

Reviewed 8/5

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SITE HAZARD ASSESSMENT
WORKSHEET 1
Summary Score Sheet

SITE INFORMATION:

Name: Lacey Food Mart
Address: 4603 Lacey Blvd. SE
City: Lacey **County:** Thurston **State:** WA **Zip:** 98503
Section/Township/Range: S23/T18/R2W
Latitude: 47° 2' 8"N **Longitude:** 122° 49' 22"W 47.03555 -122.82277
TCP ID # 54596735
Site scored/ranked for the August 2009 update.
Date Scored: June 9, 2009

SITE DESCRIPTION:

The site is located at the intersection of Lacey Boulevard Southeast and College Street Southeast in Lacey, Washington (see attached Thurston County maps). The site has been utilized as a gasoline/service station since 1965 and currently contains an active Valero fuel station. Surrounding land use is primarily commercial in nature. Subsurface soils generally consist of Nisqually loamy fine sand, while groundwater ranges in depth from approximately 13 feet to 23 feet below ground surface (bgs).

PREVIOUS SITE INVESTIGATIONS:

In 1986 through 1987, five underground storage tanks (USTs) were removed from the site: two 8,000-gallon gasoline USTs, one 6,000-gallon gasoline UST, one 300-gallon waste oil UST, and one approximately 500-gallon heating oil UST. Available information also suggests that the floor hoists in the former service bay were also removed during this time period. No report was filed with the Washington Department of Ecology (Ecology) and no record of the UST decommissioning was available.

From January 1996 through June 1997, Stemen Environmental, Inc. (Stemen) conducted a remedial excavation project to address soil contamination related to the dry well and former USTs. Three separate excavations were completed during the project. The first excavation addressed the former waste oil tank and dry well, while the second excavation addressed the former gasoline USTs. An additional smaller excavation was completed to address the former pump islands. A total of 2,255 tons of contaminated soil and 6,510 gallons of excavation water were removed for proper treatment or disposal. Thirty-five soil samples were collected from the final limits of the three excavations. Final analysis confirmed that total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene, xylene (BTEX) did not exceed Ecology's Model Toxics Control Act (MTCA) Method A cleanup levels in two of three excavations. Contaminated soils from the northern sidewall of the gasoline UST excavation were not accessible due to the presence of underground utilities and adjacent roadway. Additional sampling activities conducted outside of the excavation confirmed the remaining presence of contaminated soil and groundwater in excess of MTCA Method A cleanup levels.

From 1998 to 2008, 13 monitoring wells have been installed at various locations at the site. Recent groundwater monitoring conducted by Environmental Resolutions, Inc. (ERI) has confirmed the remaining presence of TPH, BTEX, and total lead (See Table 1) at concentrations exceeding MTCA Method A cleanup levels.

TABLE 1: GROUNDWATER ANALYTICAL RESULTS

Sample #	Date	Benzene	Toluene	Ethyl-benzene	Xylene	TPH-Gas	TPH-Diesel	Total Lead
MW-11	9/15/08	8.92	25.2	202	949	2,470	614	21.7
MW-4	9/15/08	29.7	4.5	167	310	1,800	570	nd
MW-10	9/15/08	18.7	12.7	191	752	5,220	2,090	7.21
MTCA ¹		5	1,000	700	1,000	800	500	15

¹MTCA Method A Cleanup Level.

Bold entries indicate MTCA exceedances

All results are reported in micrograms per liter (ug/L)

nd-analyte not detected

CONCLUSION

As of March 2009, ERI is planning to conduct a feasibility study for future remedial action. Detailed information will be available pending results of the study.

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.

