upwind station were A6 and A7 (samples H6082399, H7082399 and P6082399, P7082399);
- On August 24, 1999, upwind station was A6 (sample H6082499 and P6082499);
- On August 25, 1999, upwind stations were A5 through A7 (samples H5082599 through H7082599 and P5082599 through P7082599);
- On August 26, 1999, upwind station was A6 (sample H6082699 and P6082699);
- On August 27, 1999, upwind station was A7 (sample H7082799 and P7082799); and
- On August 28, 1999, upwind stations were A6 and A7 (samples H6082899, H7082899 and P6082899, P7082899).

Contaminated Samples:

- On August 22, 1999, downwind stations A1 through A6 (samples H1082299 through H6082299 and P1082299 through P6082299) contained concentrations of arsenic, acenaphthene, flourene, naphthalene and phenanthrene that met observed release criteria (Ref. 8, Table 7-23). In addition, 2-methylnaphthalene, anthracene, flouranthene, pentachlorophenol, and pyrene were also detected in one or more of these stations in concentrations that met observed release criteria (Ref. 8, Table 7-23);
- On August 23, 1999, one or more downwind stations A1 through A5 (samples H1082399 through H5082399 and P1082399 through P5082399) contained one or more of the same hazardous substances detected on August 22, 1999 in concentrations that met observed release criteria (Ref. 8, Table 7-24);
- On August 24, 1999, one or more downwind stations A1 through A5 (samples H1082499 through H5082499, P1082499 through P5082499) contained one or more of the same hazardous substances detected on August 22, 1999 in concentrations that met observed release criteria (Ref. 8, Table 7-25);
- On August 25, 1999, one or more downwind stations A1 through A4 (samples H1082599 through H4082599 and P1082599 through P4082599) contained one or more of the same hazardous substances detected on August 22, 1999 in concentrations that met observed release criteria (Ref. 8, Table 7-26);
- On August 26, 1999, downwind stations A1 through A5 (samples H1082699 through H5082699 and P1082699 through P5082699) contained one or more of the same hazardous substances detected on August 22, 1999 in concentrations that met observed release criteria (Ref. 8, Table 7-27);
- On August 27, 1999, downwind stations A1 through A6 (samples H1082799 through H6082799 and P1082799 through P6082799) contained one or more of the same hazardous substances detected on August 22, 1999 in concentrations that met observed release criteria (Ref. 8, Table 7-28); and
- On August 28, 1999, downwind stations were A1 through A4 (samples H1082899 through H4082899 and P1082899 through P4082899) contained one or more of the same hazardous substances detected on August 22, 1999 in concentrations that met observed release criteria (Ref. 8, Table 7-29).

Tables 20 through 26 illustrate the air samples which contained one or more hazardous substances that met observed release criteria. The concentrations provided in the tables do not correspond to the appropriate analytical data form 1s. Concentrations were converted from m³/minute to an in-air concentrations using a series of conversion calculations (Ref. 20). Reference 20 provides the conversion calculations for all air samples. Sample quantitation limits were calculated for all samples and analytes and are presented in Tables 20 through 26 (Ref. 25).

Table 20							
AIR SAMPLES							
INORGANIC AND SEMIVOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS							
FOR AUGUST 22, 1999							
EPA Inorganic ID	99080216	99080210	99080211	99080212	99080213	99080214	99080215
Inorganic Location ID	H7082299	H1082299	H2082299	H3082299	H4082299	H5082299	H6082299
EPA Organic ID	99080206	99080200	99080201	99080202	99080203	99080204	99080205
Organic Location ID	P7082299	P1082299	P2082299	P3082299	P4082299	P5082299	P6082299
Background							
Reference 8, Page(s)	E3084, E3144	E3078, E3134	E3079, E3135	E3080, E3136	E3081, E3136	E3082, E3139	E3083, E3143
Reference 20, Page(s)	112, 197, 206, 207	12, 99, 100, 197, 207, 208	3, 4, 101, 102, 196, 207	5, 6, 103, 104, 197, 208	7, 8, 105, 106, 197, 208	9, 10, 107, 108, 197, 206	11, 12, 109, 110, 197, 207
Inorganics (ug/m ³)							
Arsenic	0.0002 JB (0.00026 U)	0.001 (SQL= 0.00026)	0.0008 (SQL= 0.00026)	0.0007 (SQL= 0.00025)	0.0005 JL (SQL= 0.00026)	0.0004 JL (SQL= 0.00025)	0.0004 JL (SQL= 0.00025)
SVOCs (ug/m ³)							
2-Methylnaphthalene	0.0322 (SQL= 0.0037)	2.4233 (SQL= 0.0613)	3.0592 (SQL= 0.0329)	1.0063 (SQL= 0.0314)	0.6103 (SQL= 0.0094)	0.5755 (SQL= 0.0072)	0.0574 (SQL= 0.0034)
Acenaphthene	0.0073 (SQL= 0.0037)	1.5031 (SQL= 0.0613)	0.8882 (SQL= 0.0329)	0.3774 (SQL= 0.0314)	0.2958 (SQL= 0.0094)	0.3094 (SQL= 0.0072)	0.0324 (SQL= 0.0034)
Anthracene	0.0037 U					0.0245 (SQL= 0.0072)	
Fluoranthene	0.0037 U				0.0103 (SQL= 0.0094)	0.0504 (SQL= 0.0072)	0.0054 (SQL= 0.0034)
Fluorene	0.0055 (SQL= 0.0037)	0.7669 (SQL= 0.0613)	0.6579 (SQL= 0.0329)	0.239 (SQL= 0.0314)	0.1549 (SQL= 0.0094)	0.2446 (SQL= 0.0072)	0.027 (SQL= 0.0034)
Naphthalene	0.0476 (SQL= 0.0037)	3.9877 (SQL= 0.0613)	2.4013 (SQL= 0.0329)	1.3836 (SQL= 0.0314)	1.2207 (SQL= 0.0094)	0.7554 (SQL= 0.0072)	0.1554 (SQL= 0.0034)
Pentachlorophenol	0.0366 U					0.2914 (SQL= 0.0719)	
Phenanthrene	0.007 (SQL= 0.0037)	0.7055 (SQL= 0.0613)	0.625 (SQL= 0.0329)	0.2579 (SQL= 0.0314)	0.1455 (SQL= 0.0094)	0.3957 (SQL= 0.0072)	0.0338 (SQL= 0.0034)
Pyrene	0.0037 U					0.0266 (SQL= 0.0072)	0.0044 (SQL= 0.0034)

