

# **CLEANUP ACTION REPORT**

# FORMER TEXACO SERVICE STATION 501 TUKWILA PARKWAY TUKWILA, WASHINGTON

SAP CODE 121333 INCIDENT NO. 89874961 ECOLOGY F/S NO. 35955167 VCP NO. NW2090

# **Prepared For:**

Shell Oil Products US 20945 S. Wilmington Ave Carson, CA 90810

JULY 11, 2012 Ref. no. 241838 (12)

This report is printed on recycled paper.

# Prepared by: Conestoga-Rovers & Associates

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Christina McClelland

Brian Peters, LG

BRIAN C. PETERS

**JULY 10, 2012** 

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#### 1.0 <u>INTRODUCTION</u>

#### 1.1 <u>SITE INFORMATION</u>

Site Name: Former Texaco Service Station

Site Address: 501 Tukwila Parkway, Tukwila, WA

Voluntary Cleanup Program Number: NW2090

Project Consultant: Conestoga-Rovers & Associates

Project Consultant Contact Information: Brian Peters, LG

20818 44<sup>th</sup> Avenue West, Suite 190 Lynnwood, Washington, 98036

Office - 425.563.6500 Direct - 425.563.6506

Current Owner/Operator: John C. Radovich Development Company,

LLC

#### 1.2 <u>PURPOSE</u>

Conestoga-Rovers & Associates (CRA) prepared this Cleanup Action (CA) report on behalf of Equilon Enterprises LLC dba Shell Oil Products US (SOPUS) for the former Texaco service station located at 501 Tukwila Parkway, Tukwila, Washington, at the southeast corner of Tukwila Parkway and Andover Park East (Property; Figure 1).

This CA report was prepared following the February 29, 2012 groundwater sampling event, which was the final confirmation monitoring event as requested by the Washington State Department of Ecology (Ecology) in a meeting on January 20, 2012. Monitored natural attenuation (MNA) was the selected and approved cleanup remedy, as documented in CRA's *Cleanup Action Report* dated November 8, 2010 (2010 CAR). Ecology issued an opinion letter dated March 1, 2011 indicating that the selected remedy met the substantive requirements of the Model Toxics Control Act (MTCA) and that further action would not likely be required following execution of the cleanup action. The Ecology opinion letter is included as Appendix A. This CA report along with the 2010 CAR demonstrates that all the requirements under Washington Administrative Code (WAC) 173-340 have been met for a No Further Action (NFA) determination based on Site conditions and all environmental investigation findings associated with the petroleum hydrocarbon release at the Property.

#### 1.3 SITE DESCRIPTION AND BACKGROUND

MTCA (WAC 173-340) defines a "Site" as all affected areas from the petroleum release associated with the Property and potentially impacted adjacent parcels. The Site boundary is presented on Figure 2. The Property is in an area zoned for commercial use as part of the Tukwila Urban Center.

According to aerial photographs, the Property appears to have been agricultural in use prior to development sometime before 1956 until the early 1960's. Aerial photographs indicate the presence of a service station at the Property from approximately 1965 until station decommissioning in 2007. According to Environmental Data Resources (EDR) reports, the Property operated as a Texaco service station with auto repair from approximately 1976 until June 1998. In June 1998, ownership of the Property was transferred from Texaco Refining & Marketing, Inc. (TRMI) to Equilon. In June 2007, ownership was transferred to the current Property owner, the John C. Radovich Development Company, LLC. The Property is currently a vacant lot, awaiting development.

In October 1989, the removal and replacement of underground storage tanks (USTs) at the Property facilitated soil sampling to assess subsurface conditions in the vicinity of the gasoline USTs, the waste oil UST, and the heating oil UST (Figure 2). Soil samples were collected from the excavation for the former gasoline UST pit and the waste oil and heating oil UST pits. Laboratory analysis of soil samples indicated concentrations of petroleum hydrocarbons exceeding MTCA Method A cleanup levels. Upon removal, visual inspection of the waste oil UST indicated holes on the tank, up to 1/8 inch in diameter, and the heating oil UST was severely pitted.

A petroleum release impacting soil and groundwater was reported to Ecology on October 19, 1989, and the Site was listed with Ecology's leaking underground storage tank (LUST) program (ID #1599). The site was entered into Ecology's Voluntary Cleanup Program (VCP) in 2008 and issued site number NW2090. The current status of the Site with Ecology is "Monitoring" for soil and groundwater as of May 2008.

#### 2.0 <u>SITE CHARACTERIZATION</u>

#### 2.1 RESULTS OF REMEDIAL INVESTIGATION

Environmental site investigation activities detailed in the 2010 CAR provided sufficient characterization of the Site to establish cleanup levels. Figure 3 presents the locations of

all soil samples collected at the Site. Table 1 presents the date of collection, sample depths, and analytical results for all soil samples. Appendix B provides a chronological summary of environmental activities performed at the Site. Based on the conclusions made in the 2010 CAR, there are no constituents of concern (COCs) remaining in soil at the Site and no further management of soil is necessary. The COCs identified in the 2010 CAR for groundwater were limited to total petroleum hydrocarbons (TPH) as gasoline (TPHg), TPH as diesel (TPHd) and benzene. At the time of the 2010 CAR, the only remaining well exceeding MTCA Method A cleanup levels for Site COCs was well MW-9. Additional confirmation monitoring was required at well MW-9 for Site COCs. Historical groundwater monitoring results are presented in Table 2.

#### 2.2 TERRESTRIAL ECOLOGICAL EVALUATION

According to Ecology's opinion letter, the Site does not qualify for an exclusion from further terrestrial ecological evaluation (TEE) based on a lack of contamination within the upper 15 feet below ground surface (bgs), since impacted soil was present prior to remediation. Therefore, a site-specific TEE has been conducted. Residual concentrations of TPHg in soil from 0 to 15 feet bgs beneath the Property are below the reference value of 5,000 milligrams per kilogram (mg/kg) for wildlife exposure. The Property meets the definition of "commercial", as defined in WAC 173-340-7490(3); therefore, plants and soil biota do not need to be considered. Residual soil concentrations beneath the Site are protective of wildlife, and no additional evaluation is necessary.

#### 2.2 UPDATED SITE CONCEPTUAL MODEL

Petroleum was released into soil at the service station sometime prior to 1989. It is not certain when or how the release occurred but based on environmental investigations the release likely occurred in association with the former gasoline and waste oil USTs and the dispenser islands and/or product conveyance system.

The Site has been covered with gravel since excavation activities were completed in 2007 and, therefore, has potentially been exposed to infiltrating surface water. Subsurface soils at the Site mainly consist of fill to a depth of approximately 22 feet bgs. Subsurface soils in areas of the Property not excavated consist of interbedded layers of sand, silt, and clay with some gravel. Historically, impacted soils came into contact with groundwater at the Site. Groundwater is present at the Site at an average depth of approximately 16 to 19 feet bgs and flows predominantly to the east toward Green River located approximately 180 feet east of the Property.

A remedial excavation was conducted at the Site in 2007 that included the removal of approximately 10,500 tons of petroleum impacted soil from the Site to a depth of 22 feet bgs. Based on removal of the source areas, no impacted soil remains in the vadose zone. A localized area of impacted soil within the saturated zone is present north of the former dispensers at a depth of approximately 22 feet bgs and was likely more representative of groundwater quality in this area at the time of sampling. Continued groundwater monitoring at well MW-14 through September 2011 can be used to empirically demonstrate that the soil impacted with benzene in this location is no longer contributing to adverse groundwater quality.

Petroleum impacted groundwater is defined at the Site and was limited to the area north of the former first generation gasoline USTs and to the west of monitoring well MW-9 located on the west side of Christensen Road. The downgradient edge of the plume is defined on the east side of Christensen Road by monitoring wells MW-11 and MW-12. Current groundwater monitoring activities indicate that there are no additional exceedances of groundwater cleanup levels at the Site. No drinking water wells are installed within the regional aquifer within ½ mile of the Property.

The Site qualifies for a TEE exclusion indicating that there is no risk to ecological receptors based on the historical release.

Based on current soil and groundwater quality at the Site and current use of the Property, soil vapor concentrations of petroleum hydrocarbon compounds are not likely to be a potential risk to human health. It is anticipated that the commercial use of the Property will continue in the future.

#### 2.3 <u>COMPLIANCE MONITORING RESULTS</u>

Groundwater from all Site monitoring wells have been below MTCA Method A cleanup levels for at least six consecutive quarters. In September 2011, the groundwater sample from well MW-9 reportedly contained a TPHd concentration of 541 micrograms per liter ( $\mu$ g/l), however, a review of the chromatogram for the sample resulted in the determination that the TPH in the sample was weathered gasoline and not diesel. A letter from Dr. Ileana Rhodes with Shell Global Solutions describing her evaluation of the sample data is included as Appendix C. Since the TPH remaining is indicative of gasoline range, the total TPH should compare to the MTCA Method A cleanup level of 1,000  $\mu$ g/l in the gasoline range (no detectable benzene, toluene, ethylbenzene, or xylenes). The total TPH as gasoline concentration was 832  $\mu$ g/l and therefore below the MTCA Method A cleanup level.

Based on the results of confirmation monitoring, no additional management of groundwater is necessary.

#### 3.0 CLEANUP STANDARDS - SOIL AND GROUNDWATER

In accordance with MTCA, development of cleanup levels includes identifying potential exposure pathways for humans and environmental impacts based on the planned land use. The Property is currently zoned for retail use, and future zoning is not anticipated to change upon Property redevelopment as a retail strip mall. As noted previously, the Property is currently a vacant lot.

#### 3.1 GROUNDWATER CLEANUP LEVELS

The Site is located in the Duwamish-Green River Watershed. Shallow groundwater in the vicinity of the Site is not classified for drinking water beneficial use for the City of Tukwila, but could potentially be classified for future drinking water use. Therefore, MTCA Method A groundwater cleanup levels for COCs at the Site will be used. The point of compliance for this Site is defined as the point at which the groundwater cleanup level must be attained; thus, the point of compliance is the entire Site. MTCA Method A cleanup levels are presented on Table 2.

Green River is located approximately 180 feet east of the Site. Site groundwater is likely hydraulically connected to the river. Monitoring wells MW-11 and MW-12, located downgradient of the release and between the release and Green River, will be used as points of compliance to demonstrate protection of surface water. No COCs are present above Site-specific cleanup levels in these monitoring wells.

The Site-specific cleanup levels for groundwater protective of surface water for site COCs are presented on Table 2. The cleanup level for benzene, toluene, and ethylbenzene, developed for surface water protective of for human health, was calculated using the most stringent Cleanup Level Risk Calculations (CLARC) value for surface water. There are no available surface water cleanup levels for TPHg, TPHd, or TPHo, and MTCA Method A cleanup levels are protective of human health but are not recognized as protective of aquatic organisms, therefore, the TPH cleanup levels at the surface water points of compliance will be set at the practical quantitation limit identified by Ecology as  $250 \,\mu\text{g}/1$ .

#### 3.2 SOIL CLEANUP LEVELS

Based on the classification of groundwater in this area, MTCA Method A soil cleanup levels will be used for COCs at the Site. The point of compliance for soil cleanup levels based on protection of groundwater is all soil throughout the Site.

#### 4.0 AREAS REQUIRING FUTURE MANAGEMENT AND CONCLUSIONS

#### 4.1 CONSTITUENTS OF CONCERN

There are no COCs remaining in soil or groundwater at the Site.

#### 4.2 SOIL - VERTICAL AND LATERAL

All petroleum impacted soil associated with the release at this Site has been removed from the Site. Soil collected at 21 feet bgs from CS27-21 during excavation activities in 2007 contained benzene exceeding the MTCA Method A cleanup level. In 2008, benzene exceeding MTCA Method A cleanup levels was present in saturated soil from CB-3 at 21 feet bgs, advanced to confirm CS27-21.

