

SITE HAZARD ASSESSMENT
Summary Score Sheet

SITE INFORMATION:

Name: **BP Service Station 03158**

Address: **501 Troser Road SW City: Tumwater County: Thurston State: WA Zip: 98902**

Section/Township/Range: **S34/T18/R2W**

Latitude: **46° 59' 58" N** Longitude: **122° 54' 49" W**

TCP ID #: **69587682** Tax Parcel #: **12834430200**

Site scored/ranked for February 2007 update

SITE DESCRIPTION:

The site is a former Exxon gasoline station located at the southeastern corner of the intersection of Troser Road and Tyee Drive, adjacent to U.S. Interstate 5 (See Thurston County Maps). The site is located approximately 160 feet above mean sea level in a mostly commercial area. Groundwater is located approximately 30 feet below ground surface (bgs) and generally flows towards the east. In September 1991 the property was sold to BP Oil Company and redeveloped as a BP service station. Presently, the site is operated as a 76 station which is owned by Kayo Oil Company.

PREVIOUS SITE INVESTIGATIONS:

In October 1991, a subsurface investigation was conducted at the site, which was believed to be related to the recent property transaction. A total of six soil borings were completed in various areas throughout the site, four of which were completed as monitoring wells MW1 through MW4. (See Groundwater Sample Analysis Map). A total of 11 soil samples were collected during the drilling process and no Model Toxics Control Act (MTCA) Method A cleanup level exceedances were reported. Groundwater samples collected from monitoring well MW1 contained dissolved hydrocarbon concentrations exceeding MTCA Method A cleanup levels. No other MTCA exceedances were reported in groundwater.

In January 1992, six additional borings were advanced and completed as groundwater monitoring wells MW5 through MW10. Two subsurface soil samples collected from MW8 contained concentrations of TPH-gasoline and total xylenes exceeding MTCA Method A cleanup levels. Groundwater samples collected from MW1, MW4, MW5, MW6, MW8, and MW9 all contained hydrocarbon concentrations exceeding MTCA Method A cleanup levels.

In January 1993, liquid phase hydrocarbons (LPH) were observed in monitoring well MW8 and attributed to a suspected new release from equipment operated by BP Oil Company. Subsequent sampling in December 1993 also discovered LPH in MW2 and again in MW8.

Three additional soil borings were advanced in March 1995, one of which was completed as a monitoring well (MW11) with the other two being completed as nested air sparge/soil vapor extraction (AS/SVE) wells AS/SVE1 and AS/SVE2. Subsequent AS/SVE feasibility tests indicated that such

systems would be effective in reducing soil vapor concentrations. Thus, an AS/SVE system was installed and operated from 1995 to 1998, effectively removing approximately 1,091 pounds of petroleum hydrocarbon vapors.

Except for the period of suspected new release in January 1993, results of subsequent groundwater sampling events indicated a general decline in dissolved-phase hydrocarbons over time. However, groundwater analytical results from October 2004 (See Table 1) indicated the presence of total petroleum hydrocarbons (gasoline, diesel, heavy oil) and benzene at concentrations exceeding MTCA Method A cleanup levels.

Table 1: Groundwater Sample Results from October 2004

Monitoring Well ID	TPH-gasoline	TPH-diesel	TPH-heavy oil	Benzene
MW1	598	<100	<100	6.2
MW2	156	206	659	1.5
MW6	1,990	656	<100	<1.0
MTCA¹	800	500	500	5.0

Results are reported in parts per billion (ug/L)

¹*MTCA Method A cleanup level for groundwater*

Bold entries indicate MTCA exceedances

< = Less than the stated laboratory reporting limit

SPECIAL CONSIDERATIONS:

Due to the contamination documented on-site being primarily subsurface, the surface water and air routes are not applicable for WARM scoring for this site. Thus, only the groundwater route will be scored.

