SITE HAZARD ASSESSMENT

WORKSHEET 1

Summary Score Sheet

SITE INFORMATION:

Leo's Line Up &Tires Auto Express (aka L&L Exxon Service)
1315 Lee Blvd
Richland, WA 99352

Current Co-Owners: Leland Davis and Lloyd Wachtel
Parcel ID: 111983020402002
Section/Township/Range: 11/9N/R28E
Latitude: 46.27470
Longitude: -119.28040
Ecology Facility Site ID No.: 78835792
LUST Site ID: 5532

Site scored/ranked for the August 2010 update

Background and Site Sampling

The site known as Leo's Line Up & Tires Auto Express has been occupied by several different businesses. The current owners have owned the property since1976. At that time the site was a gas station known as L&L Exxon Service. In 1996 the property was leased to Leo's Line Up & Tires Auto Express. In 1999 five underground storage tanks were removed from the property and four years later Leo's Line Up relocated to a different location. Currently, the property is being leased to Rollin Motors, an auto dealership.

On August 29, 1989 Dave George of the Washington State Department of Ecology (Ecology) was contacted by Gilbert Jones of Major Petroleum, Inc. (Kennewick, WA). Mr. Jones was installing spill and overfill protection at L&L Exxon and he had encountered contaminated soil. When Mr. George visited the site on August 30, 1989 a large amount of soil (~15 cubic yards) surrounding three underground storage tanks (USTs) had already been excavated (see Figure 1 for UST map). Ground water had been encountered near the bottom of the tanks at approximately 13 feet and slight sheen was visible on the water surface. Mr. George recommended having the soil and water checked for contaminants prior to the hole being refilled. Westinghouse Environmental Systems and Services (Richland, WA) was contacted the same day to perform soil and water sampling. Two soil samples and one water sample were taken at the site but it is not clear from the report where exactly the samples were taken (1). All samples were analyzed for Benzene, Toluene, Ethylbenzene, Xylene (BTEX) and lead (see Tables 1 and 2). One of the soil samples and the water sample had levels of BTEX that exceeded the cleanup standards at the time. Lead was also detected in all samples. The stockpile was deemed contaminated and was eventually taken to the Richland City Landfill in December 1989.

The excavation hole remained open for several months until the extent of the contamination could be determined. In an Ecology phone memo dated February 15, 1990 Gilbert Jones indicated that additional soil sample(s) would be taken from the excavation hole surrounding the USTs. The sampling was performed by a company called Chen Northern. No analytical results of the sample(s) could be found but in a phone memo between Jerry Harper (of Chen Northern) and Dave George dated March 29, 1990 there was note that indicated that BTEX results for the sample(s) were less than 10 parts per billion (ppb), except for Xylene which was 700 ppb. The owners of the property were eager to get dirt backfilled around the tanks since it was creating a safety hazard. Dave George indicated that ground water monitoring would still be required but that the hole could be filled in. Shortly after their conversation the USTs were covered and four ground water monitoring wells were installed by Major Petroleum (personal communication with Gilbert Jones 07/23/2010). Mr. Jones recalled that ground water samples were taken but he could not remember who analyzed the samples or what the results were. No records exist in the site file indicating that water samples were taken from these wells.

In 1999 the owners decided to remove all USTs on the property. There were a total of five USTs on the property. Three tanks were used for gasoline and two tanks were used for waste oil and heating oil (Figures 1 and 2 and Table 3). Tanks were removed by Major Petroleum and environmental sampling was provided by GN Northern Inc. (Kennewick, WA). Removal of the USTs, piping and ancillary took place from February 18th to February 26th 1999. The three gas tanks were in good condition with only minor to moderate rusting (2). The heating oil and waste oil tanks were in poor condition with severe rusting but no seam failures or holes were observed. Ground water was not encountered during the removal of the tanks (2). There was visible soil staining along the walls of the gasoline tanks and the and beneath the pump islands. Petroleum odors were also present. However, no obvious soil staining or odors were apparent in the stockpiled material or the oil tank basin (2).

