

# Site Hazard Assessment

## Recommendation for No Further Action

### Site Information:

Name: **West Bay Marina**

Address: **2100 West Bay Drive NW**

City: **Olympia** County: **Thurston** State: **WA** Zip: **98502**

Section/Township/Range: **S10/T18/R2W**

Ecology Facility Site ID #: **92753273** Latitude: **47° 03' 52"N** Longitude: **122° 55' 0"W**

July 16, 2007

### Site Description/Background:

The subject site is located on the western shore of Budd Inlet in Olympia, Washington (See Thurston County Geodata Maps). Surrounding properties include a vacant commercial site to the south, a log sorting operation to the north, and residential properties to the west.

Groundwater at the site is influenced by two sources, including onshore groundwater flow from the west and tidally influenced water from the east. Depending on tidal cycles and weather conditions, the groundwater level continually fluctuates between approximately 4 feet and 10 feet below ground surface (bgs).

Soils at the site consist mainly of poorly consolidated fill materials, which includes pit run sands, cobbles, and varying sizes of wood debris. It is suspected that the area was filled in early 1900's, along with other portions of land in downtown Olympia.

### Underground Storage Tank Removal Project:

In the spring of 1999, Stemen Environmental, Inc. (Stemen) was contracted to remove three underground storage tanks (USTs). The 1,500 gallon leaded gasoline, 4,000 gallon unleaded gasoline, and 2,000 gallon diesel fuel USTs were buried side-by-side in the main parking area (See Figure 1). The three fuel tanks were of single wall steel construction and included submersible pumps, pressurized underground steel fuel supply lines, and remote fuel dispensers. The fuel supply lines extended approximately 65 feet to the remote fuel dispensers.

The tank removal project commenced on April 3<sup>rd</sup>, 1999. In an effort to minimize the effects of tidal fluctuations, the majority of the excavation was scheduled to coincide with low tide (minus if possible). As the tanks were being removed, visible petroleum contamination was observed in soils adjacent to the 4,000 gallon gasoline UST. Specifically, contaminated soils were discovered at shallow depths (between 0-3 feet bgs) near the fill port and submersible pumps, while soils greater than 3 feet bgs exhibited more uniform contamination in all areas surrounding the tank. Additionally, petroleum-contaminated soils were also discovered around the fuel supply lines, which appeared to exhibit more significant levels of contamination when compared to the tank area. A subsequent inspection of the USTs revealed significant exterior corrosion, but no observable holes.

Due to the significant presence of petroleum-contaminated soils, the site was entered into Washington State Department of Ecology's (Ecology) Voluntary Cleanup Program (VCP). A site meeting was conducted with Ecology staff to discuss further cleanup plans. Attendees included Paul Stemen of Stemen Environmental, Martha Maggi from Ecology, Gerald Tousley from Thurston County Health Department, and the property owner, Neil Falkenburg. In order to ensure compliance with all applicable Model Toxics Control Act (MTCA) regulations, Ecology required the following actions:

- 1) Containment of excavation waters: Following the removal of the USTs, an oily sheen was observed on the surface of the excavation waters. Sample analysis confirmed the presence of heavy oil and diesel at concentrations exceeding MTCA Method A cleanup levels (See Table 1A, Sample #EW). Ecology required that these waters be captured and contained for permitted disposal. A floating pump and portable storage tank was subsequently installed to skim petroleum products from the surface of the water as needed.
- 2) UST Excavation: Obtain soil samples from the perimeter of the UST excavation.

- 3) Fuel supply lines: Obtain soil samples along the entire length of the fuel supply lines.
- 4) Fuel dispensing island: Obtain soil samples from beneath the dispenser mounting location.

On April 10<sup>th</sup>, 1999, soil and groundwater samples were obtained from the areas listed above in accordance with Ecology requirements. The majority of the samples were collected using a Strataprobe Sampling System. Continuous cores were extended to a depth of approximately 12 feet bgs, which was approximately two feet below the maximum water table depth. Soil and groundwater sample results are listed below in Table 1A and 1B.

