SITE HAZARD ASSESSMENT
WORKSHEET 1
SUMMARY SCORE SHEET

Site Name/Location:

Seitz Property
off Brian Lane
Silverdale, WA 98383

Township:	25N
Range:	1E
Section:	8
Longitude:	W122° 41′ 49.6″
Latitude:	N47° 40′ 9.7″

Facility Site ID: 6865393

February 7, 2006
Site assessed for the February 22, 2006, update of the Site Register.

Site Description:

The Seitz Property is a five (5) acre, undeveloped property located in central Kitsap County northwest of Silverdale.

On March 18, 2005, the Kitsap County Health District (Heath District) visited the site to investigate a complaint filed by a neighboring property owner of solid waste on the surface of the ground. Health District staff observed several piles of trash and rubbish that appeared to have been uncovered/unearthed by recent land clearing activity at the site. At that time, the Health District documented via photos that the complaint was valid and contacted the property owner to inquire about the status of the waste observed on the ground. The owner related that he was planning on developing the property, and on cleaning up the solid waste.

On March 25, 2005, the property owner informed the Health District that he found several drums of unknown waste at the site. The Health District inspected the site on March 28, 2005. Seventeen (17) drums were identified. All of the drums were sitting on the surface of the ground. Four (4) of them had signs of leakage or spillage. Several of the drums were labeled with "Roybond Primer". The area around the drums smelled of solvents, and all of the drums were found to be full or close to full. Results of the inspection were forwarded over to the Washington Department of Ecology (Ecology). (The property owner contracted for the removal of the drums from the site by Clean Harbors Environmental Services on August 17, 2005.)

On March 29, 2005, Ecology received a report of hazardous waste dumping at the site (ERTS #547121). The complaint alleged the dumping had occurred in 1985 or 1986 when the property was owned by a Mr. Ron Deno. Also, the complaint alleged that several drums with unknown contents were buried on the property.

Previously, in 1997, as the result of a complaint from the same person, Ecology and Environment, Inc. (E&E) conducted a survey of the property on behalf of the U.S.

Environmental Protection Agency (EPA). The geophysical survey and trench digging that occurred during the survey revealed no evidence of buried drums or cylinders.

Now the complainant maintains that the 1997 survey was done in the wrong area and that hazardous waste is still buried at the site. An initial investigation was started by the Health District as the result of the ERTS received from Ecology. The Initial Investigation was closed out on April 12, 2005, with agreement between Ecology and the Health District to conduct an SHA.

The site was listed on the Washington State Department of Ecology's (Ecology) Confirmed and Suspected Contaminated Sites (CSCS) list on April 19, 2005, based on confirmed releases of total petroleum hydrocarbons to soil and suspected releases of halogenated organic compounds, metals, and non-halogenated solvents to soil.

On August 26, 2006, a letter was sent to the owner of the property informing him that the site will undergo a site hazard assessment (SHA), under the Model Toxics Control Act (MTCA).

SHA INVESTIGATION

A ground penetrating radar and magnetic survey was conducted on August 16, and 17, 2005, at the site because of the possibility of buried drums on the site in areas not covered by the 1997 E&E study. The results were negative. No buried metallic objects and no signs of excavation were found.

On August 31, 2005, a site visit was conducted by Health District staff to familiarize one of the staff with the site. The five (5) acre site has about two (2) acres cleared on the west end.

SHA SOIL AND WATER SAMPLING

On November 16, 2005, the Health District conducted a sampling event at and near the Seitz Property. The sampling consisted of two (2) water samples from drinking water wells down slope of the site, and five (5) soil samples from the cleared area of the site. The drinking water samples were analyzed for NWTPH-Dx, VOCs, SVOCs, and metals. Two (2) of the soil samples were analyzed for NWTPH-Dx, VOCs, SVOCs, and metals. The other three (3) soil samples were analyzed for NWTPH-Dx, SVOCs, and metals.

Soil Results

Results from the soil and groundwater samples are listed below in Table 1.

The soil results indicate that sample SP2 contains carcinogenic polycyclic aromatic hydrocarbons (PAHs) above the MTCA Method A levels. SP1, SP3, SP4, SP5 all had detections of PAHs but they were within acceptable MTCA Method A levels. In addition, SP1 contained a number of phthalate compounds, all of which were below MTCA. One phthalate compound was found in the method blank for soils, indicating likely contamination of this compound in the method blank at the lab. No soil samples showed exceedances of MTCA for metals.