Key:

- B = Analyte detected below the Contract Required Detection Limits, but at or above the instrument detection limits.
- EPA = United States Environmental Protection Agency.
- ID = Identification.
- J = The analyte was positively identified. The associated numerical result is an estimate.
- L = Low bias.
- ug/m3 = Microgram per cubic meter.
- SQL = Sample quantitation limit.
- SVOCs = Semivolatile organic compounds.
- U = The analyte was not detected. The associated numerical result is the sample quantitation limit.

Table 21

**AIR SAMPLES
INORGANIC AND SEMIVOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS
FOR AUGUST 23, 1999**

EPA Inorganic ID	99080233	99080234	99080228	99080229	99080230	99080231	99080232
Inorganic Location ID	H6082399	H7082399	H1082399	H2082399	H3082399	H4082399	H5082399
EPA Organic ID	99080225	99080226	99080220	99080221	99080222	99080223	99080224
Organic Location ID	P6082399	P7082399	P1082399	P2082399	P3082399	P4082399	P5082399
Background							
Reference 8, Page(s)	E30916, E3165	E3092, E3166	E3086, E3160	E3087, E3161	E3162	E3163	E3164
Reference 20, Page(s)	124, 196, 200, 201	27, 28, 125, 126, 196, 204	15, 16, 113, 114, 197, 210	116, 197, 201, 202	117, 118, 199, 200	119, 120, 199	121, 122, 200
Inorganics (ug/m³)							
Arsenic	0.0003 JL (0.0003 AC)	0.0002 JB (0.00026 U)	0.0047 (SQL= 0.00025)	0.0036 (SQL= 0.00024)			
SVOCs (ug/m³)							
2-Methylnaphthalene	0.0162 (SQL= 0.0036)	0.0126 (SQL= 0.0039)	0.6962 (SQL= 0.0158)	3.9344 (SQL= 0.0328)	0.121 (SQL= 0.0036)	0.0554 (SQL= 0.0028)	
Acenaphthene	0.0068 (SQL= 0.0036)	0.0039 U (SQL= 0.0039)	0.3797 (SQL= 0.0158)	2.8525 (SQL= 0.0328)	0.0427 (SQL= 0.0036)		
Anthracene	0.0036 U (SQL= 0.0036)	0.0039 U (SQL= 0.0039)	0.0272 (SQL= 0.0158)	0.177 (SQL= 0.0328)			
Fluoranthene	0.0036 U (SQL= 0.0036)	0.0039 U (SQL= 0.0039)	0.0601 (SQL= 0.0158)	0.1443 (SQL= 0.0328)	0.0114 (SQL= 0.0036)		0.0045 (SQL= 0.0038)
Fluorene	0.0054 (SQL= 0.0036)	0.0039 U (SQL= 0.0039)	0.2215 (SQL= 0.0158)	1.8361 (SQL= 0.0328)	0.0281 (SQL= 0.0036)		
Naphthalene	0.0306 (SQL= 0.0036)	0.0209 (SQL= 0.0039)	1.8038 (SQL= 0.0158)	4.5902 (SQL= 0.0328)	0.1851 (SQL= 0.0036)	0.1357 (SQL= 0.0028)	
Phenanthrene	0.0097 (SQL= 0.0036)	0.0059 (SQL= 0.0039)	0.3165 (SQL= 0.0158)	2.1639 (SQL= 0.0328)	0.0463 (SQL= 0.0036)		
Pyrene	0.0036 U (SQL= 0.0036)	0.0039 U (SQL= 0.0039)	0.0411 (SQL= 0.0158)	0.0885 (SQL= 0.0328)	0.0071 (SQL= 0.0036)		

Key:

- B = Analyte detected below the Contract Required Detection Limits, but at or above the instrument detection limits.
EPA = United States Environmental Protection Agency.
ID = Identification.
J = The analyte was positively identified. The associated numerical result is an estimate.
L = Low bias.
ug/m³ = Microgram per cubic meter.
SQL = Sample quantitation limit.
SVOCs = Semivolatile organic compounds.
U = The analyte was not detected. The associated numerical result is the sample quantitation limit.

Table 22

**AIR SAMPLES
INORGANIC AND SEMIVOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS
FOR AUGUST 24, 1999
TAYLOR LUMBER AND TREATING
SHERIDAN, OREGON**