GN Northern employees took numerous soil samples from the two tank basins and from the beneath the pumping stations (see Figures 1 and 2). Gas and BTEX levels exceeding cleanup levels were detected in three samples taken near the pumping stations and detectable levels were also present in four other samples taken from the gas tank basin (see Table 4). Lead was also detected in one of the samples taken near the one of the pump islands. No detectable levels of gas, diesel, or heavy oil were detected in the samples taken from the heating oil tank basin (results not shown). Three soil samples were taken from the stockpile. Two samples did not have detectable levels of contaminants and one sample had 30 mg/kg of Total Petroleum Hydrocarbons-Gas (TPH-G) which was below cleanup standards at the time. The stockpiled soil was later used as backfill at the site.

The GN Northern report (2) did not indicate that more excavation was done to remove areas of soil where contamination had been found. The report stated that based on the analytical results that there had been a petroleum release into the soil and that ground water monitoring from the pre-exiting wells on site should be performed (2). The report also indicated that bioremediation could also be employed as a means of cleaning up the petroleum in the soil at the site. No other documentation of remediation exists in the Ecology file for this site. One of the owners, Leland Davis, and Jerry Harper (formerly of GN Northern) both indicated that bioremediation was performed at the site for some time (personal communication with Jerry Harper and Leland Davis, July 2010). However, no documentation of this work could be found.

On May 14, 1991 Dick Basset (Ecology) visited the site and filed ERTS #C502779. He noted that the petroleum contaminated soil was returned to the excavation with some "bugs" (bioremediation bacteria). He also noted that the GN Northern was looking into more monitoring at site and the possibility of installing another ground water monitoring well. His final recommendation was that the site receive an Interim Action.

Site Hazard Assessment

A site hazard assessment (SHA) was performed by James Coleman of the Benton-Franklin Health District on May 24, 2010. Leland Davis was present during the SHA and escorted Mr. Coleman around the site. The site is currently being leased by Rollin Motors, an auto dealership. The site located on the corner of Lee Boulevard and Goethals Drive in Richland (see Photo1). It is surrounded by businesses but there is residential area approximately 500 feet to the south of the property. The Columbia River lies approximately 2,700 feet due east of the property. The entire surface of the property is covered either by pavement or asphalt and is relatively flat.

Mr. Davis pointed out where the four ground water monitoring wells were located. Three of them are aligned in a north-south direction slightly to the east of where the gasoline USTs were formally located (see Photo 2). Mr. Davis could not recall much information regarding the well depth, well installer, or sampling information. The two northern most wells had covers that were bolted down. The southern most well had a cover but no lid. The fourth well was located in the northwest corner of the property and did not have a cover or a lid.

When Mr. Davis was asked about how the site was remediated he indicated that bioremediation was used and that some water monitoring was performed. He said that some soil samples were taken during the bioremediation process but that he was not sure if a formal report was written regarding the outcome of the process. During the visit he indicated that Jerry Harper was involved in the process and provided his phone number. When Mr. Harper was contacted he also indicated that bioremediation was performed at the site but was uncertain of the effectiveness of the treatment and that he was no longer employed by GN Northern. Following the SHA Mr. Davis requested that Jerry Harper take groundwater samples from the wells on the site. Mr. Harper indicated that all of the wells were dry. The depth of the wells ranged from 9 to 13 feet.

According to the GN Northern report soils at the soil are sandy gavel. Precipitation in the area is minimal with approximately 7.5 inches annually. There are no wells on the site and city water and sewer are available in the surrounding area. Data from the Ecology, Water Rights Application System (WRATS) indicates that there are numerous ground water wells within a two mile radius of the site. Most notable are nine municipal wells that are operated by the City of Richland. One of the wells that is used for Richland City drinking water is located approximately 1,850 feet southwest of the site.