ROUTE SCORES:

Surface Water/Human Health: NS
 Air/Human Health: NS
 Groundwater/Human Health: 52.0

Surface Water/Environmental.: NS
 Air/Environmental: NS

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, 2, 3, 4
TPH-Gasoline, TPH-Diesel, Benzene, Toluene, Ethylbenzene, Xylene, Total Lead
- b. Explain basis for choice of substance(s) to be used in scoring:
TPH-Gasoline, TPH-Diesel, and Total Lead were detected at concentrations exceeding MTCA Method A cleanup levels in groundwater.
- c. List those management units to be considered for scoring: Source: 1, 2, 3, 4
Contaminated groundwater.
- d. Explain basis for choice of unit to be used in scoring:
Documented release to groundwater.

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	3306 rat	3	ND	-	1.0	.029	3	
2 TPH-Diesel	160	4	490 rat	5	0.004	5	ND	ND	-	
3 LEAD	5	8	ND	-	<0.001 (NOAEL)	10	ND	ND	-	

* Potency Factor, ND-No Data

Source: 5, 6
Highest Value: 10
(Max = 10)
Plus 2 Bonus Points? Yes
Final Toxicity Value: 12
(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
3= Lead, Value 2	3=

Source: 5, 6
Value: 3
(Max = 3)

1.3 Substance Quantity (volume):	
Explain basis: Unknown, Use default Value = 1	Source: 4 Value: 1 (Max=10)

2.0 MIGRATION POTENTIAL

		Source	Value
2.1	Containment (explain basis): Site and surrounding areas are paved, score as landfill: 1) No liner, Value 3. 2) Low permeability cover, Value 1. 3) No leachate collection, Value 2,	6	6 (Max = 10)
2.2	Net precipitation: Nov-Apr (inches): 38.54" total precipitation, 11.74" evapotranspiration rate, 38.54-11.74 = 26.80 net precip.	7, 8	3 (Max = 5)
2.3	Subsurface hydraulic conductivity: loamy fine sand, $>10^{-3}$	3, 4	4 (Max = 4)
2.4	Vertical depth to groundwater: 13-23 feet	4	8 (Max = 8)

3.0 TARGETS

		Source	Value
3.1	Groundwater usage: Public supply, alternate sources available	10, 11	4 (Max = 10)
3.2	Distance to nearest drinking water well: <u>800 feet</u>	9	4 (Max = 5)
3.3	Population served within 2 miles: $\sqrt{\text{pop.}} = >10,000$	10, 11	100 (Max = 100)
3.4	Area irrigated by (groundwater) wells within 2 miles: $(0.75) \cdot \sqrt{968} = 23.3$	11	24 (Max = 50)

4.0 RELEASE

		Source	Value
	Explain basis for scoring a release to groundwater: Documented release	3, 4	5 (Max = 5)

SOURCES

1. Stemen Environmental, LLC, *Excavation and Remediation Activities for Former Exxon Service Station Site Located at 4603 Lacey Blvd, Lacey, Washington*, Paul W. Stemen, July 28, 1997.
2. Environmental Resolutions, Inc., *Soil Sampling and Well Installation Activities, Former Exxon Station 72454*, Stacy Pickard, May 23, 2008.
3. Environmental Resolutions, Inc., *Air Sparge Well Installation Report, Former Exxon Station 72454*, Stacy Pickard, September 5, 2008.
4. Environmental Resolutions, Inc., *Groundwater Monitoring Report, Former Exxon Station 72454*, Ryan Pozzuto, September 2008.
5. Washington Department of Ecology, *Toxicology Database for Use in Washington Ranking Method Scoring*, January 1992.
6. Washington Department of Ecology, *WARM Scoring Manual*, April 1992.
7. Western Regional Climate Center, *Precipitation data from the Olympia, Washington Airport, June 1948 to September 2005*.
8. Table 16-Estimated Evapotranspiration, E.M. 2462, p42, for Thurston County Airport.
9. Thurston County Geodata Center, *Roads and Transportation Division*, March 2009.
10. Washington State Department of Health, *Drinking Water Division, Sentry Database*, March 2009.
11. Washington Department of Ecology, *Water Resources Program, Water Right Tracking System (WRTS)*, March 2009.