EPA Inorganic ID	99080251	99080246	99080247	99080248	99080249	99080250
Inorganic Location ID	H6082499	H1082499	H2082499	H3082499	H4082499	H5082499
EPA Organic ID	99080241	99080236	99080237	99080238	99080239	99080240
Organic Location ID	P6082499	P1082499	P2082499	P3082499	P4082499	P5082499
	Background					
Reference 8, Page(s)	E3056, E3154	E3094, E3149	E3095, E3150	E3151	E3152	E3153
Reference 20, Page(s)	39, 40, 137, 138, 196, 219	29, 30, 127, 128, 196, 204, 205	31, 32, 129, 130, 196, 202, 203	131, 132, 202	133, 134, 204	135, 136, 219, 220
Inorganics (ug/m³)						
Arsenic	0.0003 (SQL= 0.00025)	0.0035 (SQL= 0.00025)	0.0023 (SQL= 0.00024)			
Lead	0.002 (SQL=0.00007)	0.0079 (SQL= 0.00008)				
SVOCs (ug/m³)						
2-Methylnaphthalene	0.021 (SQL= 0.0036)	0.3322 (SQL= 0.0133)	5.137 (SQL= 0.0685)		0.0635 (SQL= 0.0033)	
Acenaphthene	0.0051 (SQL= 0.0036)	0.1296 (SQL= 0.0133)	5.137 (SQL= 0.0685)		0.0211 (SQL= 0.0033)	0.0158 (SQL= 0.0038)
Anthracene	0.0036 U (SQL= 0.0036)		0.3219 (SQL= 0.0685)			
Fluoranthene	0.0036 U (SQL= 0.0036)	0.0199 (SQL= 0.0133)	0.25 (SQL= 0.0685)	0.007 (SQL= 0.0035)		0.0045 (SQL= 0.0038)
Fluorene	0.0047 (SQL= 0.0036)	0.0831 (SQL= 0.0133)	3.2534 (SQL= 0.0685)		0.0161 (SQL= 0.0033)	0.0166 (SQL= 0.0038)
Naphthalene	0.0399 (SQL= 0.0036)	1.0963 (SQL= 0.0133)	6.5068 (SQL= 0.0685)		0.1605 (SQL= 0.0033)	
Phenanthrene	0.0098 (SQL= 0.0036)	0.1196 (SQL= 0.0133)	3.7671 (SQL= 0.0685)			
Pyrene	0.0036 U (SQL= 0.0036)		0.1541 (SQL= 0.0685)			

Key:

EPA = United States Environmental Protection Agency.

ID = Identification.

ug/m3 = Microgram per cubic meter.

SQL = Sample quantitation limit.

SVOCs = Semivolatile organic compounds.

U = The analyte was not detected. The associated numerical result is the sample quantitation limit.

Table 23							
AIR SAMPLES							
INORGANIC AND SEMIVOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS							
FOR AUGUST 25, 1999							
EPA Inorganic ID	99080268	99080269	99080270	99080264	99080265	99080266	99080267
Inorganic Location ID	H5082599	H6082599	H7082599	H1082599	H2082599	H3082599	H4082599
EPA Organic ID	99080260	99080261	99080262	99080256	99080257	99080258	99080259
Organic Location ID	P5082599	P6082599	P7082599	P1082599	P2082599	P3082599	P4082599
Background							
Reference 8, Page(s)	E3063, E3105	E3064, E3106	E3065, E3107	E3059, E3101	E3060, E3102	E3061, E3103	E3062, E3104
Reference 20, Page(s)	51, 52, 149, 150, 196, 217	53, 54, 151, 152, 196, 215	55, 56, 153, 154, 199, 214, 215	43, 44, 141, 142, 196, 212, 213	45, 46, 143, 144, 197, 212	47, 48, 145, 147, 196, 216, 217	147, 148, 216, 217
Inorganics (ug/m ³)							
Arsenic	0.0001 JB (0.00023 U)	0.0002 JB (0.00024 U)	0.0001 U (SQL= 0.00028)	0.0033 (SQL= 0.00027)	0.0206 (SQL= 0.00024)	0.0007 (SQL= 0.00023)	
SVOCs (ug/m ³)							
2- Chloronaphthalene	0.0037 U (SQL= 0.0037)	0.0034 U (SQL= 0.0034)	0.0036 U (SQL= 0.0036)		0.0671 (SQL= 0.0671)		
2-Methylnaphthalene	0.0315 (SQL= 0.0037)	0.0205 (SQL= 0.0034)	0.008 (SQL= 0.0036)	3.1949 (SQL= 0.0799)	4.3624 (SQL= 0.0671)	0.2255 (SQL= 0.0036)	0.2669 (SQL= 0.0068)
Acenaphthene	0.0139 (SQL= 0.0037)	0.0141 (SQL= 0.0034)	0.0036 U (SQL= 0.0036)	2.1086 (SQL= 0.0799)	3.6913 (SQL= 0.0671)	0.1127 (SQL= 0.0036)	0.1486 (SQL= 0.0068)
Anthracene	0.0037 U (SQL= 0.0037)	0.0034 U (SQL= 0.0034)	0.0036 U (SQL= 0.0036)	0.0831 (SQL= 0.0799)	0.2248 (SQL= 0.0671)	0.0058 (SQL= 0.0036)	
Fluoranthene	0.0037 U (SQL= 0.0037)	0.0034 U (SQL= 0.0034)	0.0036 U (SQL= 0.0036)		0.2215 (SQL= 0.0671)	0.0138 (SQL= 0.0036)	
Fluorene	0.0099 (SQL= 0.0037)	0.0101 (SQL= 0.0034)	0.0036 U (SQL= 0.0036)	0.9904 (SQL= 0.0799)	2.2819 (SQL= 0.0671)	0.0582 (SQL= 0.0036)	0.0845 (SQL= 0.0068)
Naphthalene	0.0696 (SQL= 0.0037)	0.0671 (SQL= 0.0034)	0.0175 (SQL= 0.0036)	7.0288 (SQL= 0.0799)	5.0336 (SQL= 0.0671)	0.4 (SQL= 0.0036)	0.5743 (SQL= 0.0068)
Phenanthrene	0.0147 (SQL= 0.0037)	0.0174 (SQL= 0.0034)	0.0036 U (SQL= 0.0036)	0.9265 (SQL= 0.0799)	2.953 (SQL= 0.0671)	0.0764 (SQL= 0.0036)	0.0811 (SQL= 0.0068)
Pyrene	0.0037 U (SQL= 0.0037)	0.0034 U (SQL= 0.0034)	0.0036 U (SQL= 0.0036)		0.1443 (SQL= 0.0671)	0.0095 (SQL= 0.0036)	

Key:

- B = Analyte detected below the Contract Required Detection Limits, but at or above the instrument detection limits.
- EPA = United States Environmental Protection Agency.
- ID = Identification.
- J = The analyte was positively identified. The associated numerical result is an estimate.
- ug/m3 = Microgram per cubic meter.
- SQL = Sample quantitation limit.
- SVOCs = Semivolatile organic compounds.
- U = The analyte was not detected. The associated numerical result is the sample quantitation limit.