TABLE 1: SEITZ PROPERTY SOIL AND WELL WATER SAMPLING RESULTS

SVOCs	SP1 Soil (mg/kg)	SP2 Soil (mg/kg)	SP2 PAHs (mg/kg)	SP3 Soil (mg/kg)	SP4 Soil (mg/kg)	SP5 Soil (mg/kg)	Soil Cleanup Standard (mg/kg)	Soils Blank (mg/L)	SP7 Water (mg/L)	Water Blank (mg/L)
Phenol	ND	4.77	NA	ND	ND	ND	48000	ND	ND	ND
2,4-Dimethylphenol	ND	0.09	NA	ND	ND	ND	1600	ND	ND	ND
2-Methyl naphthalene	ND	0.12	NA	ND	ND	ND	320	ND	ND	ND
Dimethyl phthalate	0.06		NA	ND	ND	ND	80000	ND	ND	ND
Acenaphthene	ND	5.04	NA	ND	ND	ND	4800	ND	ND	ND
Dibenzofuran	ND	3.73	NA	ND	ND	ND	160	ND	ND	ND
Fluorene	ND	5.74	NA	ND	ND	ND	3200	ND	ND	ND
Diethyl phthalate	0.04		NA	ND	ND	ND	64000	ND	ND	ND
Phenanthrene	ND	55.8	NA	0.05	ND	ND	none	ND	ND	ND
Anthracene	ND	11.6	NA	ND	ND	ND	24000	ND	ND	ND
Di-n-butyl phthalate	0.09 [1]	ND	NA	0.09	0.08	ND	none	0.07	0.12	0.24
Fluoranthrene	ND	86.8	NA	0.26	0.09	0.05	3200	ND	ND	ND
Pyrene	ND	124.0	NA	0.29	0.1	0.06	2400	ND	ND	ND
Butyl benzenyl phthalate	0.06	ND	NA	ND	ND	ND	1600	ND	0.16	0.24
Benzo(a) anthracene	ND	99.0	9.9 [2,3]	0.17	0.09	0.07	0.1	ND	0.12	0.16
Chrysene	0.05	64.0	0.6	0.15	0.1	0.08	0.1	ND	0.1	0.15
Bis(2-ethylhexyl) phthalate	0.04		NA	0.28		0.05	71	ND	0.5	0.55
Benzo(b) fluoranthrene	ND	165	16.5	ND	ND	ND	0.1	ND	ND	ND
Benzo(k) fluoranthrene	ND	7.33	0.7	ND	ND	ND	0.1	ND	ND	ND
Benzo(a)pyrene	ND	63.2	63.2	ND	ND	ND	0.1	ND	ND	ND
TOTAL PAHs			91.0				0.1			
Metals										
Arsenic			NA	2.2	2.25		20	NA	0.012 [4]	
Mercury	0.002	0.015	NA	0.025	0.031	0.010	2	NA	0.001	
Iron	14796	22165	NA	12604	14533	12314	none	NA	0.711 [5]	
VOCs										
Methylene chloride	ND	ND	NA	ND	ND	ND	ND	24.8	0.5	1

1. Light shading indicates sample results invalid. The method blank was found to have been contaminated with the analyte.
2. Dark shading indicates sample results exceed the appropriate standard.
3. Carcinogenic PAH results are totaled together, and a toxicity equivalency factor applied. If the results exceed 0.1 mg/kg the sample is greater than MTCA Method A Cleanup Levels for PAHs.
4. The arsenic result exceeds the new MCL of 0.01 ppm. However, Health District files contain sample results for this water system that also exceed the new standard but are below the old standard of 0.05 ppm and no arsenic was found in the soil at the site. Therefore the Health District concludes that the result of 0.012 ppm is not from the contaminated site.
5. Exceeds the secondary MCL of 0.3 ppm. Secondary MCLs are advisory for taste and odor.

Ground Water Sampling Results

One of the two well water samples showed exceedances of Maximum Contaminant Levels (MCLs) for the Washington State Drinking Water Standards. Drinking water sample SP7, the Landsworth Creek Water System well exceeded the MCL (0.01 mg/l) for arsenic at 0.012 mg/l and the MCL (0.3 mg/l) for iron at 0.711 mg/l. The MCL for iron is secondary, and is for taste and odor.