Monitoring well MW-14 is located approximately 50 feet downgradient of CB-3 and groundwater in well MW-14 is no longer impacted by petroleum hydrocarbons exceeding MTCA Method A cleanup levels. Using conservative values of hydraulic conductivity (0.001 centimeters per second), porosity (0.35), and an average gradient of 0.008 feet per foot, the anticipated travel time for impacted groundwater to travel from the former CB-3 soil sample location to well MW-14 is approximately 2.1 years. Based on this information, it can be empirically demonstrated that the remaining impacted soil associated with the former release is no longer adversely affected water quality at the Site. No additional management of soil at the Site is necessary.

### 4.3 GROUNDWATER - VERTICAL AND LATERAL

Groundwater at the Site has been below the MTCA Method A cleanup levels for at least four consecutive quarters. No additional management of groundwater beneath the Site is necessary.

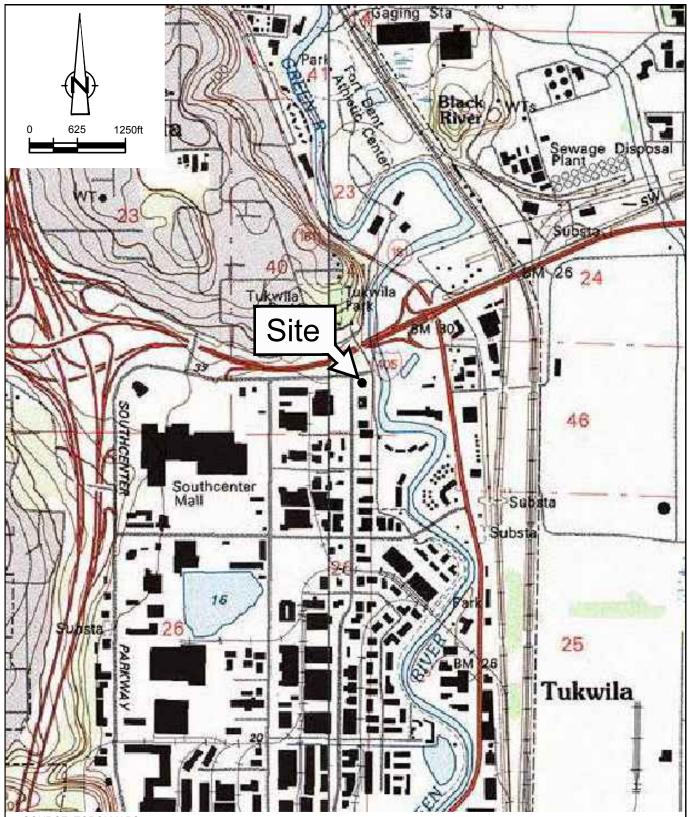
# 4.0 REQUEST FOR NO FURTHER ACTION

Groundwater concentrations have been below MTCA Method A cleanup levels for at least four consecutive quarters in all Site monitoring wells. Petroleum hydrocarbons have not been detected in monitoring wells MW-11 or MW-12, therefore groundwater is protective of surface water. All soil impacts have been previously removed with the exception of benzene in one location at a depth of 21 feet bgs, which has been demonstrated to be protective of groundwater quality. Previously impacted soil at the Site does not pose a risk to terrestrial or ecological receptors. Based on the information contained in this CA report along with the 2010 CAR, CRA requests a No Further Action determination for the Site.

#### 5.0 REFERENCES

CRA, Cleanup Action Report, November 2010.

