SITE HAZARD ASSESSMENT
Worksheet 1
Summary Score Sheet

Site Information

Anderson Property Old Hadlock Road

Property Owner: Michael Anderson
Address: 890 Old Hadlock Road
Port Hadlock, WA 98339
Location: NW ¼ , Section: 11, Township: 29N, Range: 1W
Ecology Facility Site ID No. 551003
Latitude: Degrees: 48.02117
Longitude: Degrees: -122.76777

Submittal Date: December 28, 2007

Site scored/ranked for the February 20, 2008 update

Site Description

The 5.4 acre property is located south of Port Hadlock on Old Hadlock Rd. The parcel runs east to west and is about 800 feet long and 300 feet wide (north /south). Chimacum Creek, a salmon bearing stream, runs south to north along the western boundary of the property. The property slopes down from the road on the east to the floodplain on the west. Over half of the property is considered to be a wetland. In addition, the entire parcel is located on soils which have been defined in the Unified Development Code as susceptible and about a quarter of the parcel is within a special aquifer recharge protection area (SARPA). There is a 1948, two-story farmhouse located in the southeastern corner of the property.

Background

Mr. Anderson operates two businesses: Michael's Custom Rebuild and Towing, and Michael's Hulk Hauling. The repair shop is located on a separate property. Both sites are involved in litigation initiated by Jefferson County Public Health (JCPH) for solid waste violations.

On October 4, 2005, the Washington Department of Ecology (Ecology) received a complaint from a caller concerned that "Car batteries and automobile fluids have been buried and disposed of on this site....Chimacum Creek is in the area of the dumping." The ERTS was forwarded to JCPH. A solid waste complaint with JCPH was also opened.

On November 29, 2005, Mark Nelson of JCPH visited the site and took photographs. He reported finding numerous solid waste violations including oil on the ground and oil pooled up on puddles. An Initial Investigation with soil and water sampling was performed December 21, 2005, by Mark Nelson and Alan Gardner of JCPH (See report below).

Mr. Anderson signed a Voluntary Performance Contract with JCPH on April 6, 2006, which states, in part, that he is in violation of Washington State and Jefferson County solid waste laws, that his actions are leading to pollutants being released to Chimacum Creek, a Type I salmon stream; that his actions are releasing pollutants into the aquifer of a public water supply that serves 4000 people; and that his property is in a Special Aquifer Recharge Protection Area on susceptible soils within ½ mile of a public well. The contract also stipulated that he would remove all solid waste and junk vehicles from his property within six months, thus allowing a Site Hazard Assessment (SHA). He also agreed to enter into the Department of Ecology Voluntary Cleanup Program within 90 days of the agreement.

Some initial removal of vehicles and metal scrap was done by Mr. Anderson between May and July 2006. When progress ceased and Mr. Anderson was found to be out of compliance with his performance contract, his case was referred to the Jefferson County Prosecuting Attorney, who initiated a suit seeking abatement of Mr. Anderson's property. The case is currently still in the courts.

A letter was sent to Mr. Anderson on October 1, 2007, requesting a site visit to evaluate clean-up progress and to perform an SHA, including soil sampling. No response has been received to date.

Follow-up Site Investigations

An initial investigation (I.I.) was performed by Alan Gardner and Mark Nelson of JCPH on December 21, 2005. Also present at the inspection were Tony Hernandez (Jefferson County Sheriff's Office), Fern Svendson (Ecology), and Michael Anderson (the owner of the property). According to the Investigation report, Mr. Anderson had, within two previous weeks, covered the road with fresh crushed rock, and spread fresh fill dirt over the area where he keeps his excavator. Both sites are on the lower part of the property, a floodplain. This was the same area which, on a previous visit, Mark Nelson had witnessed and taken photos of soils which appeared to have been contaminated with petroleum products, including product pooled up on puddles.

The Investigation report listed numerous solid and hazardous waste violations on the property:

- More than 100 junk vehicles (cars, trucks, boats, trailers), some stored within 40 feet of Chimacum Creek, a Type I salmon-bearing stream.
- Improperly stored car batteries,
- Stacks of exposed engines, transmissions, and parts thereof, with heavy petroleum residue,
- Hundreds of waste tires (estimated 800-1000),
- Pools of petroleum products and sheens on soils and surface water,
- Open and exposed hazardous material containers (antifreeze bottles, oil cans, 55 gallon drums, 5 gallon buckets) with small amounts of product,
- No secondary containment for a diesel fuel tank.