PATHWAY SCORING

Surface Water Route

The closest surface water to the site is approximately 1100 ft to the east-northeast and is Clear Creek. Clear Creek is a salmon stream that flows approximately two (2) miles into Dyes Inlet of Puget Sound. Clear Creek flows year around.

Air Route

Air emissions from PAHs in soil would be the primary air release pathway from the Seitz Property. The closest residence is located approximately 200 feet from the Seitz property. Approximately 135 homes with approximately 337 residents are situated within one-half mile of the site. No confirmed release of contaminants was scored for the air pathway.

Groundwater Route

The groundwater contaminant route was scored as a spill to the surface of the ground. Vertical depth to groundwater is believed to be between 50-100 feet bgs, based on local well logs and the area's topography. An unknown volume of contaminated soils was used in scoring as the extent of the spill is unknown.

The closest well is a small public well approximately 500 feet from the area of concern at the Seitz Property. This well was sampled as part of the SHA (See SP7 above in Table 1 and in the discussion on ground water sampling results.).

The arsenic standard was, until January 2006, 0.05 ppm. In January 2006, the US Environmental Protection Agency MCL was reduced to 0.01 ppm for Group A water systems. The Health District's Drinking Water Program is in the process of implementing the new arsenic standard in their regulations for Group B systems such as the Landsworth Creek Water System. Additionally, the Health District's file on the Landsworth Creek Water System contains historic arsenic results in the same range. For instance in 1987 the water system had a sample result of 0.017 ppm for arsenic. Based on historical data in the water system file and the lack of arsenic in the soils at the Seitz Property the Health District is of the opinion that the arsenic result from this well is not associated with contamination at the Seitz Property.

The iron standard is 0.3 ppm. This is a secondary drinking water standard for iron is 0.3 ppm, in place for odor and taste issues. There is no adverse health effects associated with this secondary MCL. Health District staff located four (4) Group A water systems, ten (10) Group B water systems, and 316 private wells within 2 miles of the landfill site. These wells served an estimated 8,463 persons with no alternative drinking water sources available.

The soil type that is mapped in the area of the Seitz Property is classified Alderwood very gravelly sandy loam. This soil type is typified by 6 to 15 percent slopes, is moderately deep and well drained. A silica cemented hardpan layer is found from 20 to 40 inches. The other major soil type in the immediate area is the Neilton gravelly loamy sand. This soil type has very gravelly loamy sand to 20 inches and very gravelly sand to 60 inches.

Special Considerations:

The Washington Ranking Method guidance assumes 3 people per household when scoring the air and groundwater pathways. However, the scoring for the Seitz Property site used the Kitsap County average of 2.5 people per household.

PATHWAY SCORES:

Surface Water/Human Health:	16.1	Surface Water/Environ:	47.7
Air/Human Health:	8.0	Air/Environmental:	NS
Groundwater/Human Health:	45.9		

OVERALL RANK: **2**

gah/swwqbcd/shw/common/sha/sites/seitz property/seitz worksheet 1a

WORKSHEET 2
ROUTE DOCUMENTATION

1. SURFACE WATER ROUTE -

List those substances to be considered for scoring: Source: 1

Benzo(a)pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthrene, Benzo(k)fluoranthrene

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

The substances were identified in analytical soil samples from the site in multiple samples and at concentrations above the applicable cleanup standard.

List those management units to be considered in scoring: Source: 1

Contaminated soils and surface water.

Explain basis for choice of unit to be considered in scoring.

Contaminated soil contituents flowing into surface water offsite.

2. AIR ROUTE

List those substances to be considered for scoring: Source: 1

Benzo(a)pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthrene, Benzo(k)fluoranthrene

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

The substances were identified in analytical soil samples from the site in multiple samples and at concentrations above the applicable cleanup standard.

List those management units to be considered in scoring: Source: 1

Contaminated soils.

Explain basis for choice of unit to be considered in scoring:

Contaminated soil contituents volitilizing offsite.

3. GROUND WATER ROUTE

List those substances to be considered for scoring: Source: 1

Benzo(a)pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthrene, Benzo(k)fluoranthrene

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

The substances were identified in analytical soil and/or well water samples from the site in multiple samples and at concentrations above the applicable cleanup standard.

List those management units to be considered in scoring: Source: 1

Contaminated soil and groundwater.