**Table 1A: Pre-Cleanup Analytical Results for Soil**

Sample ID#	Location	Benzene	Toluene	Ethyl-benzene	Xylene	Gasoline	Diesel	Heavy Oil
FL-1	Fuel Lines	nd	nd	nd	nd	nd	nd	nd
FL-2	Fuel Lines	nd	nd	nd	0.2	nd	nd	nd
FL-3	Fuel Lines	nd	nd	nd	nd	nd	nd	360
FL-4	Fuel Lines	nd	nd	nd	nd	nd	nd	nd
FL-5	Fuel Lines	<b>0.05</b>	0.33	3.0	<b>10.0</b>	<b>1,500</b>	nd	<b>2,000</b>
FL-6	Fuel Lines	<b>4.4</b>	<b>18.0</b>	2.2	<b>50.0</b>	<b>800</b>	nd	nd
FL-7	UST Area	nd	nd	nd	nd	nd	nd	200
FL-8	UST Area	nd	nd	nd	0.25	nd	nd	nd
FL-9	UST Area	nd	nd	nd	nd	nd	72.0	nd
FL-10	UST Area	nd	nd	nd	nd	nd	nd	nd
FL-11	UST Area	nd	nd	nd	nd	nd	nd	nd
PI-1	Pump Island	nd	nd	nd	nd	nd	<b>2,170</b>	nd
PI-2	Pump Island	nd	nd	nd	1.2	nd	180	nd
VB-1	Valve Box	nd	nd	nd	nd	nd	290	70
L-1	Fuel Lines	<b>7.7</b>	<b>38.0</b>	<b>21.0</b>	<b>150</b>	<b>1,900</b>	nd	NA
L-2	Fuel Lines	<b>7.4</b>	<b>35.0</b>	<b>17.0</b>	<b>130</b>	<b>1,000</b>	nd	NA
<b>MTCA<sup>1</sup></b>		<b>0.03</b>	<b>7.0</b>	<b>6.0</b>	<b>9.0</b>	<b>30.0</b>	<b>2,000</b>	<b>2,000</b>

<sup>1</sup>MTCA Method A Soil Cleanup Level for Unrestricted Land Uses. Bold entries indicate MTCA exceedances.

Results are reported in parts per million (mg/kg)

nd - Analyte Not Detected

NA - Analyte Not Analyzed

**Table 1B: Pre-Cleanup Analytical Results for Groundwater**

Sample ID#	Location	Benzene	Toluene	Ethyl-benzene	Xylene	Gasoline	Diesel	Heavy Oil
FL-6	Fuel Lines	4.1	8.2	nd	19.0	nd	nd	nd
FL-7	UST Area	<b>9.8</b>	4.1	nd	5.1	nd	<b>2,800</b>	nd
FL-8	Fuel Lines	nd	nd	nd	nd	nd	nd	nd
FL-10	UST Area	nd	nd	nd	nd	nd	nd	nd
EW	Excavation Water	nd	nd	nd	nd	nd	<b>5,400</b>	<b>17,000</b>
<b>MTCA<sup>1</sup></b>		<b>5.0</b>	<b>1,000</b>	<b>700</b>	<b>1,000</b>	<b>800</b>	<b>500</b>	<b>500</b>

<sup>1</sup>MTCA Method A Groundwater Cleanup Level. Bold entries indicate MTCA exceedances.

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

nd - Analyte Not Detected

Based on the above sampling results, remedial excavation continued in the following locations:

- 1) Pump island: Approximately two cubic yards of petroleum-contaminated soils were removed from the area directly beneath and adjacent to the remote fuel dispenser mounting location.
- 2) UST excavation: The south, west, north, and east sidewalls in the former UST area were extended approximately 4 feet to the locations where clean Strataprobe soil samples were previously obtained. After a five day period of dry weather, the amount of water in the excavation bottom

was significantly reduced. During the low water period, the excavation bottom was extended downward until field screening results produced no noticeable presence of petroleum sheens.