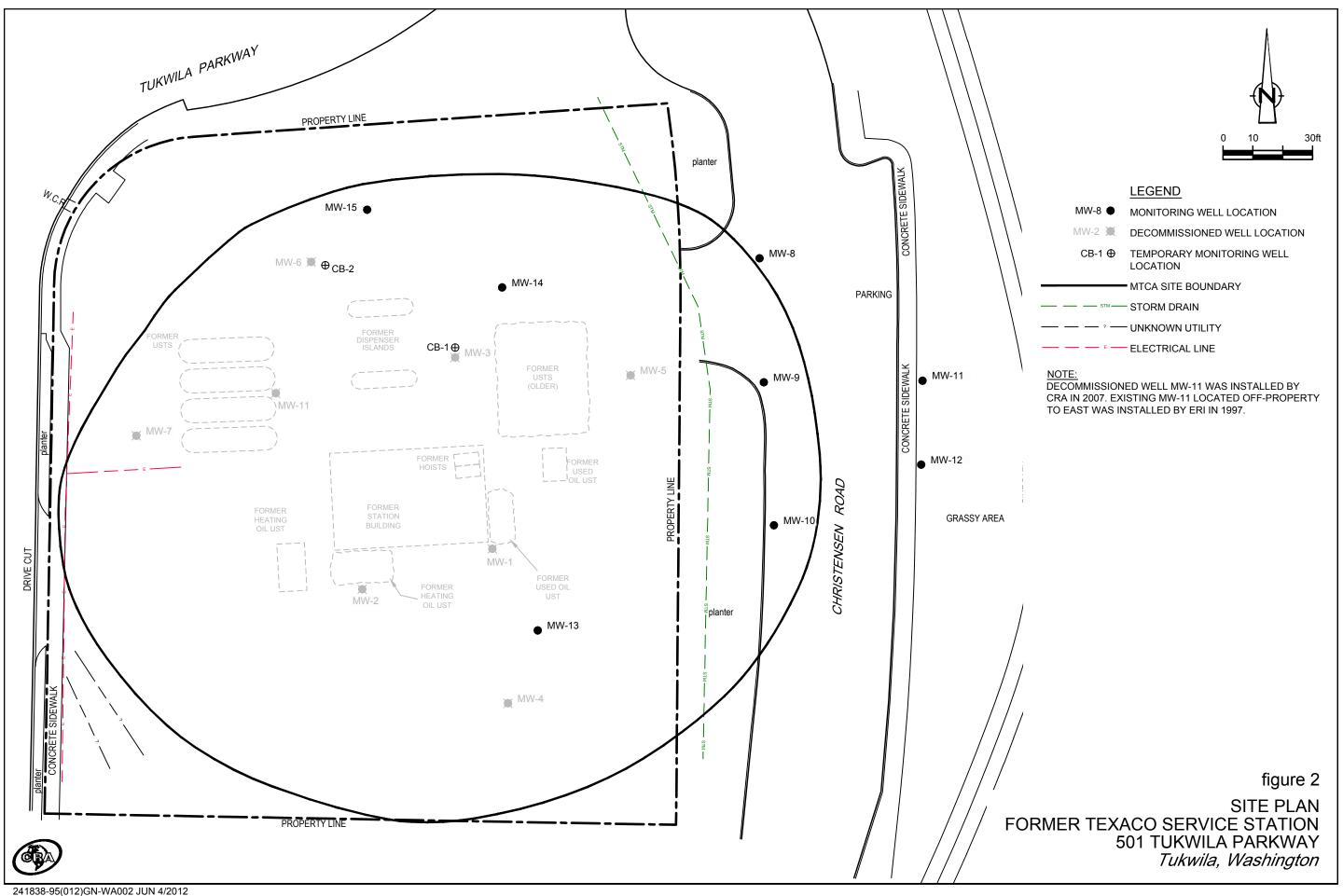
**FIGURES** 

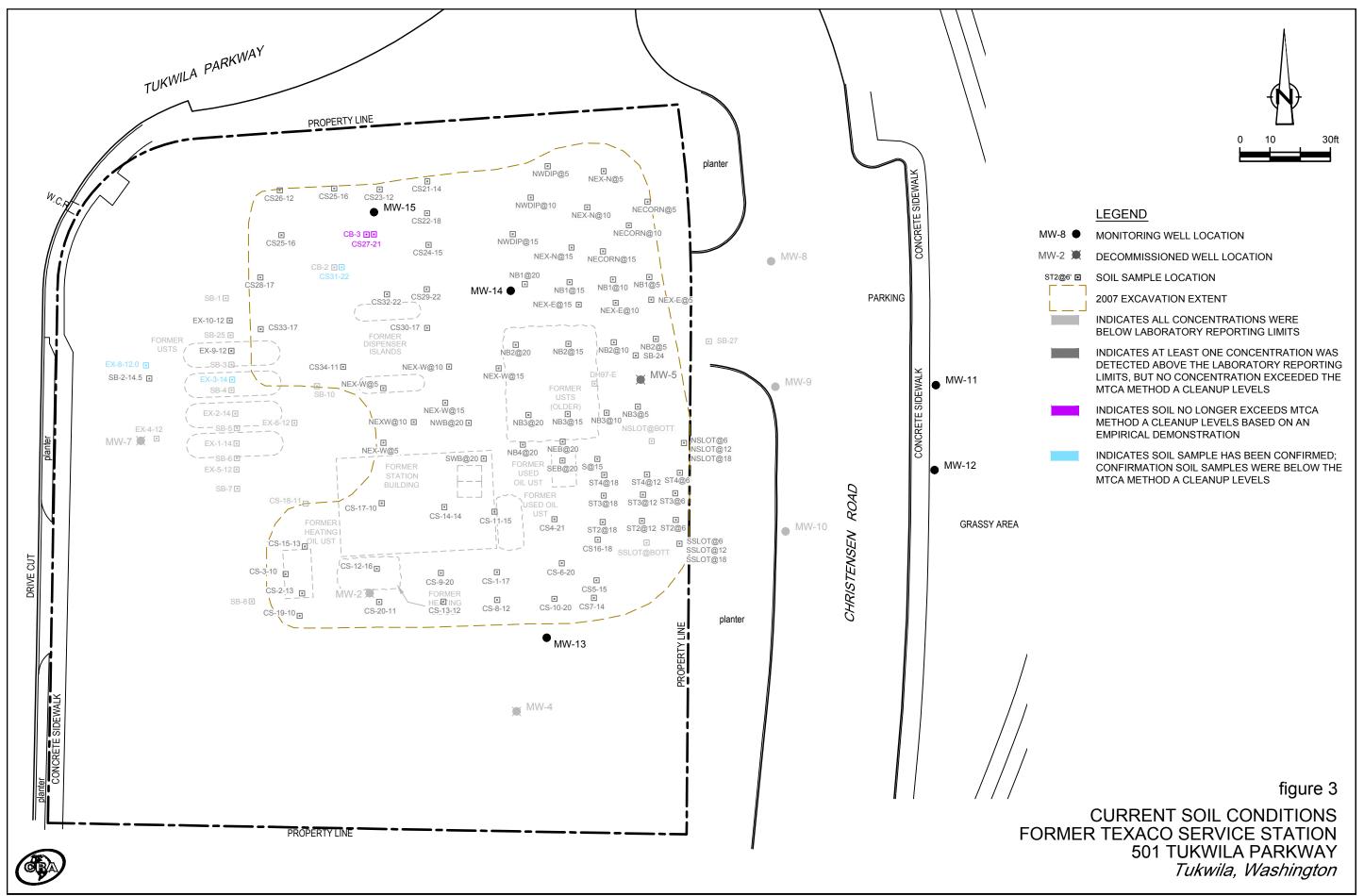


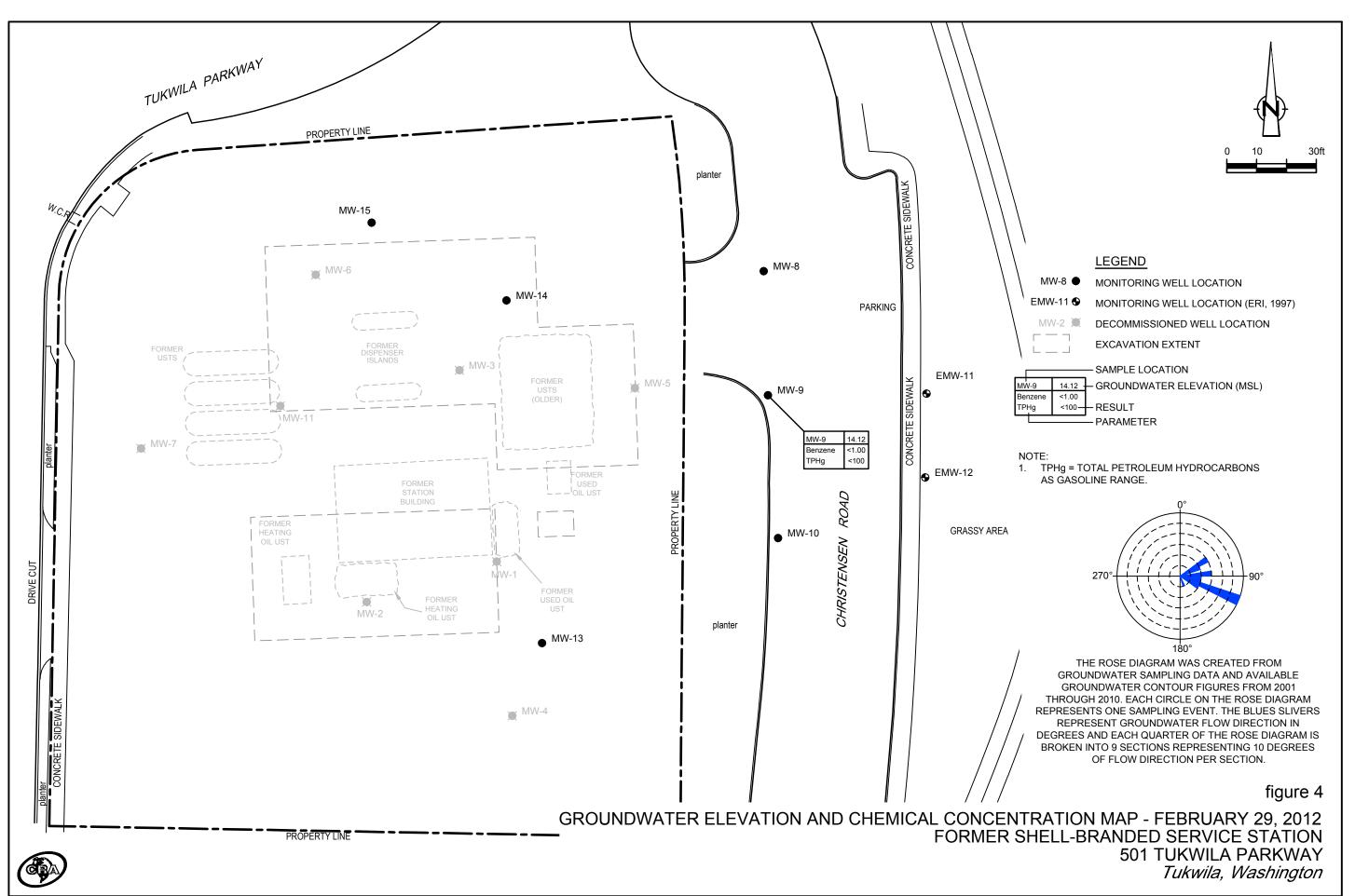
SOURCE: TOPO! MAPS figure 1

VICINTIY MAP FORMER TEXACO SERVICE STATION 501 TUKWILA PARKWAY Tukwila, Washington









**TABLES** 

					HYDROC	ARBONS				PI	RIMARY VO	cs			LEAD	HVOCs	j	PAHs	PCBs
Sample ID	Report Referenced	Sample Date	Depth	ТРН	ТРНд	TPHd	ТРНо	В	T	Е	X	MTBE	EDC	EDB	Total	Total	cPAHs a	Naphthalene	Total
MTCA Method A	Cleanup Level			N/A	30/100	2000	2000	0.03	7	6	9	0.1	N/A	0.005	250	N/A	0.1	5	0.1
	,		ft bgs	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)							
Gasoline UST Excavation			, ,	. 0 0	. 0 0		. 0 0			. 0 0					. 0 0			. 5 5	
DH97-N	GTI 1990	9/6/1990		12				< 0.050	< 0.050	< 0.050	< 0.050								
DH97-S	GTI 1990	9/6/1990		4				< 0.050	< 0.050	<0.050	< 0.050								
DH97-W	GTI 1990	9/6/1990		19				< 0.050	< 0.050	<0.050	< 0.058								
DH97-E	GTI 1990	9/6/1990		24				< 0.050	<0.050	<0.050	< 0.050								
DH97-B	GTI 1990	9/6/1990		8				0.18	<0.050	<0.050	0.08								
DH912-NE	GTI 1990	9/6/1990		8				0.018	0.059	0.065	0.204								
DH912-SE	GTI 1990	9/6/1990		<1				0.009	0.004	0.002	0.082								
DH912-B	GTI 1990	9/6/1990		<1				0.003	0.003	0.002	0.011								
Waste Oil/Heating Oil UST	0111770	3,0,2330						0.000	0.000	0.002	0.011								
WO98-B	GTI 1990	9/6/1990	12.0	18,100												<0.2**			2.2
WO98-S (Comp)	GTI 1990	9/6/1990		12,500												<b>~0.2</b>			2.2
HO98-B	GTI 1990	9/6/1990	12.0	4,100															_
HO98-S (Comp)	GTI 1990	9/6/1990		248															_
WO	GTI 1990	9/8/1990	12.0	731															
НО	GTI 1990	9/8/1990	12.0	8,210															
MW-1C	GTI 1990	9/10/1990	15.5	4,200															
MW-1D	GTI 1990	9/10/1990	21.0	12															
MW-2C	GTI 1990	9/10/1990	15.5	<5															
MW-2D	GTI 1990	9/10/1990	21.0	<10															
		-,,																	
MW3-A	GTI 1994	3/26/1993	5.0		<10	<10	<100	< 0.005	< 0.005	< 0.005	< 0.015								
MW-3C	GTI 1994	3/26/1993	15.0		<10	<10	<100	< 0.005	< 0.005	< 0.005	< 0.015								
MW4-A	GTI 1994	3/26/1993	5.0		<10	<10	<100	< 0.005	< 0.005	< 0.005	< 0.015								
MW4-C	GTI 1994	3/26/1993	15.0		<10	<10	<100	< 0.005	< 0.005	< 0.005	< 0.015								
MW-5-10	EMCON 1996	10/12/1995	10.0		2.4	<10	<25	< 0.050	< 0.050	< 0.050	< 0.10								
MW-5-15	EMCON 1996	10/12/1995	15.0		4.6	<10	<25	< 0.050	< 0.050	<0.050	<0.10				ND				
MW-6-11	EMCON 1996	10/12/1995	11.0		<1.0	<10	<25	<0.050	< 0.050	<0.050	<0.10								
MW-6-16	EMCON 1996	10/12/1995	16.0		<1.0	65	610	< 0.050	< 0.050	<0.050	<0.10				16				
MW-7-5	EMCON 1996	10/12/1995	5.0		<1.0	<10	<25	< 0.050	< 0.050	< 0.050	< 0.10								
MW-7-15	EMCON 1996	10/12/1995	15.0		<1.0	<10	<25	< 0.050	< 0.050	< 0.050	< 0.10				ND				
		, ,																	
S-B8-9	ERI FEB 1997	11/5/1996	9.0		<5	<10	<25	< 0.05	< 0.05	< 0.05	< 0.1								
S-B9-10	ERI FEB 1997	11/5/1996	10.0		<5	<10	<25	< 0.05	< 0.05	< 0.05	< 0.1								
S-B10-10	ERI FEB 1997	11/5/1996	10.0		<5	<10	<25	< 0.05	< 0.05	< 0.05	< 0.1								
B11-S-13	ERI DEC 21997	9/10/1997	13.0		<5	<10	<25	< 0.05	< 0.05	< 0.05	< 0.1								
B11-S-16	ERI DEC 21997	9/10/1997	16.0		<5	<10	<25	< 0.05	< 0.05	<0.05	<0.1								
B12-S-11.5	ERI DEC 21997	9/10/1997	11.5		<5	<10	<25	< 0.05	< 0.05	< 0.05	<0.1								
B12-S-16.5	ERI DEC 21997	9/10/1997	16.5		<5	<10	<25	<0.05	<0.05	< 0.05	<0.1								
B13-S-6	ERI DEC 21997	9/10/1997	6.0		35.5	51.5	70.7	<0.05	<0.05	<0.05	0.156							-	
B13-S-14	ERI DEC 21997	9/10/1997	14.0		23	14.6	<25	<0.05	0.0582	0.0630	<0.1								
B13-S-15.5	ERI DEC 21997	9/10/1997	15.5		5.25	14.7	<25	<0.05	< 0.05	< 0.05	<0.1								
B14-S-12	ERI DEC 21997	9/10/1997	12.0		99.5	18.8	88.9	0.0825	0.122	0.197	0.313						0.184	0.164	
B14-S-15.5	ERI DEC 21997	9/10/1997	15.5		10,400	458	<25	<2.50	10.6	89.7	102						0.053	44.3	
B15-S-10.5	ERI DEC 21997	9/10/1997	10.5		28.9	15.6	25.3	< 0.05	0.0556	<0.05	<0.1								
B15-S-15.5	ERI DEC 21997	9/10/1997	15.5		9,120	564	<25	<10	13.2	114	336								