Mr. Anderson was interviewed about his operations at the site. According to the report, Mr. Anderson said that he uses the site to store vehicles for spare parts for his auto mechanic business in Irondale. He repeatedly stated that he does not consider his operation to be a junk yard or an auto wrecking yard. When asked what happens to a car when it comes in Michael said "I lift it up, poke a hole in the gas tank and drain the gas. Then I smash it down and stack it on the pile." When asked what he did with the other fluids (oil, antifreeze and automatic transmission fluid) he said "I don't need to drain anything else because the haulers will take the vehicles with it." When asked how many vehicles he had on the property, he answered "100 to 150."

Four soil samples and two water samples were obtained from Mr. Anderson's property on December 21, 2005. The first soil sample (001) was taken from under a diesel storage tank approximately 100 feet northwest of the house on the property. The soil was taken with a shovel from 2 inches under the surface. The second sample (002) was taken from soils directly adjacent to a large pile of radiators down the slope on the floodplain. The sample was taken with a hand auger and the soil sampled came from 2-4 inches deep. Sample three (003) was taken from underneath the excavator, approximately 300 feet west of the house, on the floodplain. The soil was taken from 6 inches deep and sampled by shovel. The last soil sample (004) was collected from the west edge of the area which had been recently filled. The soil was sampled from 6-8 inches deep. Two surface water samples were taken from Chimacum Creek, one upstream and one downstream. The upstream sample (006) was taken from the southwestern end of the parcel and the downstream sample (007) was taken near the northwestern end of the parcel.

The Department of Ecology Manchester Environmental Laboratory (MEL) ran a Hydrocarbon Identification Analysis (HCID) on all six samples (see table 1 below), and NWTPH-Gx and/or NWTPH-Dx on each sample with significant levels of contamination (see table 2 below). Analytical testing confirmed that soil samples 001, 002, and 003 were over MTCA cleanup levels for diesel range organics (2000 mg/Kg). Soil samples 002 and 003 were also over Model Toxics Control Act (MTCA) clean up levels for gasoline range organics (30 mg/Kg).

Based on data from this initial sampling, it was recommended this property be listed on Ecology's Confirmed and Suspected Contaminated Sites List.

Analytical Test Results

Table 1: HCID

Sample	Findings
Sample 1 (soil)	Sample contains significant levels of #2 diesel oil or #2 fuel oil.
Sample 2 (soil)	Sample contains significant levels of both gasoline and lube oil.
Sample 3 (soil)	Sample contains significant levels of both gasoline and lube oil.
Sample 4 (soil)	Sample contains significant levels of both gasoline and lube oil.
Sample 5 (water)	No detectable petroleum products found.
Sample 6 (water)	No detectable petroleum products found.

Table 2: NWTPH

Sample	NWTPH-Gx	NWTPH-Dx
Sample 001 (soil)		**7800 mg/Kg**
Sample 002 (soil)	**240 mg/Kg**	**2900 mg/Kg**
Sample 003 (soil)	**53 mg/Kg**	**3900 mg/Kg**
Sample 004 (soil)	9.8 mg/Kg	73 mg/Kg
MTCA Method A Cleanup Levels for Soil:	30 mg/Kg	2,000 mg/Kg.

*MTCA A ULU refers to the Model Toxics Control Act Table 740-1 Method A Soil Cleanup Levels for Unrestricted Land Use

Site Hazard Assessment

A letter of intent to do a Site Hazard Assessment (SHA) was sent by Ecology to Mike Anderson on March 15, 2006. An SHA was not done at that time because Mr. Anderson's solid waste case with JCPH was referred to Jefferson County's Prosecuting Attorney to pursue abatement. It was felt that evaluation and sampling of the site, beyond what was done for the Initial Investigation of January 3, 2006, would not be possible without first removing the vehicles and other solid waste.

As of October 2007, the abatement case was still in the court system. On October 1, 2007, JCPH sent a letter to Mr. Anderson requesting a site visit to evaluate clean-up progress and to perform an SHA. As of December 1, 2007, Mr. Anderson had not responded to the request, consequently this SHA was drafted based on the most recent sampling available, the results from the Initial Investigation of December 21, 2005.