Table 24						
AIR SAMPLES						
INORGANIC AND SEMIVOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS						
FOR AUGUST 26, 1999						
EPA Inorganic ID	99080285	99080280	99080281	99080282	99080283	99080284
Inorganic Location ID	H6082699	H1082699	H2082699	H3082699	H4082699	H5082699
EPA Organic ID	99080277	99080272	99080273	99080274	99080275	99080276
Organic Location ID	P6082699	P1082699	P2082699	P3082699	P4082699	P5082699
	Background					
Reference 8, Page(s)	E3072, E3128	E3067, E3123	E3068, E3124	E3125	E3070, E3126	E3127
Reference 20, Page(s)	67, 68, 164, 165, 199, 219	57, 58, 155, 156, 199, 213	59, 60, 157, 158, 199, 211, 212, 218	159, 159a, 213, 214	160, 161, 218, 219	162, 163, 214
Inorganics (ug/m ³)						
Arsenic	0.0004	0.0013 (SQL= 0.00025)	0.0013 (SQL= 0.00027)			
Chromium	0.0017 JL (0.017 U)					
Lead	0.0024					
SVOCs (ug/m ³)						
2-Methylnaphthalene	0.0558 (SQL= 0.0037)	4.2904 (SQL= 0.1320)	6.5934 (SQL= 0.0733)	0.5654 (SQL= 0.0071)	1.1842 (SQL= 0.0329)	0.1735 (SQL= 0.0034)
Acenaphthene	0.0242 (SQL= 0.0037)	2.0462 (SQL= 0.1320)	3.2967 (SQL= 0.0733)	0.2049 (SQL= 0.0071)	0.4934 (SQL= 0.0329)	0.0578 (SQL= 0.0034)
Anthracene	0.0037 U	0.1584 (SQL= 0.1320)	0.2051 (SQL= 0.0733)	0.0117 (SQL= 0.0071)	0.0362 (SQL= 0.0329)	
Fluoranthene	0.0037 U		0.1612 (SQL= 0.0733)	0.012 (SQL= 0.0071)		0.0092 (SQL= 0.0034)
Fluorene	0.0182 (SQL= 0.0037)	0.9241 (SQL= 0.1320)	2.0147 (SQL= 0.0733)	0.1131 (SQL= 0.0071)	0.2368 (SQL= 0.0329)	
Naphthalene	0.1375 (SQL= 0.0037)	13.8614 (SQL= 0.1320)	9.1575 (SQL= 0.0733)	0.9541 (SQL= 0.0071)	3.6184 (SQL= 0.0329)	
Pentachlorophenol	0.0372 U					0.0374 (SQL= 0.0340)
Phenanthrene	0.0283 (SQL= 0.0037)	0.7261 (SQL= 0.1320)	2.2344 (SQL= 0.0733)	0.1201 (SQL= 0.0071)	0.1941 (SQL= 0.0329)	
Pyrene	0.0037 U		0.0842 (SQL= 0.0733)			0.0044 (SQL= 0.0034)

Key:

EPA = United States Environmental Protection Agency.
 ID = Identification.
 J = The analyte was positively identified. The associated numerical result is an estimate.
 L = Low bias.
 ug/m3 = Microgram per cubic meter.
 SQL = Sample quantitation limit.
 SVOCs = Semivolatile organic compounds.
 U = The analyte was not detected. The associated numerical result is the sample quantitation limit.

Table 25							
AIR SAMPLES							
INORGANIC AND SEMIVOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS							
FOR AUGUST 27, 1999							
EPA Inorganic ID	99080303	99080297	99080298	99080299	99080300	99080301	99080302
Inorganic Location ID	H7082799	H1082799	H2082799	H3082799	H4082799	H5082799	H6082799
EPA Organic ID	99080295	99080289	99080290	99080291	99080292	99080293	99080294
Organic Location ID	P7082799	P1082799	P2082799	P3082799	P4082799	P5082799	P6082799
Background							
Reference 8, Page(s)	180, 181, 208, 209	E4167	E4168	172, 173, 222, 223	174, 175, 215, 216	E4171	E4172
Reference 20, Page(s)	209	168, 169, 209	170, 171, 211	223	216	176, 177, 201	178, 179, 209
SVOCs (ug/m ³)							
2-Methylnaphthalene	0.0216 (SQL= 0.0036)	1.9649 (SQL= 0.0702)	4.7458 (SQL= 0.1695)	0.2303 (SQL= 0.0066)	0.2416 (SQL= 0.0074)	0.1326 (SQL= 0.0036)	
Acenaphthene	0.0079 (SQL= 0.0036)	1.2632 (SQL= 0.0702)	3.7288 (SQL= 0.1695)	0.1217 (SQL= 0.0066)	0.1413 (SQL= 0.0074)	0.0753 (SQL= 0.0036)	0.0324 (SQL= 0.0036)
Anthracene	0.0036 U (SQL= 0.0036)	0.0737 (SQL= 0.0702)	0.2237 (SQL= 0.1695)	0.0069 (SQL= 0.0066)			
Fluoranthene	0.0036 U (SQL= 0.0036)		0.1797 (SQL= 0.1695)	0.0099 (SQL= 0.0066)			
Fluorene	0.0065 (SQL= 0.0036)	0.5614 (SQL= 0.0702)	2.2373 (SQL= 0.1695)	0.0625 (SQL= 0.0066)	0.0706 (SQL= 0.0074)	0.0466 (SQL= 0.0036)	0.021 (SQL= 0.0036)
Naphthalene	0.0612 (SQL= 0.0036)	6.6667 (SQL= 0.0702)	12.5424 (SQL= 0.1695)	0.6908 (SQL= 0.0066)	0.9665 (SQL= 0.0074)	0.3943 (SQL= 0.0036)	0.25 (SQL= 0.0036)
Phenanthrene	0.0108 (SQL= 0.0036)	0.5263 (SQL= 0.0702)	2.5763 (SQL= 0.1695)	0.0724 (SQL= 0.0066)	0.0595 (SQL= 0.0074)	0.0466 (SQL= 0.0036)	

Key:

- EPA = United States Environmental Protection Agency.
- ID = Identification.
- ug/m³ = Microgram per cubic meter.
- SVOCs = Semivolatile organic compounds.
- SQL = Sample quantitation limit.
- U = The analyte was not detected. The associated numerical result is the sample quantitation limit.