					HYDROC	ARBONS				PR	IMARY VO	CS			LEAD	HVOCs	I	PAHs	PCBs
Sample ID	Report Referenced	Sample Date	Depth	ТРН	TPHg	TPHd	ТРНо	В	T	Е	X	MTBE	EDC	EDB	Total	Total	cPAHs a	Naphthalene	Total
MTCA Method A		•	•	N/A	30/100	2000	2000	0.03	7	6	9	0.1	N/A	0.005	250	N/A	0.1	, 5	0.1
			ft bgs	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Gasoline and Diesel USTs			1000	(	(8/1.8/	(	(	(	(	(	(	(	(	(8/1.8/	(	(	(	(	(
EX-1-14.0	GeoEngineers 2006	7/5/2006	14.0		<8.07	<12.6	<31.6	< 0.0323	< 0.0807	< 0.0807	< 0.161								
EX-2-14.0	GeoEngineers 2006	7/5/2006	14.0		<7.23	<12.5	<31.2	< 0.0289	< 0.0732	< 0.0732	< 0.145								
EX-3-14.0*	GeoEngineers 2006	7/5/2006	14.0		<9.30	<12.6	<31.5	0.184	0.12	0.714	0.551	< 0.000785	< 0.000982	< 0.00393	4.54			< 0.0127	
EX-4-12.0	GeoEngineers 2006	7/5/2006	12.0		<9.37	<14.1	<35.3	< 0.0375	< 0.0937	< 0.0937	< 0.187								
EX-5-12.0	GeoEngineers 2006	7/5/2006	12.0		<10.4	<14.1	<35.3	< 0.0414	< 0.104	< 0.104	< 0.207								
EX-6-12.0	GeoEngineers 2006	7/5/2006	12.0		<8.89	<13.8	<34.6	< 0.0356	< 0.0889	< 0.0889	< 0.178								
EX-7-12.0	GeoEngineers 2006	7/10/2006	12.0		<10.0	<12.6	<31.5	< 0.0181	0.0302	0.0152	0.0298								
EX-8-12.0*	GeoEngineers 2006	7/10/2006	12.0		<11.2	<13.5	<33.9	0.0344	0.0189	0.0123	< 0.0245								
EX-9-12.0	GeoEngineers 2006	7/10/2006	12.0		<7.51	<12.6	<31.6	0.0164	0.042	0.00766	0.0199						0.0113	< 0.0125	
EX-10-12.0	GeoEngineers 2006	7/10/2006	12.0		<9.59	<15.3	<38.4	< 0.0173	0.0132	0.0219	0.0361								
Dispensers																			
EX-11-3.0	GeoEngineers 2006	7/6/2006	3.0		< 5.63	<11.4	<28.4	< 0.0101	0.0224	0.0252	0.0665								
EX-12-3.0	GeoEngineers 2006	7/6/2006	3.0		<6.69	<12.1	<30.3	< 0.0120	< 0.0669	< 0.0669	< 0.134								
EX-13-3.0	GeoEngineers 2006	7/6/2006	3.0		< 5.81	<11.3	<28.2	< 0.0324	0.0118	0.0211	0.113								
EX-14-3.0	GeoEngineers 2006	7/6/2006	3.0		<6.52	<10.7	<26.8	0.0324	0.00726	0.0601	0.0971								
Hoists																			
EX-15-10.0	GeoEngineers 2006	7/6/2006	10.0		<9.78	<14.3	<35.7	< 0.0117	0.0104	0.0197	0.0229								
EX-16-10.0	GeoEngineers 2006	7/6/2006	10.0		73.0	33.1	54.6	< 0.0176	0.0156	0.0154	0.0479								
Heating Oil UST																			
EX-17-9.0	GeoEngineers 2006	7/6/2006	9.0		<8.72	<13.6	<34.0	< 0.0252	0.024	0.0435	0.13						0.0123	< 0.0136	ND
EX-18-7.0	GeoEngineers 2006	7/6/2006	7.0		<8.88	<13.0	<32.5	< 0.0157	0.0136	0.0295	0.0216								
EX-19-7.0	GeoEngineers 2006	7/6/2006	7.0		<9.35	<12.4	<31.1	< 0.0160	< 0.00533	0.0103	< 0.0195								
EX-20-7.0	GeoEngineers 2006	7/6/2006	7.0		<9.19	<13.6	<34.0	< 0.0168	0.0225	0.0603	0.0856								
EX-21-7.0	GeoEngineers 2006	7/6/2006	7.0		<10.4	<15.4	<38.5	< 0.0165	0.211	0.0175	0.032								
Waste Oil UST																			
EX-22-8.0	GeoEngineers 2006	7/6/2006	8.0		<7.53	<12.4	<30.9	< 0.0136	< 0.00452	0.0111	< 0.0166	< 0.000785	ND	< 0.00279	4.94	ND	0.0135	< 0.0126	ND
EX-23-6.0	GeoEngineers 2006	7/6/2006	6.0		<8.21	<13.5	<33.8	< 0.0148	0.00813	0.00747	< 0.0181								
EX-24-6.0	GeoEngineers 2006	7/6/2006	6.0		<8.63	<13.0	<32.6	<0.0155	0.00622	0.017	< 0.0190								
EX-25-6.0	GeoEngineers 2006	7/6/2006	6.0		<7.14	<13.0	<32.6	<0.0128	< 0.00428	0.00757	< 0.0157								
EX-26-6.0	GeoEngineers 2006	7/6/2006	6.0		<6.91	<12.7	<31.7	< 0.0124	0.0157	0.0151	0.0506								
SB-1 @ 9.01	CRA 2007	12/18/2006	9.0		<5.39	<14.1	<35.2	< 0.00155	< 0.00155	< 0.00414	< 0.0103	< 0.00103	< 0.00129	< 0.00517	5.15		< 0.0144	< 0.0144	
SB-2 @ 14.5'	CRA 2007	12/18/2006	14.5		<5.87	<13.6	<33.9	< 0.00133	< 0.00133	< 0.00414	< 0.0103	< 0.00103	< 0.00123	<0.00517	4.49		< 0.0144	< 0.0144	
SB-3 @ 14.5'	CRA 2007	12/18/2006	14.5		<5.05	<12.9	<32.2	< 0.00185	< 0.00185	< 0.00493	< 0.0123	< 0.00123	< 0.00154	< 0.00616	3.26		< 0.0129	< 0.0129	
SB-4 @ 14.0'	CRA 2007	12/18/2006	14.0		<5.24	<13.1	<32.8	< 0.00183	< 0.00183	< 0.00489	< 0.0122	< 0.00122	< 0.00153	< 0.00611	2.32		< 0.0132	< 0.0132	
SB-5 @ 13.5'	CRA 2007	12/18/2006	13.5		<5.07	<12.8	<32.1	< 0.00180	< 0.00180	< 0.00479	< 0.0120	< 0.00120	< 0.00150	< 0.00599	2.73		< 0.0129	< 0.0129	
SB-6 @ 14.2'	CRA 2007	12/18/2006	14.2		<5.21	<13.0	<32.4	< 0.00198	< 0.00198	< 0.00529	< 0.0132	< 0.00132	< 0.00165	< 0.00661	2.01		< 0.0128	< 0.0128	
SB-7 @ 14.2	CRA 2007	12/18/2006	14.2		<6.50	<14.2	<35.6	< 0.00262	< 0.00262	< 0.00699	< 0.0175	< 0.00175	< 0.00218	< 0.00874	4.50		< 0.0143	< 0.0143	
SB-8 @ 14'	CRA 2007	12/19/2006	14.0		<5.53	<13.7	<34.2	< 0.00185	< 0.00185	< 0.00493	< 0.0123	< 0.00123	< 0.00154	< 0.00616	2.95		< 0.0136	< 0.0136	
SB-9 @ 13.1'	CRA 2007	12/19/2006	13.1		<6.53	<13.1	<32.8	< 0.00222	< 0.00222	< 0.00592	< 0.0148	< 0.00148	< 0.00185	< 0.00739	3.04		< 0.0132	< 0.0132	
SB-10 @ 18.5'	CRA 2007	12/19/2006	18.5		< 5.98	<14.0	<35.0	< 0.00215	< 0.00215	< 0.00573	< 0.0143	< 0.00143	< 0.00179	< 0.00716	2.69		< 0.0141	< 0.0141	
SB-11 @ 12.95'	CRA 2007	12/20/2006	13.0		1,920	305	<35.6	< 0.582	< 0.582	19.1	9.61	<2.91	< 0.582	< 0.582	4.60		< 0.715	31.2	
SB-12 @ 13.31	CRA 2007	12/20/2006	13.3		<6.06	<13.4	<33.6	< 0.00206	< 0.00206	< 0.00549	< 0.0137	< 0.00137	< 0.00171	<0.00686	3.20		< 0.0134	< 0.0134	
SB-13 @ 14.35'	CRA 2007	12/19/2006	14.4		230	12,100	<1,610	< 0.106	< 0.106	< 0.106	< 0.317	< 0.528	< 0.106	< 0.106	2.30		<2.59	21.9**	
SB-14 @ 14.7'	CRA 2007	12/19/2006	14.7		<5.54	<13.5	<33.7	< 0.00208	< 0.00208	< 0.00555	< 0.0139	< 0.00139	< 0.00173	< 0.00694	4.55		< 0.0136	< 0.0136	
SB-15 @ 18.081	CRA 2007	12/19/2006	18.1		<5.52	<12.8	<32.1	< 0.00194	< 0.00194	< 0.00518	< 0.0130	< 0.00130	< 0.00162	< 0.00648	1.58		< 0.0129	< 0.0129	
SB-16 @ 14'	CRA 2007	12/19/2006	14.0		<4.73	<14.1	<35.3	< 0.00207	< 0.00207	< 0.00553	< 0.0138	< 0.00138	< 0.00173	< 0.00691	3.76		< 0.0140	< 0.0140	
SB-17 @ 14'	CRA 2007	12/19/2006	14.0		8.32	142	628	< 0.00257	< 0.00257	< 0.00684	< 0.0171	< 0.00171	< 0.00214	< 0.00855	32.5		0.012	< 0.0146	< 0.0741
SB-18 @ 17.6'	CRA 2007	12/20/2006	17.6		2,240	138	<34.1	<2.20	<2.20	6.72	<6.61	<11.0	<2.20	<2.20	2.75		< 0.0136	15.1	
SB-19 @ 17.81	CRA 2007	12/20/2006	17.8		<7.47	<17.2	<42.9	0.0125	< 0.00257	< 0.00685	< 0.0171	< 0.00171	< 0.00214	< 0.00857	2.61		< 0.0171	< 0.0171	
SB-20 @ 15'	CRA 2007	12/19/2006	15.0		<5.39	<13.0	<32.4	< 0.00136	< 0.00136	< 0.00363	< 0.00907	< 0.000907	< 0.00113	< 0.00453	2.62		< 0.0130	< 0.0130	
SB-21 @ 14.5'	CRA 2007	12/19/2006	14.5		<5.59	<12.6	<31.5	< 0.00192	< 0.00192	< 0.00512	< 0.0128	< 0.00128	< 0.00160	< 0.00640	1.72		< 0.0125	< 0.0125	< 0.0647
SB-22 @ 9.5'	CRA 2007	12/20/2006	9.5		<6.06	<13.7	<34.3	< 0.00237	< 0.00237	< 0.00633	< 0.0158	< 0.00158	<0.00198	< 0.00792	3.86		< 0.0137	< 0.0137	