Explain basis for choice of unit to be considered in scoring:

Contaminated soil leaching to groundwater at the site.

gah/swwqbcd/shw/common/sha/sites/seitz property/seitz worksheet 2

WORKSHEET 4
SURFACE WATER ROUTE

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

Substance	Drinking Water Standard (ug/l)	Val.	Acute Toxicity (mg/kg-bw)	Val.	Chronic Toxicity (mg/kg/day)	Val.	Carcinogenicity WOE	PF	Val.
Benzo(a)pyrene	0.2	10	50	10	ND	ND	B2	12	7
Chrysene	0.2	10	ND	ND	ND	ND	B2	11.5	7

Source: _____
Highest Value: 10
2 Bonus Points? 2
Final Toxicity Value 12 (1-12)

1.2 Environmental Toxicity

(x) Freshwater
( ) Marine

Substance	Acute Criteria (ug/l)	Val.	Non-human Mammalian Acute Toxicity (mg/kg)	Val.
Benzo(a)pyrene	ND	-	50	10

Source 1,3,4 Value: 10 (2-10)

1.3 Substance quantity: Unknown — Source 1 Value: 1 (1-10)
Explain basis: Default value =1

2.0 MIGRATION POTENTIAL

2.1 Containment: Spill with no controls — Source 1 Value: 10 (0-10)

2.2 Surface Soil Permeability: High permeability — Source 1 Value: 1 (1-7)

2.3 Total Annual Precipitation: inches/year: 38.7 inches/year — Source 1, 3 Value: 3 (1-5)

2.4 Max. 2-Yr/24-hour Precipitation: 3 inches max 2 yr, 24 hr — Source 1,3 Value: 3 (1-5)

2.5 Flood Plain: Not in Flood Plain — Source 1, 2 Value: 0 (0-2)

2.6 Terrain Slope: 2% — Source 1, 2, 3 Value: 1 (1-5)

WORKSHEET 4 (CONTINUED)
SURFACE WATER ROUTE

3.0 TARGETS

3.1 Distance to Surface Water: 1100 feet — Source 1, 2 Value: 7 (0-10)

3.2 Population Served within 2 miles: 0 persons — Source 1,2 Value: 0 (0-75)

3.3 Area Irrigated within 2 miles: 0 acres — Source 1,2 Value: 0 (0-30)

3.4 Distance to Nearest Fishery Resource: 1100 feet — Source 1,2 Value: 9 (0-12)

3.5 Distance to, and Name (s) of, nearest Sensitive Environment(s) : fisheries resource and wetlands (1100 feet) — Source 1,2 Value: 9 (0-12)

4.0 RELEASE

Explain basis for scoring a release to surface water: None — Source 1,2 Value: 0 (0 or 5)

WORKSHEET 5
AIR ROUTE

1.0 SUBSTANCE CHARACTERISTICS

1.1 Introduction (WARM Scoring Manual) - Please review before scoring.

1.2 Human Toxicity

Substance	Air Standard (ug/m3)	Val.	Acute Toxicity (mg/kg)	Val.	Chronic Toxicity (mg/kg/day)	Val.	Carcinogenicity WOE	PF	Val.
benzo(a)pyrene	0.0006	10	nd	n	nd	n	n	n	n

Source: 1,3,4
Highest Value: 10
2 Bonus Points? 0
Final Toxicity Value **10** (1-12)

1.3 Mobility (Use numbers to refer to above listed substances)

1.3.1 Gaseous Mobility — Source 1,3,4 Value: 1 (1-4)

1.3.2 Particulate Mobility — Source 1,3 Value: 0 (0-4)

Soil type: Sandy loam
Erodibility: 86
Climactic Factor: 1-10

1.4 Highest Human Health Toxicity/Mobility Matrix Value (from Table A-7)

Final Human Health Air Matrix Value: **5** (1-24)

1.5 Environmental Toxicity/Mobility — Source 4

Substance	Non-human Mammalian Acute Toxicity (mg/m3)	Value (1-10)	Mobility Value (0-4)	Matrix Value
benzo(a)pyrene	ND	ND	1	

1.5 Highest Environmental Toxicity/Mobility Matrix Value (from Table A-7) equals

Final Environmental Health Air Matrix Value: **NS** (1-20)