SPECIAL CONSIDERATIONS (include limitations in site file data or data which cannot be accommodated in the model, but which are important in evaluating the risk associated with the site, or any other factor(s) over-riding a decision of no further action for the site): It is unclear from the data file that a complete cleanup was ever accomplished. There is evidence that more data exists for this site but at the time scoring none could be found.

ROUTE SCORES:

Surface Water/Human Health:	**NS**	Surface Water/Environmental.:	**NS**
Air/Human Health:	**NS**	Air/Environmental:	**NS**
Groundwater/Human Health:	54.0		

OVERALL RANK: 2

WORKSHEET 2
Route Documentation

1. **SURFACE WATER ROUTE – NOT SCORED.** No data or direct observation exists to support that contaminants were released into the Columbia River. The site is covered primarily with asphalt.
   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

      Benzene, Ethylbenzene, Toluene, and Xylene, Lead

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

These substances were detected in soil samples taken from the excavation pit.

c. List those management units to be considered for scoring: Source: 1,2

Subsurface soil/groundwater.

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

Contaminants were detected in soil and water samples at site.

WORKSHEET 6
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	Benzene	5	8	3306	3	ND	ND	A	.029	5
2	Ethylbenzene	700	4	3500	3	0.1	3	-	-	-
3	Toluene	2000	2	5000	3	0.2	1	-	-	-
4	Xylene	10,000	2	50	10	2	1	-	-	-
5	Lead	15	6	ND	ND	<0.001	10	-	-	-

* *Potency Factor*

Source: 1,2,4

Highest Value: 10
(Max = 10)

Plus 2 Bonus Points? 2

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= Benzene, 1800 mg/L	1=3
2= Toluene, 540 mg/mL	2=2
3= Ethylbenzene, 150 mg/L	3=2

4=Xylene, 200 mg/L	4=2
5= Lead K=0.1 to 1.0	5=2

Source: 1,2,4,5
Value: 3
(Max = 3)

1.3 Substance Quantity:	
Explain basis: Approximately 15 cubic yards of contaminated soil was removed from the site. Some contaminated soil remains on site but it would probably not exceed 100 cubic yards.	Source: 1,2,5 **Value: 2** (Max=10)

2.0 MIGRATION POTENTIAL

		Source	Value
2.1	**Containment (explain basis):** Spill that has been capped. Scored as a landfill with cover but no liner or leachate collection system.	1-4	**6** (Max = 10)
2.2	**Net precipitation:** 5" – 3.4" = 1.6"	6	**1** (Max = 5)
2.3	**Subsurface hydraulic conductivity:** Sandy-Gravel	1,2	**4** (Max = 4)
2.4	**Vertical depth to groundwater:**	1,2	**8** (Max = 8)

3.0 TARGETS[1]

		Source	Value
3.1	**Groundwater usage:**	7,8	**4** (Max = 10)
3.2	**Distance to nearest drinking water well:** 1,850 **feet**	7,8	**3** (Max = 5)
3.3	**Population served within 2 miles:** Richland City Well (pop>10,000)	7,8	**100** (Max = 100)
3.4	**Area irrigated by (groundwater) wells within 2 miles:** **Greater than 4,500 acres =** 50	7,8	**50** (Max = 50)

4.0 RELEASE

	Source	Value
Explain basis for scoring a release to groundwater: Confirmed release to groundwater.	1,2	**5** (Max = 5)

SOURCES USED IN SCORING

1. Laboratory Analysis for Groundwater and Soil Samples from L&L Exxon, NWECNo 89-5006-ES, Westinghouse Northwest Environmental, September 11, 1989.

2. Underground Storage Tank and Site Assessment of Former L&L Exxon Service Station, Documental No. 199-349.RPT. Prepared by GN Northern, Inc, March 19, 1999.