Sample ID   Report Referenced   Sample Date   Depth   TPH   TPHg   TPHd   TPHo   B   T   E   X   MTBE   EDC   EDB	Total 250 (mg/kg) 1.84 2.57 3.34 2.68 3.26 2.64 5.75 2.60	Total N/A (mg/kg)	cPAHs a 0.1 (mg/kg) <0.0131 <0.0130 <0.0137 <0.0136	Naphthalene 5 (mg/kg) 0.753 <0.0130	Total 0.1 (mg/kg) 
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	(mg/kg) 1.84 2.57 3.34 2.68 3.26 2.64 5.75	(mg/kg)	(mg/kg) <0.0131 <0.0130 <0.0137	(mg/kg) 0.753 <0.0130	
SB-23 @ 17.8' CRA 2007 12/20/2006 17.8 19.9 <13.1 <32.7  0.0179 <0.00196 0.286 0.0382 0.00432 <0.00164 <0.00655	1.84 2.57 3.34 2.68 3.26 2.64 5.75	  	<0.0131 <0.0130 <0.0137	0.753 <0.0130	(mg/kg) 
SB-23 @ 17.8' CRA 2007 12/20/2006 17.8 19.9 <13.1 <32.7 0.0179 <0.00196 0.286 0.0382 0.00432 <0.00164 <0.00655 SB-24 @ 18' CRA 2007 12/20/2006 18.0 7.68 <12.9 <32.3 <0.00193 <0.00193 <0.00193 <0.00515 <0.0129 <0.00129 <0.00161 <0.00644 <sb-25 0.0116="" 0.0248="" 12="" 14.3="" 14.3'="" 16.8="" 18'="" 18.0="" 20="" 2006="" 2007="" 9.58="" <0.00121="" <0.00127="" <0.00134="" <0.00151="" <0.00159="" <0.00168="" <0.00181="" <0.00191="" <0.00201="" <0.00483="" <0.00537="" <0.00604="" <0.00636="" <0.00644="" <0.00649="" <0.00664="" <0.00664<="" <0.00671="" <0.0121="" <0.0134="" <13.2="" <13.5="" <13.8="" <32.9="" <33.8="" <34.6="" <5.57="" <5.67="" @="" cra="" sb-26="" td=""><td>1.84 2.57 3.34 2.68 3.26 2.64 5.75</td><td>  </td><td>&lt;0.0131 &lt;0.0130 &lt;0.0137</td><td>0.753 &lt;0.0130</td><td></td></sb-25>	1.84 2.57 3.34 2.68 3.26 2.64 5.75	  	<0.0131 <0.0130 <0.0137	0.753 <0.0130	
SB-25 @ 14.3'	3.34 2.68 3.26 2.64 5.75	 	< 0.0137		
SB-26@18'	2.68 3.26 2.64 5.75				
SB-27 @ 16.75' CRA 2007 12/20/2006 16.8 <5.57 <13.2 <32.9 <0.00181 <0.00181 <0.00483 <0.0121 <0.00121 <0.00121 <0.00151 <0.00604 SB-28 @ 16.5' CRA 2007 12/20/2006 16.5 <5.61 <13.3 <33.3 <0.00209 <0.00209 <0.00209 <0.00588 <0.0139 <0.00139 <0.00174 <0.00697 SB-28 @ 0.00121 SB-29 @ 17' CRA 2007 12/20/2006 3.0 <4.88 <12.1 <30.3 <0.00153 <0.00153 <0.00153 <0.00499 <0.0102 <0.00102 <0.00102 <0.00102 <0.00511 SB-29 @ 17' CRA 2007 12/20/2006 17.0 121 1,240 <32.2 <0.00180 <0.00180 <0.00180 <0.00480 <0.0120 <0.00102 <0.00102 <0.00150 <0.00600 South Excavation June through July 2007  CS1-17 CRA 2008 6/27/2007 17 <5.27 <16.6 <33.2 <0.0130 <0.0650 <0.0650 <0.0650 <0.195 CS2-13 CRA 2008 6/27/2007 13 <8.65 <18.2 <36.4 <0.0178 <0.0889 <0.0889 <0.089 <0.267	3.26 2.64 5.75		< 0.0136	< 0.0137	
SB-28 @ 16.5' CRA 2007 12/20/2006 16.5 <5.61 <13.3 <33.3 <0.00209 <0.00209 <0.00558 <0.0139 <0.00139 <0.00139 <0.00174 <0.00697 SB-28A @ 3' CRA 2007 12/20/2006 3.0 <4.88 <12.1 <30.3 <0.00153 <0.00153 <0.00153 <0.00409 <0.0102 <0.00102 <0.00102 <0.00112 <0.00511 SB-29 @ 17' CRA 2007 12/20/2006 17.0 121 1,240 <32.2 <0.00180 <0.00180 <0.00180 <0.00480 <0.0120 <0.00120 <0.00120 <0.00150 <0.00600 South Excavation June through July 2007 CS1-17 CRA 2008 6/27/2007 17 <5.27 <16.6 <33.2 <0.0130 <0.0650 <0.0650 <0.0650 <0.195 CS2-13 CRA 2008 6/27/2007 13 <8.65 <18.2 <36.4 <0.0178 <0.0889 <0.0889 <0.089 <0.267	2.64 5.75			< 0.0136	
SB-28A @ 3' CRA 2007 12/20/2006 3.0 < 4.88 <12.1 <30.3 <0.00153 <0.00153 <0.00409 <0.0102 <0.00102 <0.00102 <0.00112 <0.00112 SB-29 @ 17' CRA 2007 12/20/2006 17.0 121 1,240 <32.2 <0.00180 <0.00180 <0.00180 <0.00480 <0.0120 <0.00120 <0.00120 <0.00150 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.00600 <0.006	5.75		< 0.0133	< 0.0133	
SB-29@17' CRA 2007 12/20/2006 17.0 <b>121 1,240</b> <32.2 <0.00180 <0.00180 <0.00480 <0.0120 <0.00120 <0.00150 <0.00600 <b>South Excavation June through July 2007</b> CS1-17 CRA 2008 6/27/2007 17 <5.27 <16.6 <33.2 <0.0130 <0.0650 <0.0650 <0.0650 <0.195  CS2-13 CRA 2008 6/27/2007 13 <8.65 <18.2 <36.4 <0.0178 <0.0889 <0.0889 <0.089 <0.267			< 0.0133	< 0.0133	
South Excavation June through July 2007   CS1-17   CRA 2008   6/27/2007   17     <5.27   <16.6   <33.2   <0.0130   <0.0650   <0.0650   <0.195       <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <   <	2.60		0.105	< 0.0121	
CS1-17 CRA 2008 6/27/2007 17 <5.27 <16.6 <33.2 <0.0130 <0.0650 <0.0650 <0.195 CS2-13 CRA 2008 6/27/2007 13 <8.65 <18.2 <36.4 <0.0178 <0.0889 <0.0889 <0.267			0.009	0.0967	
CS2-13 CRA 2008 6/27/2007 13 <8.65 <18.2 <36.4 <0.0178 <0.0889 <0.0889 <0.267					
	4.04		0.010		
	7.26		0.011		
CS3-10 CRA 2008 6/27/2007 10 <6.47 <17.3 <34.7 <0.0148 <0.0742 <0.0742 <0.223	3.44		0.010		
CS4-21 CRA 2008 6/29/2007 21 <2.73 <13.8 <27.5 <0.000738 <0.00173 <0.00492	1.29		0.008		
CS5-15 CRA 2008 6/29/2007 15 <4.58 <18.1 <36.2 <0.00110 <0.00110 <0.00293 <0.00733	7.00		0.011		
CS6-20 CRA 2008 7/2/2007 20 <7.32 <11.4 <28.4 <0.00114 <0.00114 <0.00304 <0.00760	1.38		0.009		
CS7-14 CRA 2008 7/2/2007 14 <5.81 <15.1 <37.7 <0.000994 <0.000994 <0.00265 <0.00662	3.85		0.011		
CS8-12 CRA 2008 7/2/2007 12 <5.13 <11.8 <29.5 <0.000856 <0.000856 <0.00228 <0.00571	9.23		0.009		
CS9-20 CRA 2008 7/2/2007 20 <5.91 <13.5 <33.7 <0.000877 <0.000877 <0.00234 <0.00585	1.91		0.010		
CS10-20 CRA 2008 7/2/2007 20 <4.93 <13.2 <33.1 <0.00102 <0.00102 <0.00273 <0.00682	2.07		0.010		
CS11-15 CRA 2008 7/3/2007 15 <6.33 <14.1 <35.2 <0.00104 <0.00104 <0.00278 <0.00695	5.06		0.011		
CS12-16 CRA 2008 7/3/2007 16 <4.63 <13.2 <33.1 <0.00101 <0.00101 <0.00270 <0.00676	4.50		0.010		
CS13-12 CRA 2008 7/3/2007 12 <3.76 <13.9 <34.7 <0.00107 <0.00107 <0.00286 <0.00715	4.65		0.010		
CS14-14 CRA 2008 7/3/2007 14 <3.91 <12.8 <31.9 <0.000941 <0.000941 <0.00251 <0.00627	4.21		0.010		
CS15-13 CRA 2008 7/3/2007 13 <5.93 <14.7 <36.8 <0.00130 <0.00130 <0.00348 <0.00869	7.76		0.011		
CS16-18 CRA 2008 7/3/2007 18 <4.56 <13.3 <33.2 0.00116 <0.000868 <0.00231 <0.00579	5.47		0.010		
CS17-10 CRA 2008 7/5/2007 10 <5.89 <14.1 <35.2 <0.000741 <0.000741 <0.00191 <0.00194	2.73		0.011		
CS18-11 CRA 2008 7/5/2007 11 <4.30 <13.8 <34.6 <0.000627 <0.000627 <0.000167 <0.00418	7.37		0.011		
CS19-10 CRA 2008 7/5/2007 10 <3.92 <14.0 <34.9 <0.000743 <0.000743 <0.00198 <0.00496 CS20-11 CRA 2008 7/5/2007 11 <3.63 <13.9 <34.6 <0.000768 <0.000768 <0.000768 <0.00512	4.20 4.59		0.010 0.011		
CS20-11 CRA 2008 7/5/2007 11 <3.63 <13.9 <34.6 <0.000768 <0.000768 <0.00205 <0.00512 North Excavation July 2007	4.59		0.011		
CS21-14 CRA 2008 7/9/2007 14 <5.01 <13.1 <32.8 <0.0200 <0.100 <0.100 <0.300	4.36		0.010		
CS22-18 CRA 2008 7/9/2007 18 <-0.01 <12.9 <32.3 <0.0212 <0.106 <0.106 <0.319	4.09		0.010		
CS23-12 CRA 2008 7/9/2007 12 <2.68 <13.6 <34.1 <0.0107 <0.0537 <0.0537 <0.061	4.78		0.010		
CS24-15 CRA 2008 7/9/2007 15 <2.62 <14.1 <35.2 <0.0166 <0.0832 <0.0832 <0.050	5.58		0.010		
CS25-16 CRA 2008 7/10/2007 16 <2.04 <15.8 <39.4 <0.00818 <0.0409 <0.0409 <0.0123	2.68		0.010		
CS26-12 CRA 2008 7/10/2007 12 <3.10 <14.1 <35.2 <0.0124 <0.0620 <0.0620 <0.186	5.59		0.011		
CS27-21*** CRA 2008 7/10/2007 21 12.6 <17.0 <42.4 0.0405 <0.0964 1.82 <0.289	3.59		0.009		
CS28-17 CRA 2008 7/10/2007 17 <-2.99 <13.1 <32.8 <0.0119 <0.0597 <0.0597 <0.079	3.43		0.010		
CS29-22 CRA 2008 7/11/2007 22 <3.36 <13.9 <34.7 <0.0134 <0.0672 <0.0672 <0.202	1.93		0.011		
CS30-17 CRA 2008 7/11/2007 17 3.59 <11.9 <29.7 <0.0125 <0.0624 <0.0624 <0.187	2.93		0.009		
CS31-22* CRA 2008 7/11/2007 22 93.2 <13.9 <34.8 0.0734 0.116 6.52 1.74	2.73		0.010		
CS32-22 CRA 2008 7/11/2007 22 <4.12 <11.9 <29.6 <0.0165 <0.0823 <0.0823 <0.247	4.18		0.011		
CS33-17 CRA 2008 7/11/2007 17 <3.19 <13.7 <34.2 <0.0127 <0.0637 <0.0637 <0.0191	2.62		0.010		
CS34-11 CRA 2008 7/11/2007 11 <3.56 <13.0 <32.6 <0.0142 <0.0712 <0.0712 <0.213	3.40		0.010		
Northeast Excavation October 2007					
S@15' CRA 2008 10/15/2007 15 <5.37 <11.6 <29.0 <0.0215 <0.107 <0.107 <0.322	1.80		0.022		
NEX-E@5' CRA 2008 10/17/2007 5 <4.83 <12.4 <31.1 <0.0193 <0.0967 <0.0967 <0.290	5.93		0.009		
NEX-E@10' CRA 2008 10/17/2007 10 <5.36 <12.8 <31.9 <0.0214 <0.107 <0.107 <0.322	2.95		0.010		
NEX-E@15' CRA 2008 10/17/2007 15 <5.63 <13.3 <33.4 <0.0225 <0.113 <0.113 <0.338	5.06		0.010		
NEX-N@5' CRA 2008 10/17/2007 5 <4.09 <11.2 <28.0 <0.0163 <0.0817 <0.0817 <0.245	6.18		0.009		
NEX-N@10' CRA 2008 10/17/2007 10 <6.62 <13.4 <33.4 <0.0249 <0.125 <0.125 <0.374	3.46		0.010		
NEX-N@15' CRA 2008 10/17/2007 15 <6.03 <14.5 <36.2 <0.0241 <0.121 <0.121 <0.362	7.33		0.011		
NEX-W@5' CRA 2008 10/17/2007 5 <4.70 <12.6 <31.6 <0.0188 <0.0941 <0.0941 <0.282	6.23		0.010		
NEX-W@10' CRA 2008 10/17/2007 10 <5.98 <13.9 <34.8 <0.0239 <0.120 <0.120 <0.359	3.38		0.011		