SPECIAL CONSIDERATIONS :
Chimacum Creek, a Type I salmon-bearing stream, runs along the western portion of this property.

The property is in a Critical Area, specifically a Special Aquifer Recharge Protection Area (SARPA) on susceptible soils, and is within 3500 feet of a public well serving an estimated 4315 people.

A comprehensive evaluation of the property is not possible while it is covered with vehicles.

Route Scores:

Surface Water/ Human Health: **ROUTE SCORES:**

Surface Water/Human Health:	**15.1**	Surface Water/Environmental.:	**24.7**
Air/Human Health:	**24.2**	Air/Environmental:	**32.4**
Groundwater/Human Health:	**36.3**		

OVERALL RANK: 1

WORKSHEET 1
Route Documentation

1. **SURFACE WATER ROUTE**

   a. List those substances to be considered for scoring:

      TPH-gas & TPH-diesel — Source: 1-4,7

   b. Explain basis for choice of substance(s) to be used in scoring.

      These substances were detected in on-site surface soil samples associated with the site in concentrations exceeding MTCA cleanup levels, and are potentially available to the route of concern.

   c. List those management units to be considered for scoring:

      Surface and sub-surface soils. — Source: 1-4,7

   d. Explain basis for choice of unit to be used in scoring:

      Contaminating substances were confirmed to be present in on-site surface and sub-surface soil samples in concentrations exceeding MTCA cleanup levels. There is no secondary containment system to prevent contaminants from spreading into the adjacent stream.

2. **AIR ROUTE**

   a. List those substances to be considered for scoring: — Source: 1-4,7

      TPH-gas & TPH-diesel

   b. Explain basis for choice of substance(s) to be used in scoring:

      These substances were detected in on-site surface soil samples associated with the site in concentrations exceeding MTCA cleanup levels. The soil is uncovered and the contaminants are potentially available to the route of concern.

   c. List those management units to be considered for scoring: — Source: 1-4,7

      Surface and sub-surface soils.

   d. Explain basis for choice of unit to be used in scoring:

      Contaminating substances were confirmed to be present in on-site surface and sub-surface soil samples in concentrations exceeding MTCA cleanup levels.

GROUNDWATER ROUTE

e. List those substances to be considered for scoring: Source: 1-4,7

TPH-gas & TPH-diesel

f. Explain basis for choice of substance(s) to be used in scoring:

These substances were detected in on-site surface soil samples associated with the site in concentrations exceeding MTCA cleanup levels. There is no secondary containment system to prevent contaminants from entering the groundwater.

c. List those management units to be considered for scoring: Source: 1-4,7

Surface and sub-surface soils.

d. Explain basis for choice of unit to be used in scoring:

Contaminating substances were confirmed to be present in on-site surface and sub-surface soil samples in concentrations exceeding MTCA cleanup levels.

WORKSHEET 2
Surface Water Route

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

	Substance	Drinking Water Standard (µg/L)	Value	Acute Toxicity (mg/ kg-bw)	Value	Chronic Toxicity (mg/kg/day)	Value	Carcinogenicity		Value
								WOE *	CPF **	
1	TPH-diesel	160	4	490 (rat)	5	0.004	3	-	-	ND
2	TPH-gas (benzene)	5	8	3306 (rat)	3	-	ND	A	.029	5
3										
4										

**Weight of Evidence*
*** Cancer Potency Factor mg/kg/day*

Source: 1-5
Highest Value: 8
(Max = 10)
Bonus Points: No
Final Toxicity Value: 8
(Max = 12)

	Substance	Acute Water Quality Criteria	
		(µg/L)	Value
1	TPH-diesel	2300	2
2	TPH-gas (benzene)	5300	2
3			
4			

Source: 1-5
HighestValue: 2
(Max = 10)

1.3 Substance Quantity

Explain Basis: Unknown, Use default value = 1	Source:1,5 **Value:1** (Max = 10)