3. Site Hazard Assessment site visit by James Coleman, Benton-Franklin Health District, May 24, 2010.

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

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

6. Washington Climate – Net Rainfall Table

7. Washington State Department of Ecology, Water Rights Application System (WRATS) printout for two-mile radius of site.

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

Appendix I: Figures

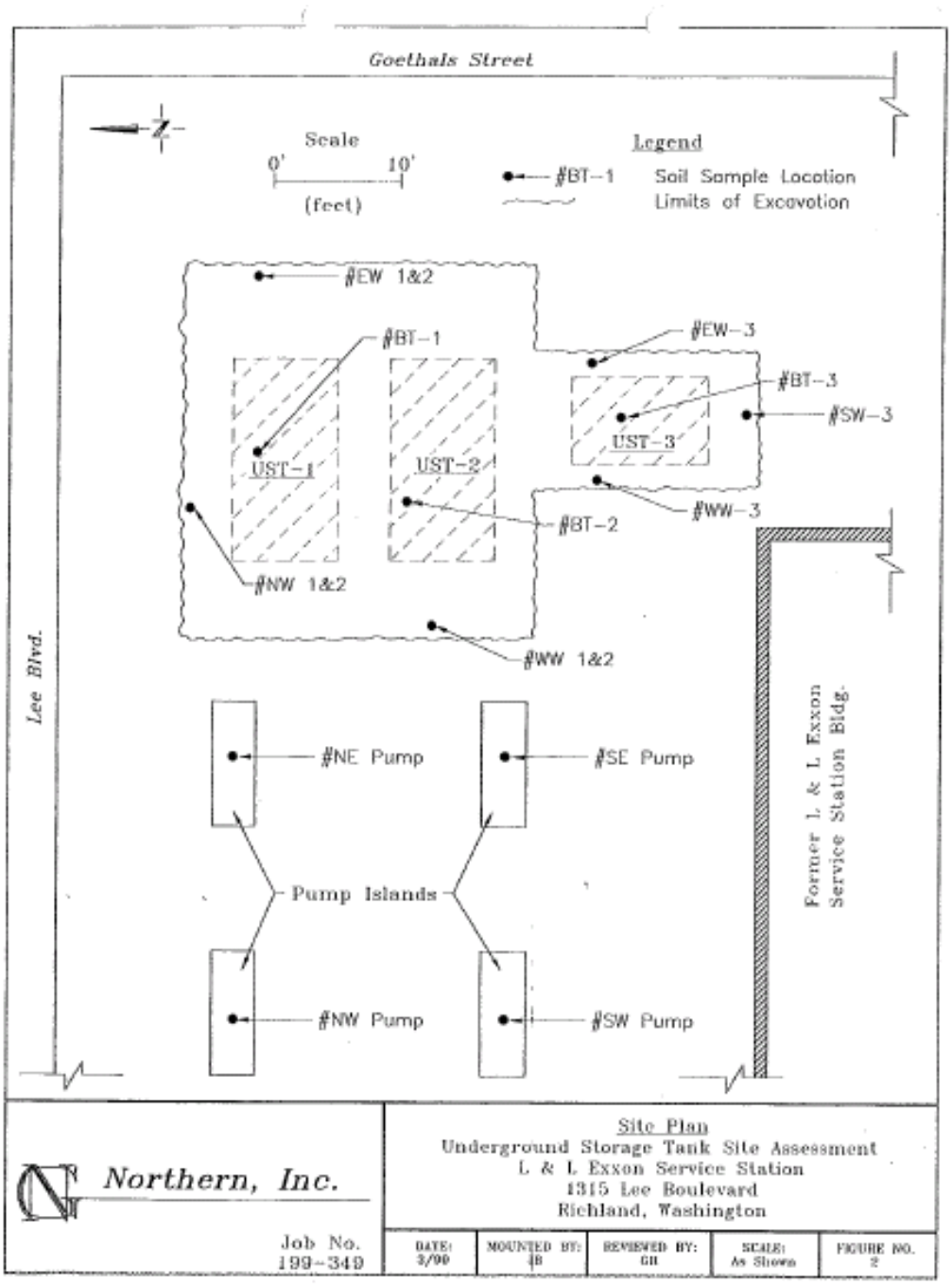


Figure 1. Diagram of Gasoline Underground Storage Tanks, Pumping Stations and Sampling Locations at L&L Exxon (Source: 2).