Table 26						
AIR SAMPLES						
INORGANIC AND SEMIVOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS						
FOR AUGUST 28, 1999						
EPA Inorganic ID	99080319	99080320	99080314	99080315	99080316	99080317
Inorganic Location ID	H6082899	H7082899	H1082899	H2082899	H3082899	H4082899
EPA Organic ID	99080310	99080311	99080305	99080306	99080307	99080308
Organic Location ID	P6082899	P7082899	P1082899	P2082899	P3082899	P4082899
Background						
Reference 8, Page(s)	E3049, E3118	E3050, E3119	E3044, E3112	E3045, E3113	E3114	E3115
Reference 20, Page(s)	95, 96, 192, 193, 198, 221, 222	97, 98, 194, 195, 198, 222	85, 86, 182, 183, 198, 222, 223	87, 88, 184, 185, 198, 223, 224	186, 187, 223	188, 189, 221
Inorganics (ug/m ³)						
Arsenic	0.0001 JB (SQL= 0.00025 U)	0.0001 JB (SQL= 0.00027 U)	0.002 JL (SQL= 0.00024)	0.0052 JL (SQL= 0.00025)		
Chromium	0.001 JL (0.0099 AC) (SQL= 0.00025)	0.0003 JL (0.003 AC) (SQL= 0.00027)				
Lead	0.001 JL (0.0099 AC) (SQL= 0.00007)	0.0009 JL (0.009 AC) (SQL= 0.00007)				
SVOCs (ug/m ³)						
2-Methylnaphthalene	0.0131 (SQL= 0.0033)	0.0062 (SQL= 0.0034)	1.7647 (SQL= 0.0327)	3.9877JH (0.3988 AC) (SQL= 0.0307)	0.0864 (SQL= 0.0033)	0.2742 (SQL= 0.0065)
Acenaphthene	0.0066 (SQL= 0.0033)	0.0034 U (SQL= 0.0034)	1.0458 (SQL= 0.0327)	3.3742 JH (0.3374 AC) (SQL= 0.0307)	0.0279 (SQL= 0.0033)	0.1097 (SQL= 0.0065)
Anthracene	0.0033 U (SQL= 0.0033)	0.0034 U (SQL= 0.0034)	0.0915 (SQL= 0.0327)	0.2025 JH (0.0202 AC) (SQL= 0.0307)		0.01 (SQL= 0.0065)
Fluoranthene	0.0033 U (SQL= 0.0033)	0.0034 U (SQL= 0.0034)	0.1013 (SQL= 0.0327)	0.2301 JH (0.023 AC) (SQL= 0.0307)	0.0083 (SQL= 0.0033)	0.0103 (SQL= 0.0065)
Fluorene	0.0046 (SQL= 0.0033)	0.0034 U (SQL= 0.0034)	0.4902 (SQL= 0.0327)	2.362 JH (0.2362 AC) (SQL= 0.0307)	0.0189 (SQL= 0.0033)	0.0613 (SQL= 0.0065)
Naphthalene	0.0328 (SQL= 0.0033)	0.0082 (SQL= 0.0034)	4.902 (SQL= 0.0327)	4.2945 JH (0.4294 AC) (SQL= 0.0307)	0.1229 (SQL= 0.0033)	0.5484 (SQL= 0.0065)
Phenanthrene	0.0085 (SQL= 0.0033)	0.0034 U (SQL= 0.0034)	0.5882 (SQL= 0.0327)	3.0675 JH (0.3067 AC) (SQL= 0.0307)	0.0302 (SQL= 0.0033)	0.0774 (SQL= 0.0065)
Pyrene	0.0033 U (SQL= 0.0033)	0.0034 U (SQL= 0.0034)	0.0784 (SQL= 0.0327)	0.1595 JK (0.016 AC) (SQL= 0.0307)	0.0053 (SQL= 0.0033)	

Key:

AC	= Adjusted concentration (Ref. 12).
EPA	= United States Environmental Protection Agency.
H	= High bias.
ID	= Identification.
J	= The analyte was positively identified. The associated numerical result is an estimate.
K	= Unknown bias.
L	= Low bias.
ug/m3	= Microgram per cubic meter.
SQL	= Sample quantitation limit.
SQL	= Sample quantitation limit.
SVOCs	= Semivolatile organic compounds.
U	= The analyte was not detected. The associated numerical result is the sample quantitation limit.

Attribution

In 1989, the EPA performed a Listing Site Inspection (LSI) of the TLT site (Ref. 8, p. 2-6; Ref. 10, p. 1). As part of this inspection, 17 ground water, 19 sediment, 3 surface water, 72 soil, and 50 air samples were collected in order to evaluate the site's potential for inclusion on the National Priorities List (Ref. 8, p. 2-6; Ref. 10, p. ix). Soil, ground water, sediment, and surface water samples were analyzed for inorganic compounds and base/neutral and acid extractable organic compounds (BNA) included on the EPA Target Compound List through the EPA Contract Laboratory Program (CLP) (Ref. 8, p. 2-6; Ref. 10, p. ix). Air samples were analyzed for inorganic analytes, BNAs, and PCP by a commercial laboratory following EPA Methods 6000/7000 series and TO-13 (Ref. 8, p. 2-6; Ref. 10, pp. ix, 20).