2.0 MIGRATION POTENTIAL

		Source	Value
2.1	**Containment:** Maximum value of 10 points scored. **Explain basis:** No run-on/runoff control systems	6	10 (Max = 10)
2.2	**Surface Soil Permeability:** Medium (Gravely clay, sandy clay)	6, 8	3 (Max = 7)
2.3	**Total Annual Precipitation:** 18.3"	9	2 (Max = 5)
2.4	**Max 2yr/24hr Precipitation:** 1.0" – 2.0"	16	2 (Max = 5)
2.5	**Flood Plain:** Almost half of the property is in a 100 year flood plain	1, 15	2 (Max = 2)
2.6	**Terrain Slope:** Less than or equal to 2%	6, 10	1 (Max = 5)

3.0 TARGETS

		Source	Value
3.1	**Distance to Surface Water:** adjacent to Chimacum Creek	1,11	10 (Max = 10)
3.2	**Population Served By Drinking Water Intakes within 2 miles (see WARM Scoring Manual Regarding Direction): 0**	12	0 (Max = 75)
3.3	**Area Irrigated by surface water within 2 miles : (0.75)*√ # acres = 0**	12	0 (Max = 30)
3.4	**Distance to Nearest Fishery Resource: Adjacent to site**	1,6,11	12 (Max = 12)
3.5	**Distance to, and Name(s) of, Nearest Sensitive Environment(s): Chimacum Creek, a Type I salmon stream, adjacent to property**	1,6,11	12 (Max = 12)

4.0 RELEASE

Explain Basis: No data	Source: 1-4, 6 **Value: 0** (Max = 5)

WORKSHEET 3
Air Route

1.0 SUBSTANCE CHARACTERISTICS

Human Toxicity											
	Substance	Air Standard ($\mu g/m^3$)	Value	Acute Toxicity (mg/m^3)	Value	Chronic Toxicity (mg/kg/day)	Value	Carcinogenicity WOE *	Carcinogenicity PF **	Value
1	TPH-diesel	166.5	4	-	ND	-	ND	-	-	ND
2	TPH-gas (benzene)	0.12	10	31947	3	-	ND	A	.029	5
3										

**Weight of Evidence*
*** Cancer Potency Factor mg/kg/day*

Source: 1-5
Highest Value: 10
(Max = 10)
Bonus Points: No
Final Toxicity Value: 10
(Max = 12)

1.3 Mobility (Use numbers to refer to above listed substances)				
	1.3.1 Gaseous Mobility	1.3.2 Particulate Mobility		
	Vapor Pressure(s) (mmHg)	Soil Type	Erodibility	Climatic Factor
1	TPH-diesel = 8.2E-02 = 3			
2	TPH-gas = 9.5E+01 = 4			
3				

Source: 1-3
Value: 4
(Max = 4)

Source:
Value: __
(Max = 4)

1.4 Highest Human Health Toxicity/ Mobility Matrix Value (from Table A-7)
(Use highest of: 10/4= 20 or 4/3= 6)

Final Matrix Value: 20
(Max = 24)

1.5 Environmental Toxicity/Mobility						
	Substance	**Non-human Mammalian Inhalation Toxicity (mg/m^3)**	**Acute Value**	**Mobility (mmHg)**	**Value**	**Matrix Value**
1	TPH-diesel	-	ND	8.2E - 02	3	-
2	TPH-gas	31947 (rat)	3	9.5E + 01	4	6

Source: 1-5

Highest Environmental Toxicity/Mobility Matrix Value (Table A-7 = **Final Matrix Value: 6**
(Max = 24)

1.6 Substance Quantity	
Explain Basis: Unknown, use default value = 1	Source: 1,3 **Value: 1** (Max = 10)

2.0 MIGRATION POTENTIAL

		Source	Value
2.1	**Containment:** Cover <2 feet thick, surface spill/discharge, and no vapor collection system.	1,6	**10** (Max = 10)

3.0 TARGETS

		Source	Value
3.1	**Nearest Population:** Less than 1000 feet	14	**10** (Max = 10)
3.2	**Distance to [and name(s) of] nearest sensitive environment(s):** Less than 1000 feet. (Less than 300 feet from Seagull Park, a municipal baseball field to the east; less than 800 feet from H.J. Carroll public park to the west.)	14	**7** (Max = 7)
3.3	**Population within 0.5 miles:** 106 residences @ 3/household = 318 people $\sqrt{318} = 17.8$	18	**18** (Max = 75)

4.0 RELEASE

Explain Basis for scoring a release to air:	None documented.	**1**	**Value** **0** (Max = 5)