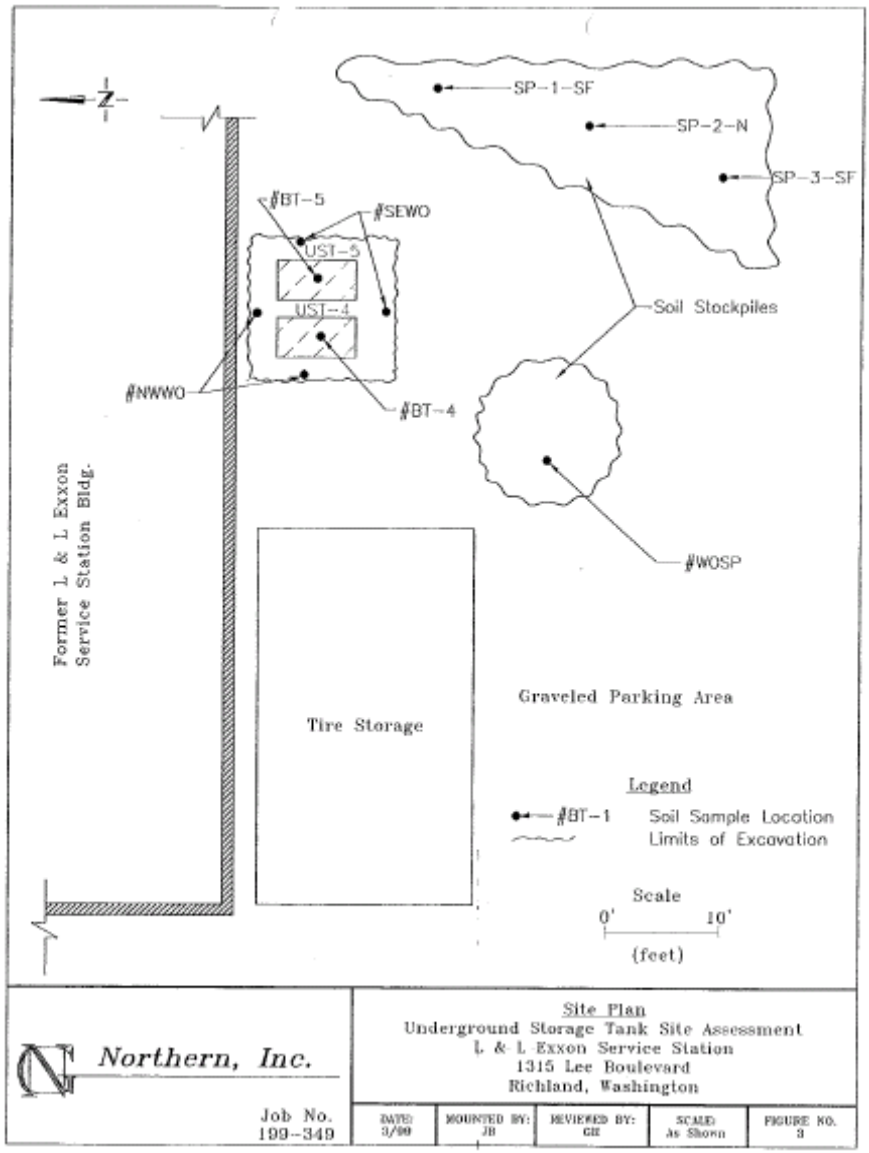


Figure 2. Diagram of Oil Underground Storage Tanks and Sampling Locations at L&L Exxon. (Source: 2)

Appendix II: Tables

Table 1. Soil Samples Taken from L&L Exxon Excavation Site by Westinghouse Northwest Environmental (mg/kg)