Analytical results indicated elevated levels of arsenic, copper, magnesium, mercury, nickel, sodium, zinc, BNAs, and PCP in on-site surface soil samples, on-site drainage ditch sediment samples, and roadside ditch sediment samples (Ref. 8, p. 2-6; Ref. 10, pp. 36 through 38, 43 through 45, 47, 63, 71, 91 through 93). On-site borehole samples, collected 4 to 5 feet below ground surface (bgs), contained elevated levels of arsenic, copper, polynuclear aromatic hydrocarbons (PAHs), and PCP (Ref. 8, p. 2-6; Ref. 10, pp. 36, 38). Surface and subsurface soils near the former lagoon and south of the treatment plant contained high concentrations of metals, including arsenic (Ref. 8, p. 2-6; Ref. 10, pp. 35, 36, 63). In addition, stained soil was observed next to the end-painting facility and found to contain elevated concentrations of PCP, BNAs, and metals (Ref. 8, p. 2-6; Ref. 10, p. 13, 14, 19, 22, 91, 92). Air sample data, collected over a six-day period, indicated elevated levels of arsenic, copper, magnesium, zinc, SVOCs, and PCP (Ref. 8, p. 2-7; Ref. 10, pp. 42, 48, 49, 74, 79, 92). Some of the air samples contained concentrations of PCP that exceeded the Occupational Safety and Health Administration (OSHA) permissible exposure limits (PELs) (Ref. 8, p. 2-7; Ref. 10, p. 74). Soil samples collected from nearby residences contained elevated levels of arsenic, copper, and zinc (Ref. 8, p. 2-7; Ref. 10, pp. 38, 93).

A salvage business is located on Rock Creek Road towards the south end of the TLT facility (Ref. 8, p. 7-13, Figure 3-4). Contaminants associated with salvage businesses are similar to those found on the TLT site. One surface soil sample (SO-03-SS) was collected from the yard of the residence located on the property of the salvage business and analytical results revealed the presence of several SVOCs, metals, PCBs, and dioxins (Ref. 8, pp. 7-91, 7-93, 7-97, 7-99). It is possible that contaminants in the soil from the salvage business property could be entrained into the air; however, the contamination detected in the air samples used in scoring is at least in part attributable to the TLT site.

Hazardous substances released:

The hazardous substances released via the air pathway are arsenic, 2-methylnaphthalene, acenaphthene, anthracene, flouranthene, flourene, naphthalene, pentachlorophenol, phenanthrene, pyrene, and 2-chloronaphthalene.

=====
Air Observed Release Factor Value: 550

6.2 WASTE CHARACTERISTICS

6.2.1 Toxicity/Mobility

The table below presents the Air Waste Characteristics Factor values for those analytes associated with sources and attributable to the site.

AIR PATHWAY WASTE CHARACTERISTICS FACTOR VALUES						
Hazardous Substance	Source(s)	Toxicity Factor Value	Gas Mobility Factor Value^a	Particulate Mobility Factor Value^b	Toxicity/Mobility Factor Value^c	Reference (Page Number from Ref. 2, Part 3)
Arsenic	1, 2, 3	10,000	NA	0.02	200	B-2
Cobalt	1, 3	1	NA	0.00002	0.00002	B-6
Mercury	1	10,000	0.2000	0.00002	2,000	B-13
Zinc	2	10	NA	0.00002	0.0002	B-20
2-Methylnaphthalene	1, 2	---	1	NA	NA	B-14
Acenaphthene	1, 2, 3	10	1	0.02	0.2	B-1
Anthracene	1, 2, 3	10	1	0.02	0.2	B-2
Benzo(a)anthracene	1, 2, 3	1,000	0.0020	0.00002	2	B-2
Benzo(a)pyrene	1, 2, 3	10,000	0.0002	0.00002	2	B-2
Benzo(b)fluoranthene	1, 2, 3	1,000	0.0020	0.00002	2	B-3
Benzo(k)fluoranthene	1, 2, 3	100	0.0002	0.00002	0.02	B-3
Chrysene	1, 2, 3	10	0.0002	0.00002	0.002	B-5
Dibenzofuran	1, 3	--	0.0200	0.00002	NA	B-7
Fluoranthene	1, 2, 3	100	1	0.02	2	B-10
Fluorene	1, 2, 3	100	1	0.02	2	B-10
Indeno(1,2,3-cd)pyrene	1, 2, 3	1,000	NA	0.00002	0.02	B-12
Naphthalene	1	100	1	0.02	2	B-14
PCP	1, 2, 3	100	1	0.02	2	B-16
Phenanthrene	1, 2, 3, 4, 5	---	1	0.02	NA	B-16
Pyrene	1, 2, 3	100	1	0.02	2	B-17
2,3,7,8-TCDD	1, 3	10,000	0.0002	0.00002	2	B-18
2,3,7,8-TCDF	1, 2, 3	10,000	NA	0.00002	0.2	B-18

Table 27						
AIR PATHWAY WASTE CHARACTERISTICS FACTOR VALUES						
Hazardous Substance	Source(s)	Toxicity Factor Value	Gas Mobility Factor Value^a	Particulate Mobility Factor Value^b	Toxicity/Mobility Factor Value^c	Reference (Page Number from Ref. 2, Part 3)
1,2,3,4,6,7,8-HpCDD	1, 2, 3	10,000	NA	0.00002	0.2	B-11
1,2,3,4,6,7,8-HpCDF	1, 2, 3	10,000	NA	0.00002	0.2	B-11
1,2,3,4,7,8-HxCDD	1, 2, 3	10,000	NA	0.00002	0.2	B-11
1,2,3,4,7,8-HxCDF	1	10,000	NA	0.00002	0.2	B-11
1,2,3,7,8-PeCDD	1, 2, 3	10,000	NA	0.00002	0.2	B-16
1,2,3,7,8-PeCDF	1, 3	10,000	NA	0.00002	0.2	B-16
2,3,4,7,8-PeCDF	1, 3	10,000	NA	0.00002	0.2	B-16

a - Gas Mobility assigned from Ref. 1, Section 6.2.1.2 and Ref. 2

b - Particulate Mobility assigned from Ref. 1, Section 6.2.1.2 and Figure 6-3

c - Toxicity/Mobility Factor Value assigned from Ref. 1, Table 6-13

--- No value in SCDM (Ref. 2)

NA - Not Applicable

The hazardous substance with the highest toxicity/mobility factor value is mercury (2,000).