1.6 Substance Quantity:
Explain basis: unknown — Source 1 Value: 1 (1-10)

2.0 MIGRATION POTENTIAL

2.1 Containment: no cover over waste fill — Source 3 Value: 10 (1-10)

WORKSHEET 5 (CONTINUED)
AIR ROUTE

3.0 TARGETS

3.1 Nearest Population: 50 feet — Source 1,2 Value: 10 (0-10)

3.2 Distance to, and Name (s) of, Nearest Sensitive Environment(s): fisheries resource and wetlands (1100 feet) — Source 1,2 Value: 6 (0-7)

3.3 Population within 0.5 miles: 72 homes at 2.5 persons each 180 persons — Source 2 Value: 13 (0-75)

4.0 RELEASE

Explain basis for scoring a release to air: none confirmed — Source 1,3 Value: 0 (0 or 5)

WORKSHEET 6
GROUND WATER ROUTE

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

Substance	Drinking Water Standard (ug/l)	Val.	Acute Toxicity (mg/kg-bw)	Val.	Chronic Toxicity (mg/kg/day)	Val.	Carcinogenicity WOE	PF	Val.
Benzo(a)pyrene	0.2	10	50	10	ND	ND	B2	12	7
Benzo(a)anthracene	0.2	10	ND	ND	ND	ND	B2	11.5	7
Chrysene	0.2	10	ND	ND	ND	ND	B2	11.5	7
Benzo(b)fluoranthrene	0.2	10	ND	ND	ND	ND	B2	11.5	7
Benzo(k)fluoranthrene	0.2	10	ND	ND	ND	ND	B2	11.5	7

Source: 1,3,4
Highest Value: 10
2 Bonus Points? 2
Final Toxicity Value: **12** (1-12)

1.2 Mobility (Use numbers to refer to above listed substances) Source 1,3,4 Value: 0 (1-4)

Solubility	(0-3)	substance	solubility mg/L	score
		Benzo(a)pyrene	1.20E-03	0
		Benzo(a)anthracene	5.70E-03	0
		Chrysene	1.80E-03	0
		Benzo(b)fluoranthrene	1.40E-02	0
		Benzo(k)fluoranthrene	4.30E-03	0

WORKSHEET 6
GROUND WATER ROUTE (CONTINUED)

Cations/Anions	(0-3)
None	

1.3 Substance Quantity — Unknown — Source 1,3 Value: 1 (1-10)
Explain basis: No data

2.0 MIGRATION POTENTIAL

2.1 Containment — None — Source 1,3 Value: 10 (0-10)
Explain basis: scored as a spill

2.2 Net Precipitation (N-A): N-A precip (29.7) - N-A ET (5.6) = 24.1 inches — Source 3,5 Value: 3 (0-5)

2.3 Subsurface Hydraulic Conductivity: gravelly sandy loam — Source 3,8 Value: 3 (1-4)

2.4 Vertical Depth to Ground Water: 50- to 100 ft — Source 1,3,7 Value: 4 (1-8)
Based on wells in the area

3.0 TARGETS

3.1 Ground Water Usage: public & private wells with alternatives available — Source 3,7,9 Value: 4 (1-10)

3.2 Distance to Nearest Drinking Water Well: approx. 500 feet — Source 1,3,7,9 Value: 5 (0-5)

3.3 Population Served within 2 Miles: — Source 3,7,9 Value: 100 (0-100)
19 Group A systems - 5952 connections * 2.5 persons = 14880 persons
26 Group B systems - 110 connections* 2.5 persons = 275 persons
316 private wells * 2.5 persons = 790 persons
10,000+ total persons

3.4 Area Irrigated by (Groundwater) Wells within 2 miles: no irrigation — Source NA Value: 0 (0-50)

4.0 RELEASE

Explain basis for scoring a release to ground water: No Data — Source 1,3 Value: 0 (0 or 5)

Sources Used in Scoring

1. Kitsap County Health District SHA research, II site visits, and sampling event data

2. KCHD environmental GIS maps

3. Washington Department of Ecology, WARM Scoring Manual, April, 1992.

4. Washington Department of Ecology, Toxicology Database for Use in Washington Ranking Method Scoring, January, 1992.

5. Kitsap County Groundwater Management Plan

6. Public Utility District #1 rainfall data for Kitsap County

7. Ecology well log viewer website http://apps.ecy.wa.gov/welllog/

9. Kitsap County Health District public water system Database

10. FIRM flood plain maps

11. NOAA weather data http://www.nws.noaa.gov/oh/hdsc/noaaatlas2.htm