					HYDROC	ARBONS				PR	RIMARY VO	CS			LEAD	HVOCs	1	PAHs	PCBs
Sample ID	Report Referenced	Sample Date	Depth	ТРН	ТРНд	TPHd	ТРНо	В	T	Е	X	MTBE	EDC	EDB	Total	Total	cPAHs a	Naphthalene	Total
MTCA Method A	Cleanup Level			N/A	30/100	2000	2000	0.03	7	6	9	0.1	N/A	0.005	250	N/A	0.1	5	0.1
	,		ft bgs	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
NEX-W@15'	CRA 2008	10/17/2007	15		<6.28	<14.6	<36.5	<0.0251	<0.126	<0.126	<0.377				5.70		0.011		
1121 11010	Northeast Excavatio	, ,			0.20	-11.0	00.0	0.0201	0.120	-0.120	.0.077				5.70		0.011		
NB1@5'	CRA 2008	12/11/2007	5		< 5.99	<13.8	<34.4	< 0.00112	< 0.0599	< 0.0599	< 0.120				7.12		0.010		
NB1@10'	CRA 2008	12/11/2007	10		<5.59	<13.5	<33.8	< 0.00128	< 0.0559	< 0.0559	<0.112				2.55		0.010		
NB1@15'	CRA 2008	12/11/2007	15		< 5.64	<13.5	<33.8	< 0.00115	< 0.0564	< 0.0564	< 0.113				5.45		0.010		
NB1@20'	CRA 2008	12/10/2007	20		<6.41	<14.1	<35.3	< 0.0126	< 0.0641	< 0.0641	< 0.128				6.24		0.011		
NB2@5'	CRA 2008	12/11/2007	5		< 5.02	<13.3	<33.3	< 0.00110	< 0.0502	< 0.0502	< 0.100				5.96		0.010		
NB2@10'	CRA 2008	12/11/2007	10		< 6.35	<13.6	<33.9	< 0.00122	< 0.0635	< 0.0635	< 0.127				3.45		0.010		
NB2@15'	CRA 2008	12/11/2007	15		< 5.95	<13.8	<34.5	< 0.00134	< 0.0595	< 0.0595	< 0.119				5.70		0.010		
NB2@20'	CRA 2008	12/10/2007	20		< 5.94	<13.6	<34.0	< 0.0120	< 0.0594	< 0.0594	< 0.119				3.62		0.010		
NB3@5'	CRA 2008	12/11/2007	5		<4.91	<12.4	<31.0	< 0.0294	< 0.0491	< 0.0491	< 0.0982				5.38		0.009		
NB3@10'	CRA 2008	12/11/2007	10		<5.51	<13.4	<33.5	< 0.00104	< 0.0551	< 0.0551	< 0.110				6.30		0.099		
NB3@15'	CRA 2008	12/11/2007	15		20	14.9	<31.4	< 0.0288	< 0.0480	< 0.0480	< 0.0959				6.52		0.062		
NB3@20'	CRA 2008	12/10/2007	20		<6.21	<12.9	<32.2	< 0.00112	< 0.0621	< 0.0621	< 0.124				1.38		0.010		
NB4@20'	CRA 2008	12/10/2007	20		< 5.93	<13.3	<33.3	< 0.00131	< 0.0593	< 0.0593	< 0.119				2.04		0.010		
NEB@20'	CRA 2008	12/13/2007	20		< 5.64	33.8	<31.9	< 0.0226	< 0.113	< 0.113	< 0.339				2.09		0.010		
SEB@20'	CRA 2008	12/13/2007	20		< 5.43	<12.0	<30.0	< 0.0217	< 0.109	< 0.109	< 0.326				1.14		0.009		
NWB@20'	CRA 2008	12/13/2007	20		< 5.93	<14.2	<35.5	< 0.0237	< 0.119	< 0.119	< 0.356				5.86		0.011		
SWB@20'	CRA 2008	12/13/2007	20		<6.63	<13.7	<34.2	< 0.0265	< 0.133	< 0.133	< 0.398				6.81		0.010		
NECORN@5'	CRA 2008	12/14/2007	5		<5.53	<12.9	<32.1	< 0.0221	< 0.111	< 0.111	< 0.332				9.23		0.010		
NECORN@10'	CRA 2008	12/14/2007	10		< 6.94	<14.3	<35.6	< 0.0278	< 0.139	< 0.139	< 0.416				3.39		0.011		
NECORN@15'	CRA 2008	12/14/2007	15		<5.77	<13.1	<32.8	< 0.0231	< 0.115	< 0.115	< 0.346				4.59		0.010		
NWDIP@5'	CRA 2008	12/14/2007	5		<5.2	<12.1	<30.3	< 0.0208	< 0.104	< 0.104	< 0.312				6.13		0.009		
NWDIP@10'	CRA 2008	12/14/2007	10		< 6.99	<13.5	<33.7	< 0.0280	< 0.141	< 0.140	< 0.420				3.05		0.010		
NWDIP@15'	CRA 2008	12/14/2007	15		<6.58	<15.1	<37.6	< 0.0244	< 0.122	< 0.122	< 0.366				6.99		0.011		
ST2@6'	CRA 2008	12/14/2007	6		<3.98	<11.5	<28.7	< 0.0159	< 0.0794	< 0.0794	< 0.238				2.80		0.009		
ST2@12'	CRA 2008	12/14/2007	12		< 5.94	<12.7	<31.6	< 0.0238	< 0.119	< 0.119	< 0.357				3.94		0.009		
ST2@18'	CRA 2008	12/14/2007	18		<5.37	<12.0	48.7	< 0.0215	< 0.107	< 0.107	< 0.322				7.76		0.038		
ST3@6'	CRA 2008	12/14/2007	6		<4.23	19.4	64.8	< 0.0169	< 0.0846	< 0.0846	< 0.254				10.30		0.081		
ST3@12'	CRA 2008	12/14/2007	12		< 5.89	<13.5	<33.7	< 0.0236	< 0.118	< 0.118	< 0.354				3.87		0.010		
ST3@18'	CRA 2008	12/14/2007	18		<6.22	<14.6	<36.5	< 0.0249	< 0.124	< 0.124	< 0.373				4.86		0.011		
ST4@6'	CRA 2008	12/14/2007	6		<4.35	<12.3	<30.8	< 0.0174	< 0.0870	< 0.0870	< 0.261				5.13		0.009		
ST4@12'	CRA 2008	12/14/2007	12		<5.71	<13.1	<32.7	< 0.0228	< 0.114	< 0.114	< 0.342				13.50		0.010		
ST4@18'	CRA 2008	12/14/2007	18		<3.31	<12.3	<30.9	< 0.0132	< 0.0662	< 0.0662	< 0.199				3.94		0.040		
SSLOT@6'	CRA 2008	12/20/2007	6														0.003		
SSLOT@12'	CRA 2008	12/20/2007	12														0.002		
SSLOT@18'	CRA 2008	12/20/2007	18														0.002		
SSLOT@BOTT	CRA 2008	12/20/2007	20														0.002		
NSLOT@6'	CRA 2008	12/20/2007	6														0.002		
NSLOT@12'	CRA 2008	12/20/2007	12														0.002		
NSLOT@18'	CRA 2008	12/20/2007	18														0.002		
NSLOT@BOTT	CRA 2008	12/20/2007	20														0.010		
-051608-TM-CB-2-20.5	CRA 2008	5/16/2008	20.5		3.3	15	<13	< 0.520	< 0.520	1.2	0.735	< 0.520	< 0.520	< 0.520					
5-051608-TM-CB-2-22	CRA 2008	5/16/2008	22		11	<6.4	<13	0.012	< 0.0055	0.13	0.0981	< 0.0055	< 0.0055	< 0.0055					
051608-TM-CB-3-21***	CRA 2008	5/16/2008	21		1.5	15	<14	0.089b	< 0.0067	0.280	0.028	< 0.0067	< 0.0067	< 0.0067					

TABLE 1 Page 5 of 5

#### SUMMARY OF SOIL ANALYTICAL RESULTS FORMER TEXACO SERVICE STATION 501 TUKWILA PARKWAY TUKWILA, WASHINGTON

				HYDROC.	ARBONS				PF	IMARY VO	CS			LEAD	HVOCs	1	PAHs	PCBs
Sample ID	Report Referenced Sample Date	Depth	TPH	ТРНд	TPHd	ТРНо	В	T	E	X	MTBE	EDC	EDB	Total	Total	cPAHs a	Naphthalene	Total
MTCA Method A	MTCA Method A Cleanup Level				2000	2000	0.03	7	6	9	0.1	N/A	0.005	250	N/A	0.1	5	0.1
		ft bgs	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)							

#### Notes/Abbreviations:

Shaded sample locations were over-excavated and no longer present

MTCA = Model Toxics Control Act

TPH analyzed by EPA Method 418.1

TPHg = Total petroleum hydrocarbons as gasoline range organics (C4-C12)

TPHo = Total petroleum hydrocarbons as oil-range organics (C24-C32)

TPHd = Total petroleum hydrocarbons as diesel-range organics (C12-C24)

MTBE = Methyl-tert butyl ether

BTEX = Benzene, toluene, ethylbenzene, xylenes

VOCs = Volatile organic compounds

HVOCs = Halogenated VOCs

PCBs = Polychlorinated Biphenyls

EDB = 1.2-Dibromoethane

EDC = 1,2-Dichloroethane

PAHs = Polycyclic aromatic hydrocarbons

cPAHs = carcinogenic polycyclic aromatic hydrocarbons

All results in milligrams per kilogram (mg/kg)

BOLD indicates exceedance of MTCA Method A Cleanup Level

- \* Indicates soil sample location has been confirmed; confirmation soil samples were below the MTCA Method A cleanup levels.
- \*\* indicates the sample contained several detections of halogenated volatile organic hydrocarbons, but detections were below the MTCA Method A cleanup levels
- \*\*\* indicates soil no longer exceeds MTCA Method A Cleanup Levels based on an empirical demonstration
- a = Total cPAHs are calculated using the Toxic Equivalency Factors for cPAHs found on Table 708-2 of the Model Toxics Control Act Cleanup Regulation," November 2007.

Non-detect results are not included in the Total cPAHs calculation.

b = sample empirically demonstrated to be protective of groundwter quality.