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Toxicity/Mobility Factor Value: 2,000

6.2.2 Hazardous Waste Quantity

Source No.	Source Hazardous Waste Quantity Value (Section 2.4.2.1.5)	Is Source Hazardous Constituent Quantity Data Complete? (yes/no)
1. Contaminated Soil	3.29	No
2. Contaminated Soil	2.13	No
3. Contaminated Soil	1.06	No
4. Pile	3,000	No
5. Surface Impoundments	34.62	No

Sum of values: 3,041.1

Hazardous Waste Quantity Factor Value (Ref. 1, p. 51591): 100

6.2.3 Waste Characteristics Factor Category Value

Toxicity/Mobility factor value X hazardous waste quantity factor value: $(2,000 \times 100) = 2 \times 10^5$
 A waste characteristics product of 2×10^5 receives a waste characteristics factor category value of 18 (Ref. 1, Table 2-7).

=====

Hazardous Waste Quantity Factor Value: 100
 Waste Characteristics Factor Category Value: 18

6.3 TARGETS

Ninety-eight people work at the site. Approximately 8,031 people live within a 4-mile radius of the site, based on multiplying the house count from a topographic map by the average number of persons per household (2.77) for Yamhill County (Ref. 3; Ref. 8, Figure 3-6; Ref. 16).

- Level I Samples

The following table demonstrates all analytes (per day) that meet observed release criteria and exceed a health based benchmark.

Station ID	Date Collected	Hazardous Substance	Hazardous Substance Concentration (ug/m ³) ^a	Benchmark ^b	Benchmark Level (ug/m ³) ^c
A1	8/22/99	Arsenic	0.001	Cancer Risk	0.00057
A2	8/22/99	Arsenic	0.0008	Cancer Risk	0.00057
A3	8/22/99	Arsenic	0.0007	Cancer Risk	0.00057
A1	8/23/99	Arsenic	0.0047	Cancer Risk	0.00057
A2	8/23/99	Arsenic	0.0036	Cancer Risk	0.00057
A1	8/24/99	Arsenic	0.0035	Cancer Risk	0.00057
A2	8/24/99	Arsenic	0.0023	Cancer Risk	0.00057
A1	8/25/99	Arsenic	0.0033	Cancer Risk	0.00057
A2	8/25/99	Arsenic	0.0206	Cancer Risk	0.00057
A3	8/25/99	Arsenic	0.0007	Cancer Risk	0.00057
A1	8/26/99	Arsenic	0.0013	Cancer Risk	0.00057
A2	8/26/99	Arsenic	0.0013	Cancer Risk	0.00057
A3	8/26/99	Arsenic	0.0012	Cancer Risk	0.00057
A1	8/28/99	Arsenic	0.002 JL	Cancer Risk	0.00057
A2	8/28/99	Arsenic	0.0052 JL	Cancer Risk	0.00057

Key

ug/m³ - micrograms per cubic meter

a - Concentrations from Ref. 8, Tables 7-23 through 7-29.

b - Ref. 2, Part 2

c - benchmark levels converted to ug/m³

Level I Distance Categories

Sample ID: A1, A2, A3, A4

Location: Air station A1 was located within ¼ mile of the site at a residence directly east of the TLT retorts, on the east side of Rock Creek Road (Ref. 4, Logbook Q, p. 2; Ref. 4, Logbook S, p. 18; Ref. 8, Figure 3-6). Station A2 was located on-site at the northeast corner of the treated pole storage yard and station A3 was located on-site at the southeast corner of the treatment plant facility (Ref. 4, Logbook Q, p. 2; Ref. 4, Logbook S, p. 18; Ref. 8, Figure 3-6). Station A4 was placed in an empty field on the east side of Chip Mill Road, approximately 0.3 mile east of the treatment plant facility (Ref. 4, Logbook Q, p. 2; Ref. 4, Logbook S, p. 18; Ref. 8, Figure 3-6).

Source: 1, 2, 3, and 4

Distance from the source in miles: 0.04, 0.04, 0.1, and 0.4, respectively (Ref. 8, Figure 3-6).

Distance categories subject to Level I concentrations: on a source - ½ mile

Level II Distance Categories

Sample ID: A5, A6

Location: Station A5 was located at the residence adjacent and approximately 300 feet west of the white pole storage area (Ref. 4, Logbook Q, p. 2; Ref. 4, Logbook S, p. 18; Ref. 8, Figure 3-6). Station A6 was located at a residence adjacent to Highway 18B and the Willamette Pacific Railroad approximately 0.8 mile west of the white pole storage area (Ref. 4, Logbook Q, p. 2; Ref. 4, Logbook S, p. 18; Ref. 8, Figure 3-6).

Source: 1, 2, 3, and 4

Distance from the source in miles: 0.250 and 0.8, respectively (Ref. 8, Figure 3-6)

Distance categories subject to Level II concentrations: ½ mile - 1 mile

Actual Contamination Distance Category: onsite to 1 milePotential Contamination Distance Category: 1 to 4 miles

6.3.1 NEAREST INDIVIDUAL FACTOR

Nearest Individual - Level I concentrations

Air station A1 was located within a 1/4 mile of the site at a residence directly east of the TLT retorts (Ref. 4, Logbook Q, p. 2; Ref. 4, Logbook S, p. 18, Ref. 8, Figure 3-6). This station contained Level 1 concentrations of arsenic, therefore a 50 is assigned for the nearest individual (Ref. 1, p. 51661).

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Nearest Individual Factor Value: 50

6.3.2 POPULATION

6.3.2.2 LEVEL I CONCENTRATIONS

Distance Category (miles)	Population	Reference
on a source	98	Ref. 4, Logbook A, p. 8
Greater than 0 - 1/4	66.48*	Ref. 3; Ref. 8, Table 7-22
Greater than 1/4 - 1/2	47.09*	Ref. 3; Ref. 8, Table 7-22
TOTAL	211.57	

* The total population per distance ring varies from what is stated in Ref. 24 because Ref. 24 uses an incorrect persons per household for Yamhill County (Ref. 16). The populations provided above were calculated by multiplying 2.77 (persons per household) by the number of houses as provided in Ref. 24.