- 3) Fuel supply lines: As the excavation continued in a southerly direction away from the former UST area, the fuel supply lines were encountered. Soils present beneath and immediately adjacent to the lines displayed a very strong odor of gasoline and field screening tests produced a heavy petroleum-like sheen. Soil samples collected in the area (Sample #L-1 and L-2) confirmed the presence of gasoline-range hydrocarbons and benzene, toluene, ethylbenzene, xylene (BTEX) in excess of MTCA Method A cleanup levels. Based on the field screening and soil sample results, the excavation was extended toward the southeast until field screening results produced no sheen. Additionally, the excavation was also extended in an easterly direction to sample location FL-4, where previous soil sample results were non-detect for petroleum-range hydrocarbons and BTEX.
- 4) Valve Box: A small amount of contaminated subsurface soils were not accessible due to existing structures. Due to the small amount of material and relatively low contaminant concentration (Sample VB-1), it was determined by Ecology that in-situ bioremediation would be an acceptable treatment method. The soil was pH balanced and nutritionally enhanced microbes were added.

After removing all known contaminated soils, discreet soil samples were collected from the final limits of the excavation (See Figure 2). Additionally, excavation water remaining in the temporary storage tank was also analyzed. Final results for the selected analytes were either non-detect or detected at concentrations below 1999 MTCA Method A cleanup levels. After discussing the results with Ecology, it was decided that the excavation could be backfilled and the site closed.

In November 1999, the final cleanup report was reviewed by Ecology. In a letter from Ecology (See Attached) dated November 29, 1999, Martha Maggi, Project Manager, stated,

“The conformational soil samples taken from the over-excavated tanks location show that sidewall soils were below applicable MTCA cleanup levels.”

However, due to the former presence of contaminated excavation waters, Ecology expressed concern regarding the potential for remaining soil contamination. Ms. Maggi’s letter proceeded to say:

“...Analytical results indicate the concentrations of oil and diesel in groundwater are above MTCA Method A cleanup levels, and it is possible that petroleum contaminated soils remain below the water table...Therefore, Ecology recommends further monitoring of site groundwater. It will be sufficient to located three groundwater sampling points surrounding and/or downgradient of the excavation and former fuel lines...If ground water results show petroleum concentrations below MTCA Method A levels, then no further action would be required for this release, and Ecology would issue a No Further Action determination letter.”

Per Ecology’s request, four (4) additional groundwater monitoring wells were installed at the site. Three wells were located downgradient from the eastern boundary of the former excavation, in the approximate area of sample locations FL-6, FL-7, and FL-8. A fourth well was installed upgradient from the former excavation area, between sample locations FL-10 and FL-11. On December 17, 1999, one groundwater sample was obtained from each well. Final results indicated that the selected analytes were either not detected or detected at concentrations below MTCA Method A cleanup levels. Results are listed below in Table 2.

**Table 2: Post-Cleanup Groundwater Monitoring Results**

Sample ID#	Benzene	Toluene	Ethyl-benzene	Xylene	Gasoline	Diesel
MW-1	nd	nd	nd	nd	nd	nd
MW-2	nd	nd	nd	nd	nd	nd
MW-3	nd	nd	nd	0.07	nd	nd
MW-4	nd	nd	nd	nd	nd	nd
<b>MTCA<sup>1</sup></b>	<b>5.0</b>	<b>1,000</b>	<b>700</b>	<b>1,000</b>	<b>800</b>	<b>500</b>

<sup>1</sup>MTCA Method A Groundwater Cleanup Level. Bold entries indicate MTCA exceedances.

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

nd - Analyte Not Detected

### **PATHWAY INFORMATION**

Soil: All of the contaminated soils identified in previous site investigations were removed from the site. No MTCA exceedances were detected in remaining soils.

Surface Water: Since all known contaminated soils were remediated, there is no remaining pathway to marine waters located downgradient.

Groundwater: Since all known contaminated soils and excavation waters were remediated, there is no pathway to groundwater.

Air: There is no known pathway to air.

### **SPECIAL CONSIDERATIONS**

This recommendation applies to the 1999 Underground Storage Tank Removal Project. Other potential areas of concern were not addressed in this report.

### **CONCLUSIONS/RECOMMENDATIONS**

Based on available information, it is believed that remedial activities associated with the 1999 Underground Storage Tank Removal Project were completed in accordance with applicable MTCA regulations under Ecology guidance. Thus, it is recommended that the tank removal project receives a determination of No Further Action (NFA) under MTCA, based on WAC 173-340-310(5)(d)(ii): A release or threatened release of a hazardous substance has occurred, but in the department's judgment, does not pose a threat to human health or the environment.