				_	HYI	DROCARBO	ONS	PRIMARY VOCs								XYGENATI	E <b>S</b>			METALS		PAHs
Sample ID	Date Model Toxi	TOC	DTW ct Method A C	GWE leanup Levels	TPHg 800/1000	TPHd 500	TPHo 500	<b>B</b> 5	T 1000	E 700	X 1000	EDB 0.01	EDC 5	MTBE	TBA N/A	DIPE N/A	ETBE N/A	TAME N/A	Total Lead	Chromium 50	Arsenic 5	Total 0.1
			ırface Water C		250	250	500	1.2	530	1300	N/A				- 7	- 4		-,				
					ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-1	03/30/92				89			3	0.4	<0.3	2											
MW-1	04/02/93				<10			< 0.3	<0.3	<0.3	<0.5											
MW-1	11/01/95	99.18	19.28	79.90	ND	500	ND	ND	ND	ND	ND								ND			
MW-1	11/08/96	99.18	17.51	81.67																		
MW-1	03/24/97	99.18	11.15	88.03	ND	693		ND	ND	ND	ND											
MW-1	06/20/97	99.18																				
MW-1	09/15/97	99.18	20.75	78.43	ND	498		ND	ND	ND	ND											
MW-1	12/29/97	99.18	17.62	81.56	ND	451		ND	ND	ND	ND											
MW-1	03/12/98	99.18	18.00	81.18	58.4	694		ND	ND	ND	ND											
MW-1	06/24/98	99.18																				
MW-1	09/18/98	99.18	21.39	77.79	ND	646		ND	ND	ND	ND											
MW-1	05/11/99	99.18	18.91	80.27																		
MW-1	11/03/99	99.18	20.67	78.51																		
MW-1	05/13/00	99.18	17.34	81.84																		
MW-1	10/23/00	99.18	20.04	79.14																		
MW-1	04/12/01	99.18	17.64	81.54																		
MW-1	10/02/01	99.18	21.18	78.00																		
MW-1	05/07/02	99.18	16.03	83.15																		
MW-1	10/19/06	Well Ab	andoned																			
MW-2	03/30/92				<10			<0.3	<0.3	<0.3	<0.5											
MW-2	04/02/93				<10			<0.3	<0.3	<0.3	<0.5											
MW-2	11/01/95	99.22	17.90	81.32	ND	480	ND	ND	0.72	ND	ND								ND			
MW-2	11/05/96	99.22	16.85	82.37																		
MW-2	03/24/97	99.22	10.52	88.70	ND	279		ND	ND	ND	ND											
MW-2	06/20/97	99.22	16.40	82.82																		
MW-2	09/15/97	99.22	19.57	79.65	ND	586		ND	ND	ND	ND											
MW-2	12/29/97	99.22	16.40	82.82	88.8	808		ND	ND	ND	ND											
MW-2	03/12/98	99.22	16.20	83.02	97.9	564		ND	ND	ND	ND											
MW-2	06/24/98	99.22	17.62	81.60																		
MW-2	09/18/98	99.22																				
MW-2	05/11/99	99.22	17.28	81.94																		

				_	HY	DROCARBO	ONS			PRIMAR	Y VOCs				О	XYGENATI	ES			METALS		PAHs
Sample ID			DTW ct Method A C urface Water C		TPHg 800/1000 250	TPHd 500 250	TPHo 500 500	B 5 1.2	T 1000 530	E 700 1300	X 1000 N/A	EDB 0.01	EDC 5	MTBE 20	TBA N/A	DIPE N/A	ETBE N/A	TAME N/A	Total Lead 15	Chromium 50	Arsenic 5	Total 0.1
					ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-2	11/03/99	99.22	19.70	79.52																		
MW-2	05/13/00	99.22	16.01	83.21																		
MW-2	10/23/00	99.22	16.47	82.75																		
MW-2	04/12/01	99.22	16.57	82.65																		
MW-2	10/02/01	99.22	19.12	80.10																		
MW-2	05/07/02	99.22	14.47	84.75																		
MW-2	10/19/06	99.22	19.24	79.98	<50	<238	<476	<0.5	< 0.5	<0.5	<1.0			<5.0	<50.0							
MW-2	02/26/07	Well Ab	andoned																			
MW-3	04/02/93				2,700			1,000	4	11	62											
MW-3	11/01/95	99.37	18.83	80.54	280	650	ND	29	1.3	0.82	4.7								6.1			
MW-3	11/08/96	99.37	17.66	81.71																		
MW-3	03/24/97	99.37	11.00	88.37	2,480	653		92.9	ND	19.7	ND											
MW-3	06/20/97	99.37	17.80	81.57	8,860	1,530		2,090	ND	520	176											
MW-3	09/15/97	99.37	20.43	78.94	1,840	410		98.2	1.39	47.4	15											
MW-3	12/29/97	99.37	17.50	81.87	1,450	546		251	ND	63	23.3											
MW-3	03/12/98	99.37	17.73	81.64	7,160	1,150		1,290	ND	173	ND											
MW-3	06/24/98	99.37	19.39	79.98	3,270	601		671	ND	125	25.7											
MW-3	09/18/98	99.37	21.05	78.32	248	ND		14.3	0.884	2.37	2.9											
MW-3	05/11/99	99.37	18.75	80.62	5,230			1,690	<25	309	88.2			<50 d								
MW-3	11/03/99	99.37	21.25	78.12	356			44.4	<2.68	0.808	5.63											
MW-3	05/13/00	99.37	17.25	82.12	2,390	1.79		906	6.63	96.1	31.7											
MW-3	10/23/00	99.37	19.95	79.42	270	<250	<500	41.5	1.13	< 0.590	3.7											
MW-3	04/12/01	99.37	17.67	81.70	218	323	<500	48.8	1.16	< 0.500	3.13			188								
MW-3	10/02/01	99.37	20.89	78.48	380			110	2.2	< 0.50	4.9			203	634	<1.0	<1.0	<1.0				
MW-3	05/07/02	99.37	15.90	83.47	3,070	964	<500	318	4.31	42.9	20.5			43.4								
MW-3	10/11/02	99.37	20.30	79.07	270	270	<500	81	<1.0	<1.0	5.9			130								
MW-3	04/24/03	99.37	16.99	82.38	1,800	770	<500	180	3.3	6.4	21.2			77								
MW-3	10/20/03	99.37	19.73	79.64	<250	<250	<500	33	<1	<1	<1											
MW-3	04/13/04	99.37	18.00	81.37	4,400	1,000	<500	190	<5	22	19											
MW-3	11/23/04	99.37	19.91	79.46	740	<250	<500	50	1	1.4	6.9			43								
MW-3	05/26/05	99.37	18.44	80.93	1,400	350	<500	53	1.1	6.6	3.7			28								

					НҮГ	DROCARBO	ONS			PRIMAI	RY VOCs				O	XYGENATI	ES .			METALS		PAHs
		TO 6	<b>7</b>	- -					_		***		ED 6	) (TD)	TTD 4	DIDE	EEDE	T.1.1 (T.				
Sample ID	Date Model Tox	TOC	DTW ct Method A C	GWE	TPHg 800/1000	TPHd 500	ТРНо 500	<b>B</b> 5	T 1000	E 700	X 1000	EDB 0.01	<b>EDC</b> 5	MTBE 20	TBA N/A	DIPE N/A	ETBE N/A	TAME N/A	Total Lead 15	Chromium 50	Arsenic 5	Total 0.1
			et Methou A C erface Water C	-	250	250	500	1.2	530	1300	N/A	0.01	3	20	IVA	IVA	IVA	IVA	15	50	5	0.1
		,	,	,	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-3	10/26/05	99.37	19.57	79.80	250	<250		1.7	<1	<1	2			18								
MW-3	04/27/06	99.37	17.01	82.36	2,810	609	<472	154	2.92	18.8	12.9			8.62								
MW-3	10/19/06	99.37	20.75	78.62	184	<238	<476	<2.5	<2.5	<2.5	5.5			7.39	65.20							
MW-3	02/26/07	Well Ab	andoned																			
MW-4	04/02/93				<10			<0.3	<0.3	<0.3	<0.5											
MW-4	11/01/95	98.35	18.60	79.75	ND	930	ND	ND	0.73	ND	ND								5.9			
MW-4	11/08/96	Not Measu	ıred																			
MW-4	03/24/97	98.35	10.27	88.08	ND	290		ND	ND	ND	ND											
MW-4	06/20/97	98.35																				
MW-4	09/15/97	98.35	19.88	78.47	ND	ND		ND	ND	ND	ND											
MW-4	12/29/97	98.35																				
MW-4	03/12/98	98.35																				
MW-4	06/24/98	98.35																				
MW-4	09/18/98	98.35																				
MW-4	05/11/99	98.35																				
MW-4	11/03/99	98.35																				
MW-4	05/13/00	98.35																				
MW-4	10/23/00	98.35																				
MW-4	04/12/01	98.35																				
MW-4	10/02/01	98.35																				
MW-4	05/07/02	98.35																				
MW-4	10/19/06	98.35	20.04	78.31	<50	<240	<481	< 0.5	< 0.5	< 0.5	<1.0			< 5.0	<50.0							
MW-4	02/26/07	Well Ab	andoned																			
MW-5	11/01/95	99.96	19.37	80.59	19,000	1,100	ND	2,000	16	810	1,400								2.4			
MW-5	11/01/96	99.96	18.24	81.72																		
MW-5	03/24/97	99.96	11.95	88.01	1,930	481		836	ND	79.9	15.6											
MW-5	06/20/97	99.96	18.79	81.17	808	763		82.7	ND	26.5	25.8											
MW-5	09/15/97	99.96	21.21	78.75	44,100	1,690		2,970	144	3,590	5,220											
MW-5	12/29/97	99.96	18.25	81.71	5,770	862		1,680	ND	393	335											
MW-5	03/12/98	99.96	18.60	81.36	7,160	767		1,280	ND	224	ND											
11111-0	00, 12, 00	, , , , 0	10.00	01.00	.,100	707		1,200	141	I	110											

				_	HYI	DROCARBO	ONS			PRIMAI	RY VOCs				О	XYGENATI	ES		<b>.</b>	METALS		PAHs
Sample ID			DTW ct Method A C urface Water C	-	TPHg 800/1000 250 ug/L	TPHd 500 250 ug/L	TPHo 500 500 ug/L	B 5 1.2 ug/L	T 1000 530 ug/L	E 700 1300 ug/L	X 1000 N/A ug/L	EDB 0.01 ug/L	EDC 5 ug/L	MTBE 20 ug/L	TBA N/A ug/L	DIPE N/A ug/L	ETBE N/A ug/L	TAME N/A ug/L	Total Lead 15 ug/L	Chromium 50 ug/L	Arsenic 5 ug/L	Total 0.1 ug/L
MW-5	06/24/98	99.96	20.21	79.75	11,900	537		1,660	34.5	1,330	886											
MW-5	09/18/98	99.96	21.76	78.20	11,100	1,200		1,500	26.4	1,130	776											
MW-5	05/11/99	99.96	19.60	80.36	349			84.9	<1.0	25.9	4.33			<25 d								
MW-5	11/03/99	99.96	22.20	77.76	13,600			849	24.9	1,350	1,580											
MW-5	05/13/00	99.96	18.09	81.87	1,620	0.69		272	6.52	79.5	62.3											
MW-5	10/23/00	99.96	20.64	79.32	7,460	1,930	< 500	784	<23.0	692	698											
MW-5	04/12/01	99.96	18.28	81.68	2,950	766	<500	332	< 5.00	11.1	14.8			<1								
MW-5	10/02/01	99.96	DRY																			
MW-5	05/07/02	99.96	16.78	83.18	3,780	1,000	< 500	248	4.29	28.6	47.6											
MW-5	10/19/06	99.96	21.74	78.22	1,740	1,650	<481	26.5	0.981	37.1	47.9			<5	<50							
MW-5	03/08/07	99.96	DRY																			
MW-5	09/13/07	Well Ab	andoned																			
MW-6	11/01/95	98.32	16.69	81.63	ND	ND	ND	5.7	ND	ND	ND								ND			
MW-6	11/08/96	98.32	16.21	82.11																		
MW-6	03/24/97	98.32	9.10	89.22	137	285		2.89	0.992	ND	1.53											
MW-6	06/20/97	98.32	15.00	83.32	63.1	ND		20.3	7.09	ND	ND											
MW-6	09/15/97	98.32	18.36	79.96	160	ND		38.4	14.6	ND	ND											
MW-6	12/29/97	98.32	15.29	83.03	637	333		442	151	ND	28.7											
MW-6	03/12/98	98.32	14.87	83.45	419	294		365	109	ND	ND											
MW-6	06/24/98	98.32	16.53	81.79	144	ND		91.9	23.6	1.37	6.82											
MW-6	09/18/98	98.32	17.97	80.35	ND	ND		174	22.2	ND	7.01											
MW-6	05/11/99	98.32	16.33	81.99	<500			394	47.7	<5.0	23.6			146								
MW-6	11/03/99	98.32	18.39	79.93	<250			209	21.8	<2.5	5.47											
MW-6	05/13/00	98.32	15.10	83.22	140	0.5		134	11.1	1.09	8.76											
MW-6	10/23/00	98.32	17.63	80.69	549	552	<500	189	14.4	<2.5	7.24											
MW-6	04/12/01	98.32	15.78	82.54	487	1,710	<500	34.8	4.77	1.35	9.09			<1								
MW-6	10/02/01	98.32			540			200	8.8	<1	5.0			90.0	<50	<1.0	<1.0	<1.0				
MW-6	05/07/02	98.32	13.73	84.59	559	531	503	42.6	2.09	0.632	8.05			10.9								
MW-6	10/11/02	98.32	17.93	80.39	<250	<250	<500	49	<1	<1	6.5			36								
MW-6	04/24/03	98.32	14.49	83.83	<250	<250	<500	34	2.2	<1	5			19								
MW-6	10/20/03	98.32	17.95	80.37	<250	<250	<500	3.1	<1	<1	3.6											