=====

Population Exposed to
Level I Concentrations: 211.57

Level I Concentrations Factor Value: 2,115.7

6.3.2.3 LEVEL II CONCENTRATIONS

Distance Category (miles)	Population	Reference
Greater than ½ to 1	240.99	Ref. 24

Population Exposed to
Level II Concentrations: 240.99

Level II Concentrations Factor Value: 240.99

6.3.2.4 POTENTIAL CONTAMINATION

Distance Category (miles)	Population	Distance-Weighted Population Value	Reference
Greater than 1 to 2	3,360.97	27	Ref. 1, Table 6-17; Ref. 24
Greater than 2 to 3	2,001.79	4	Ref. 1, Table 6-17; Ref. 24
Greater than 3 to 4	2,288.31	2	Ref. 1, Table 6-17; Ref. 24
Total distance-weighted population		33	

Distance-Weighted Population Value: 33

Potential Contamination Factor Value: 3.3

6.3.3 RESOURCES

No resources are present within ½ mile of the site, therefore, a resources factor value of 0 is assigned.

Resources Factor Value: 0

6.3.4 SENSITIVE ENVIRONMENTS

6.3.4.1 ACTUAL CONTAMINATION

Sensitive Environment

Sensitive Environment	Distance Category	Reference	Sensitive Environments Value
Critical migratory corridor for federal-listed threatened species: Wild winter steelhead trout	0 - 1 mile	Ref. 8, p. 7-15; Ref. 17; Ref. 18	75
Critical migratory corridor t for state-listed endangered species: Coho salmon	0 - 1 mile	Ref. 8, p. 7-15; Ref. 17; Ref. 18	75
Habitat for state-listed endangered species: Coho salmon	0 - 1 mile	Ref. 8, p. 7-15; Ref. 17; Ref. 18	50
Habitat for federal-listed threatened species: Wild winter steelhead trout	0 - 1 mile	Ref. 8, Table 7-6; Ref. 17	75
		Total	275

Wetlands

During the field event in April 1999, the marshy area southwest of Moe's Mountain waste pile, located east of the planing mill, adjacent to Chip Mill Road, was evaluated as a palustrine persistent emergent wetland by EPA and met the 40 CFR criteria of the definition of a wetland (Ref. 22, pp. 10, 19, 20). The area of the wetland is approximately 0.18 acres (100 feet in diameter) with a circumference of approximately 300 feet (Ref. 8, pp. 2-3, 7-15, Figure 2-2; Ref. 22, pp. 10, 19, 20). This wetland is less than 1 acre, therefore, the assigned wetland value is zero (Ref. 1, Table 6-18). The following table summarizes the wetland acreage subject to actual contamination.

Distance Category (miles)	Wetlands Acreage	Reference	Wetlands Value per Distance Category
0 - ¼	75	Ref. 11	75
¼ - ½	100	Ref. 11	75
½ - 1	120	Ref. 11	125
		Total	275

Actual Contamination Factor Value: 550

6.3.4.2 POTENTIAL CONTAMINATION

Sensitive Environments

Sensitive Environment	Distance Category	Reference	Sensitive Environments Value
Habitat for state-listed endangered species: Willamette Valley larkspur (<i>Delphinium oregonum</i>)	1 to 2 miles	Ref. 8, p. 7-15; Ref. 17	50
Habitat for state-listed endangered species: Dwarf isopyrum (<i>Isopyrum stipitatum</i>)	2 to 3 miles	Ref. 8, p. 7-15; Ref. 17	50
		Total	100

Wetlands

Distance Category (miles)	Wetlands Acreage	Reference(s)	Wetlands Value per Distance Category
1 - 2	175	Ref. 11	175
2 - 3	200	Ref. 11	175
3 - 4	225	Ref. 11	250
TOTAL	600		600

Sum of Wetlands and Sensitive Environments Values:

Distance Category (miles)	Sum of Sensitive Environment Values (S_j)	Wetlands Acreage Value (W_j)	Distance Weight (D_j)	$D_j (W_j + S_j)$
On a source	0	0	1.0	0
0 - ¼	0	0	0.25	0
¼ - ½	0	0	0.054	0
½ - 1	0	0	0.016	0
1 - 2	100	175	0.0051	1.4025
2 - 3	100	200	0.0023	0.69
3 - 4	0	225	0.0014	0.315

Sum of $D_j (W_j + S_j)$: 2.4075

[Sum of $D_j (W_j + S_j)$]/10: .24075

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Sensitive Environment Potential Contamination Factor Value: 0.2

6.3.4.3 Sensitive Environments Factor Value

The sum of the actual contamination (550) and potential contamination (0.2) factor values is 550.2. The sensitive environments factor value was achieved by first taking the product of the likelihood of release value (550), waste characteristics value (18), and the sum derived above (550.2) and dividing the product by 82,500 (Ref. 1, p. 51662). Then because the result was greater than 60, a sensitive environments factor value of 500 was calculated (Ref. 1, p. 51662).

$$550 \times 18 \times 550.2 / 82,500 = 66.024$$

$$\text{sensitive environments factor value} = 60 \times 82,500 / 550 \times 18 = 500$$

Sensitive Environments Factor Value: 500

6.3.5 Targets Factor Category Value

The nearest individual (50), population (2,359.99), resources (0), and sensitive environments factor (500) values were summed to achieve a targets factor category value of 2,909.99 (Ref. 1, p. 51662).

Targets Factor Category Value: 2,909.99

6.4 Air Migration Pathway Score

The air migration pathway score was achieved by taking the product of the values for likelihood of release (550), waste characteristics (18), and targets (2,909.99). Then dividing the product by 82,500. The resulting value is subject to a maximum of 100 (Ref. 1, p. 51662).

$$550 \times 18 \times 2,909.99 / 82,500 = 349.1988$$

Air Migration Pathway Score: 100