WORKSHEET 4
Groundwater Route

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

	Substance	Drinking Water Standard (µg/L)	Value	Acute Toxicity (mg/ kg-bw)	Value	Chronic Toxicity (mg/kg/day)	Value	Carcinogenicity		Value
								WOE *	PF **	
1	TPH-diesel	160	4	490 (rat)	5	0.004	3	-	-	ND
2	TPH-gas (benzene)	5	8	3306 (rat)	3	-	ND	A	.029	5
3										
4										

**Weight of Evidence*
*** Cancer Potency Factor mg/kg/day*

Source:1-5
Highest Value: 8
(Max = 10)
Bonus Points: No
Final Toxicity Value: 8
(Max = 12)

1.2 Mobility (use numbers to refer to above listed substances)

Cations/Anions |Coefficient of Aqueous Migration (K)| OR	Solubility (mg/L)
	TPH-diesel: 3.0E+01 =1
	TPH-gas: 1.8E+03 = 3

Source: 1-5
Value: 3
(Max = 3)

1.3 Substance Quantity

Explain basis: Unknown, use default value = 1

Source:
Value: 1
(Max=10)

2.0 MIGRATION POTENTIAL

		Source	Value
2.1	**Containment (explain basis):** Contaminated soil, no cover, no liner = 10	1-5	10 (Max = 10)
2.2	**Net precipitation:** 11.2" – 6.1" = 5.1"	9	1 (Max = 5)
2.3	**Subsurface hydraulic conductivity:** Gravely clay, sandy clay	17	2 (Max = 4)
2.4	**Vertical depth to groundwater:** 0-25 feet	17	8 (Max = 8)

2.0 TARGETS

		Source	Value
3.1	**Groundwater usage:** Public supply, unthreatened alts. avail.	12, 13	4 (Max = 10)
3.2	**Distance to nearest drinking water well:** Public water supply well is 3442 feet away	13, 14	2 (Max = 5)
3.3	**Population served within 2 miles:** $\sqrt{4,315} = 65.68$	13, 14	66 (Max = 100)
3.4	**Area irrigated by (groundwater) wells within 2 miles:** $(0.75)*\sqrt{0}$ acres = 0	12, 13	0 (Max = 50)

3.0 RELEASE

	Source	Value
Explain basis for scoring a release to groundwater: unknown, no data		0 (Max = 5)

SOURCES USED IN SCORING

1. Initial Investigation Report, Washington State Department of Ecology, January 3, 2006, ERTS # 551003.

2. Manchester Environmental Laboratory Case Narratives for ERTS 551003, December 23, 2005.
3. Manchester Environmental Laboratory Case Narratives for ERTS 551003, December 29, 2005.
4. Manchester Environmental Laboratory Case Narratives for ERTS 551003, January 3, 2006.
5. Washington State Department of Ecology, Toxicology Database for Use in Washington Ranking Method Scoring, January 1992

6. Washington State Department of Ecology, WARM Scoring Manual, April 1992.

7. Washington State Department of Ecology, Model Toxics Control Act Chapter 70.105D RCW (Amended 2005) AND Cleanup Regulation Chapter 173-340 WAC (Amended February 12, 2001). Publication No. 94-06, revised October 2005.

8. Soil Logs from Sewage Disposal Permit SEP-175 for Michael Anderson's Property, parcel # 901112013. September 15, 1981.

9. Washington Climate Net Rainfall Table

10. U.S.G.S. Topographical map for area.

11. Washington Sate Department of Natural Resources Watercourse Hydrography map for area.
12. Washington State Department of Ecology, Water Rights Application System (WRATS) printout for two-mile radius of site.

13. Washington State Department of Health, Sentry Internet Database printout for public water supplies

14. 2006 aerial photos, National Agriculture Imagery Program (NAIP), Washington State Plane North (FIPS 4601), NAD83-Feet.

15. Jefferson County FEMA Q3 Flood Data Map. http://www.co.jefferson.wa.us/idms/metadata/FEMA%20FIRMS.shtml

16. NOAA Atlas 2, Volume IX, Isopluvials of 2-year 24-Hr. Precipitation in Tenths of an Inch. Figure SW-1.

17. Area water-well reports.

18. 2005 Aerial Photos, Washington State Department of Natural Resources, Washington State Plane North (4601), NAD83, DNR-5.