	Sample 1 (NE End)	Sample 2 (SW End)	MTCA Cleanup Level[1]
Benzene	28	ND	0.03
Toluene	200	ND	7
Ethylbenzene	59	ND	6
Total Xylene	390	1.7	9
Lead	22.4	22.5	250

Model Toxics Control Act, Method A Soil Cleanup Levels for Unrestricted Land Uses

Table 2. Water Sample Taken from L&L Exxon Excavation Site by Westinghouse Northwest Environmental (ug/L)

	Sample 1 (NW Section)	MTCA Cleanup Level[1]
Benzene	18,000	5
Toluene	26,000	1,000
Ethylbenzene	2,100	700
Total Xylene	14,000	1000
Lead	25	15

Model Toxics Control Act, Method A Cleanup Levels for Ground Water

Table 3.

Summary of Tank Physical Data
L & L Exxon Service Station Site

Tank No.	Construction Materials	Additional Protection	Diameter (ft)	Length (ft)	Capacity (gallons)	Age (years)	Former Contents
1	Steel	None	8.5	14	6,000	40?	Gasoline
2	Steel	None	8.5	14	6,000	40?	Gasoline
3	Steel	None	7.5	12	4,000	20?	Gasoline
4	Steel	None	3.5	6.5	500	37?	Heating Oil
5	Steel	None	3.5	6.5	500	37?	Waste Oil

Source (2)

Table 4. Soil Samples taken by GN Northern in February 1999 from L&L Exxon.

Summary of NWTPH-G and BTEX Analysis in Soil
L & L Exxon Service Station Site

Date Sample No.	Location[1]	Sample Type Matrix	Analyte				
			TPH-G[2] (mg/kg)	Benzene (mg/kg) (B)	Toluene (mg/kg) (T)	Ethylbenzene (mg/kg) (E)	Xylenes (mg/kg) (X)
2-18-99 NW Pump	Pump Isd. 3.5 ft. BGS	Grab Soil	45,000	<2	480	210	2,600
2-18-99 NE Pump	Pump Isd. 3.0 ft. BGS	Grab Soil	ND	ND	ND	ND	ND
2-18-99 SE Pump	Pump Isd. 4.0 ft. BGS	Grab Soil	40,000	<4	440	82	1,400
2-18-99 SW Pump	Pump Isd. 4.0 ft. BGS	Grab Soil	45,000	56	800	280	2,700
2-22-99 BT-1	Base UST-1 9.5 ft. BGS	Grab Soil	89	1.1	1.8	2.0	8.2
2-22-99 BT-2	Base UST-2 10.0 ft. BGS	Grab Soil	41	1.3	6.5	1.4	5.9
2-22-99 EW-1&2	East Sidewall 6.0 ft. BGS	Grab Soil	ND	ND	ND	ND	ND
2-22-99 WW-1&2	West Sidewall 7.0 ft. BGS	Grab Soil	74	0.56	3.1	1.2	5.3
2-22-99 NW-1&2	North Sidewall 7.0 ft. BGS	Grab Soil	ND	ND	ND	ND	ND
2-22-99 BT-3	Base UST-3 9.5 ft. BGS	Grab Soil	ND	0.15	ND	ND	ND
2-22-99 EW-3	East Sidewall 7.0 ft. BGS	Grab Soil	ND	ND	ND	ND	ND
2-22-99 WW-3	West Sidewall 6.0 ft. BGS	Grab Soil	ND	ND	ND	ND	ND
2-22-99 SW-3	South Sidewall 7.0 ft. BGS	Grab Soil	ND	ND	ND	ND	ND
2-26-99 SP-1-SF	Stockpile 1.0 ft. BGS	Grab Soil	ND	ND	ND	ND	ND
2-26-99 SP-2-N	Stockpile 1.0 ft. BGS	Grab Soil	30	ND	ND	ND	ND

Table 2 - *Continued*

Date Sample No.	Location[1]	Sample Type Matrix	Analyte				
			TPH-G[2] (mg/kg)	Benzene (mg/kg) (B)	Toluene (mg/kg) (T)	Ethylbenzene (mg/kg) (E)	Xylenes (mg/kg) (X)
2-26-99 SP-3-SF	Stockpile 1.0 ft. BGS	Grab Soil	ND	ND	ND	ND	ND

Notes: [1] Sample locations are characterized by area from which the sample was obtained and the depth (in feet) below ground surface.