ROUTE SCORES:

Surface Water/Human Health:	<u>NS</u>	Surface Water/Environmental:	<u>NS</u>
Air/Human Health:	<u>NS</u>	Air/Environmental:	<u>NS</u>
Groundwater/Human Health:	<u>35.4</u>		

OVERALL RANK: 3

WORKSHEET 2
Route Documentation

1. **SURFACE WATER ROUTE – NOT SCORED**

- a. List those substances to be considered for scoring: Source:

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

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

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

2. **AIR ROUTE – NOT SCORED**

- a. List those substances to be considered for scoring: Source:

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

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

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

3. **GROUNDWATER ROUTE**

- a. List those substances to be considered for scoring: Source: 1
TPH-gasoline, TPH-diesel

- b. Explain basis for choice of substance(s) to be used in scoring:
Analytical results from groundwater sampling indicate the presence of these hazardous substances at levels exceeding current MTCA Method A cleanup levels.

- c. List those management units to be considered for scoring: Source: 1
Groundwater

- d. Explain basis for choice of unit to be used in scoring:
Spills/discharges resulted in groundwater contamination

WORKSHEET 6
Groundwater Route

1.0 SUBSTANCE CHARACTERISTICS

1.2 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-Gasoline	5	8	3,306 rat	3	ND	-	1.0	.029	3	
2 TPH-Diesel	160	4	490 rat	5	0.004	5	ND	ND	-	

* Potency Factor

Source: 2, 3

Highest Value: 8

(Max = 10)

Plus 2 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)
1=	1= TPH-gasoline: 1.8+03, Value 3
2=	2= TPH-diesel: 3.0E+01, Value 1

Source: 2, 3

Value: 3

(Max = 3)

1.3 Substance Quantity (volume):	
Explain basis: 200 gallons, Estimated volume of spilled material.	Source: 1, 3 Value: <u>1</u> (Max=10)

2.0 MIGRATION POTENTIAL

		Source	Value
2.1	Containment (explain basis): Site is covered by a building and pavement. Score as a landfill: 1) No liner = 3; 2) Maintained cover, no ponding = 0; 3) No leachate collection system = 2.	1, 3	<u>5</u> (Max = 10)
2.2	Net precipitation: November 2005 through April 2006=40.62 inches. Estimated evapotranspiration rate=5.36 inches. 40.62-5.36=35.26 inches	3, 4	<u>4</u> (Max = 5)
2.3	Subsurface hydraulic conductivity: loamy fine sand, $>10^{-3}$	3, 5, 6	<u>4</u> (Max = 4)
2.4	Vertical depth to groundwater: Confirmed release to groundwater	1, 3	<u>8</u> (Max = 8)

3.0 TARGETS

		Source	Value
3.1	Groundwater usage: Public supply with alternate sources, minimum hookup requirements.	3, 6	<u>4</u> (Max = 10)
3.2	Distance to nearest drinking water well: <u>2,000</u> feet	3, 6	<u>3</u> (Max = 5)
3.3	Population served within 2 miles: $\sqrt{\text{pop.}} = \sqrt{17,000} = 130$	3, 6	<u>100</u> (Max = 100)
3.4	Area irrigated by (groundwater) wells within 2 miles: $(0.75) * \sqrt{874} \text{ acres} = 22$	3, 7	<u>22</u> (Max = 50)

4.0 RELEASE

		Source	Value
	Explain basis for scoring a release to groundwater: Confirmed release	1, 3	<u>5</u> (Max = 5)

SOURCES USED IN SCORING

1. Site Summary and Voluntary Cleanup Program Application, Environmental Resolutions, Inc., December 30, 2002.
2. Washington State Department of Ecology, Toxicology Database for Use in Washington Ranking Method Scoring, January 1992.
3. Washington State Department of Ecology, WARM Scoring Manual, April 1992.
4. Western Regional Climate Center, Precipitation data from the Olympia, Washington Airport, June 1948 to September 2005.
5. Soil Survey of Thurston County Washington, U.S. Dept. of Agriculture, Soil Conservation Service, 1982.
6. Thurston County Geodata Center, Roads and Transportation Division, November 2006.
7. Washington State Dept. of Ecology, Water Right Application Tracking System (WRATS), November 2006.