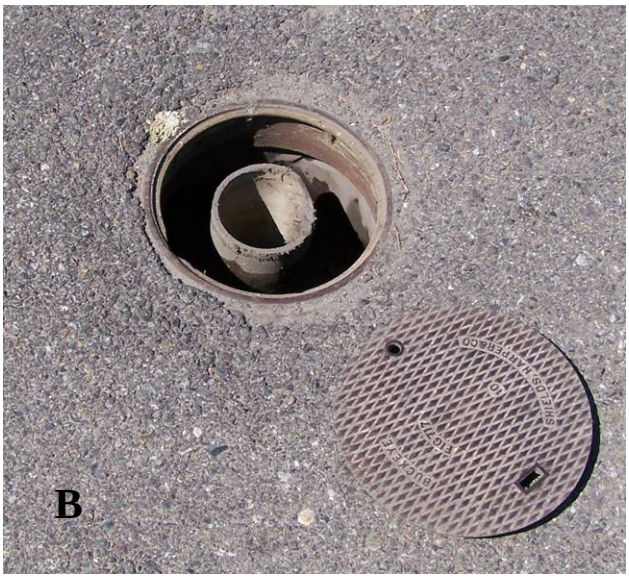
[2] Soil sample results are reported as a dry weight basis in milligrams per kilogram (mg/kg), which is equivalent to parts per million (ppm).
ND indicates compound not detected at the listed method detection limit.
Method Detection Limits: Gasoline (10.0 mg/kg), Benzene (0.05 mg/kg), Toluene (0.05 mg/kg), Ethylbenzene (0.05 mg/kg), and Xylenes (0.05 mg/kg).
Model Toxics Control Act (MTCA) Method A Cleanup Level for: TPH as Gasoline (100.0 mg/kg), Benzene (0.5 mg/kg), Toluene (40.0 mg/kg), Ethylbenzene (20.0 mg/kg), and Xylenes (20.0 mg/kg).
Soil Samples analyzed by NWTPH-G and EPA Method 8020.
Samples shown on Figures 2 and 3, Appendix 1.

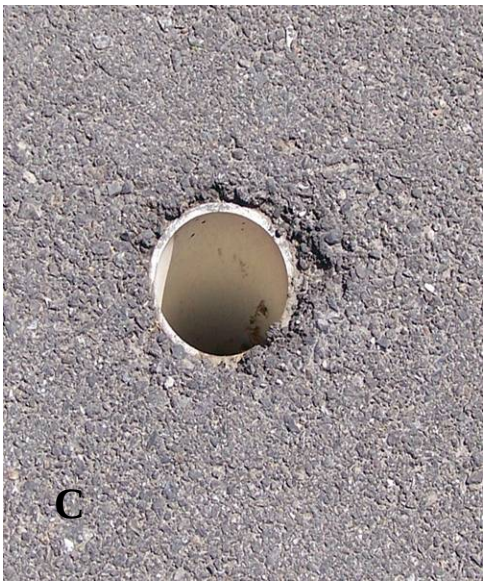
Source (2)

Appendix III: Photos

Photo 1. Aerial View of Leo's Line Up in Richland, Washington.

Photo 2. Aerial View of Leo's Line Up Showing the Approximate Locations of the Underground Storage Tanks (Rectangles) and Ground Water Monitoring Wells (Arrows).





Photos of Leo's Line Up Taken During Site Visit on May 24, 2010. Plate A: Looking South West. Plate B: Ground Water Monitoring Well with Cap. Plate C: Ground Water Monitoring Well without Cap.