				_	НҮІ	DROCARBO	ONS	PRIMARY VOCs								XYGENATI	ES			METALS		PAHs
Sample ID	Model Toxics Control Act Method A Cleanup Leve Protection of Surface Water Cleanup Leve			leanup Levels	TPHg 800/1000 250 ug/L	TPHd 500 250 ug/L	TPHo 500 500 ug/L	B 5 1.2 ug/L	T 1000 530 ug/L	E 700 1300 ug/L	X 1000 N/A ug/L	EDB 0.01 ug/L	EDC 5 ug/L	MTBE 20 ug/L	TBA N/A ug/L	DIPE N/A ug/L	ETBE N/A ug/L	TAME N/A ug/L	Total Lead 15 ug/L	Chromium 50 ug/L	Arsenic 5 ug/L	Total 0.1 ug/L
MW-6	04/13/04	98.32	15.63	82.69	<250	<250	<500	3.6	<1	<1	2.3											
MW-6	11/23/04	98.32	17.39	80.93	<250	<250	<500	<1	<1	<1	2.2			5								
MW-6	05/26/05	98.32	15.91	82.41	280	<250	<500	<1	<1	<1	1.3			<1								
MW-6	10/26/05	98.32	17.57	80.75	250	<250		<1	>1	<1	1.9			1								
MW-6	04/27/06	98.32	14.48	83.84	229	<236	<472	0.933	<0.5	<0.5	2.55			<b>&lt;</b> 5								
MW-6	10/19/06	wen Ab	andoned																			
MW-7	11/01/95	97.36	14.36	83.00	ND	ND	ND	ND	ND	ND	ND								ND			
MW-7	11/08/96	97.36	14.15	83.21																		
MW-7	03/24/97	97.36	8.03	89.33	ND	268		0.888	1.01	ND	ND											
MW-7	06/20/97	97.36	12.50	84.86	ND	ND		1.78	2.14	ND	ND											
MW-7	09/15/97	97.36	14.42	82.94	ND	256		ND	ND	ND	ND											
MW-7	12/29/97	97.36	12.91	84.45	ND	271		0.881	1.02	ND	ND											
MW-7	03/12/98	97.36	15.90	81.46	ND	250		3.6	3.18	ND	ND											
MW-7	06/24/98	97.36	13.62	83.74	ND	ND		ND	ND	ND	ND											
MW-7	09/18/98	97.36	14.93	82.43	ND	277		0.705	ND	ND	ND											
MW-7	05/11/99	97.36	13.81	83.55																		
MW-7	11/03/99	97.36	16.40	80.96																		
MW-7	05/13/00	97.36	12.68	84.68																		
MW-7	10/23/00	97.36	15.14	82.22																		
MW-7	04/12/01	97.36	13.32	84.04																		
MW-7	10/02/01	97.36	15.31	82.05																		
MW-7	05/07/02	97.36	11.31	86.05																		
MW-7	10/19/06	97.36	15.72	81.64	<50	<238	<476	< 0.5	< 0.5	< 0.5	<1.0			<5.0	<50.0							
MW-7	02/26/07	Well Ab	andoned																			
MW-8	11/08/96	29.71	19.38	10.33	<50	<250	<750 d	<0.50	<0.50	<0.50	<1.0								9.28			
MW-8	03/24/97	29.71	13.18	16.53	ND	ND		ND	ND	ND	ND											
MW-8	06/20/97	29.71	20.00	9.71	ND	ND		ND	ND	ND	ND											
MW-8	09/15/97	29.71	22.27	7.44	80.6	263		ND	ND	ND	ND											
MW-8	12/29/97	29.71	19.48	10.23	ND	1,640		ND	ND	ND	ND											
MW-8	03/12/98	29.71	19.80	9.91	ND	ND		ND	ND	ND	ND											

					НҮЕ	OROCARBO	ONS			PRIMAR				O	XYGENATI	ES			METALS		PAHs	
Sample ID			DTW ct Method A Cl orface Water Cl	•	TPHg 800/1000 250 ug/L	TPHd 500 250 ug/L	TPHo 500 500 ug/L	B 5 1.2 ug/L	T 1000 530 ug/L	E 700 1300 ug/L	X 1000 N/A ug/L	EDB 0.01 ug/L	EDC 5 ug/L	MTBE 20 ug/L	TBA N/A ug/L	DIPE N/A ug/L	ETBE N/A ug/L	TAME N/A ug/L	Total Lead 15 ug/L	Chromium 50 ug/L	Arsenic 5 ug/L	Total 0.1 ug/L
MW-8	06/24/98	29.71	21.36	8.35	ND	ND		ND	ND	ND	ND											
MW-8	09/18/98	29.71	22.92	6.79	ND	434		ND	1.21	ND	1.08											
MW-8	05/11/99	29.71	20.86	8.85																		
MW-8	11/03/99	29.71	23.43	6.28																		
MW-8	05/13/00	29.71	19.27	10.44																		
MW-8	10/23/00	29.71	21.81	7.90																		
MW-8	04/12/01	29.71	19.78	9.93																		
MW-8	10/02/01	29.71	23.93	5.78																		
MW-8	05/07/02	29.71	18.03	11.68																		
MW-8	10/11/02	29.71	22.44	7.27	<250	<250	< 500	<1.0	<1.0	<1.0	<1.0			<1.0								
MW-8	04/24/03	29.71	19.11	10.60	<250	<250	<500	<1	<1	<1	<1			<1								
MW-8	10/20/03	29.71	21.66	8.05	<250	<250	<500	<1	<1	<1	<1											
MW-8	04/13/04	29.71	20.02	9.69	<1,200 d	<250	<500	<5	<5	<5	<5											
MW-8	11/23/04	29.71	21.88	7.83	<250	<250	< 500	<1	<1	<1	<1			<1								
MW-8	05/26/05	29.71	20.43	9.28	<50	<250	< 500	<1	<1	<1	<1			<1								
MW-8	10/26/05	29.71	21.60	8.11	<50	<250		<1	<1	<1	<1			<1								
MW-8	04/27/06	29.71	18.98	10.73	<50	<238	<476	< 0.500	< 0.500	< 0.500	<1			<5								
MW-8	10/19/06	29.71	22.81	6.90	<50	<238	<476	< 0.500	< 0.500	< 0.500	<1			<5	<50							
MW-8	03/08/07	29.71	18.90	10.81	<50.0			< 0.500	< 0.500	< 0.500	<3.00											
MW-8	09/13/07	29.71	22.44	7.27	<50.0	<255	<510 d	< 0.500	< 0.500	< 0.500	<3.00			< 5.00	<50	<1.0	<1.0	<1.0				0.011
MW-8	03/31/08	29.71	21.99	7.72	<16	65 J	100 J	0.13 J	< 0.05	0.11 J	< 0.1			< 0.074	<3.2	< 0.05	< 0.052	< 0.084				< 0.032
MW-8	06/12/08	29.71	15.55	14.16	<250	<250	<400	<1	<1	<1	<1			<1	<5.0	<1.0	<1.0	<1.0				<1.0
MW-8	09/25/08	29.71	22.20	7.51	<16	100 J	180	< 0.35	< 0.25	< 0.34	< 0.61			< 0.31								
MW-8	12/16/08	29.71	19.25	10.46	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0								
MW-8	03/17/09	29.71	20.20	9.51	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0	<10	<2.0	<2.0	<2.0		<1	13.10	<0.10*
MW-8	06/10/09	29.71	20.02	9.69	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0	< 0.010	< 0.50	<1.0					<1.00			
MW-8	09/29/09	29.71	22.83	6.88	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0					<1.00			
MW-8	12/21/09	29.71	19.91	9.80	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0					<1.00			
MW-8	03/08/10	29.71	20.73	8.98	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0	<10	<2.0	<2.0	<2.0	<1.00			
MW-8	06/22/10	29.71	19.12	10.59	<100	<100	<100	<0.50	<1.0	<1.0	<1.0								<1.00			
MW-8	09/17/10	29.71	22.20	7.51	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0					<1.00			
MW-8	12/13/10	29.71	12.00	17.71	<100	<100	120	< 0.50	<1.0	<1.0	<1.0								<1.00			

				_	НҮІ	DROCARBO	ONS	PRIMARY VOCs								XYGENATI	ES			METALS		PAHs
Sample ID			DTW ct Method A C urface Water C	•	TPHg 800/1000 250	TPHd 500 250	TPHo 500 500	<b>B</b> 5 1.2	T 1000 530	E 700 1300	X 1000 N/A	EDB 0.01	EDC 5	MTBE 20	TBA N/A	DIPE N/A	ETBE N/A	TAME N/A	Total Lead 15	50	Arsenic 5	Total 0.1
					ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-8	03/03/11	29.71	19.13	10.58	<100	<100	<100	<1.00	<1.00	<1.00	<3.00			<1.00	<20.0	<1.00	<1.00	<1.00	<2.00			
MW-8	06/24/11	29.71	19.20	10.51	<100	<100	<250	<1.00	<1.00	<1.00	<3.00								<2.00			
MW-8	09/07/11	29.71	22.89	6.82	<100	<94.3	<236	<1.00	<1.00	<1.00	<3.00								<2.00			
MW-9	11/08/96	29.48	19.18	10.30	839	330	<750 d	59.3	1.76	0.625	52.7								4.14			
MW-9	03/24/97	29.48	13.00	16.48	493	333		222	0.74	1.47	17.9											
MW-9	06/20/97	29.48	19.85	9.63	111	ND		1.71	0.699	ND	ND											
MW-9	09/15/97	29.48	22.19	7.29	2,150	592		692	ND	ND	ND											
MW-9	12/29/97	29.48	19.30	10.18	290	311		132	1.24	1.17	1.08											
MW-9	03/12/98	29.48	19.59	9.89	882	402		295	ND	ND	ND											
MW-9	06/24/98	29.48	21.22	8.26	973	327		295	3.44	5.11	6.8											
MW-9	09/18/98	29.48	22.79	6.69	2,480	692		668	13.5	13.4	85.1											
MW-9	05/11/99	29.48	20.66	8.82	380			132	1.18	1.28	2.12			<5.0								
MW-9	11/03/99	29.48	22.91	6.57	1,490			217	<5.19	6.67	7.16											
MW-9	05/13/00	29.48	19.01	10.47	94.3	0.26		1.64	1.09	0.9	6.12											
MW-9	10/23/00	29.48	21.56	7.92	1,560	897	<500	<6.10 d	<3.35	12.4	55.4											
MW-9	04/12/01	29.48	19.26	10.22	711	555	<500	3.28	1.31	1.27	12.9											
MW-9	10/02/01	29.48	22.77	6.71	1,700			190	4.0	3.3	21											
MW-9	05/07/02	29.48	17.82	11.66	624	661	<500	2.10	1.26	0.603	4.29											
MW-9	10/11/02	29.48	22.18	7.30	1,400	1,000	<500	27	<1.0	2	<1.0			<1.0								
MW-9	04/24/03	29.48	18.92	10.56	300	<250	<b>&lt;</b> 500	2.3	<1	<1	<1			<1								
MW-9	10/20/03	29.48	21.37	8.11	1,500	510	<500	17	<1	<1	2.9											
MW-9	04/13/04	29.48	19.80	9.68	1,900	290	<500	27	<b>&lt;</b> 5	<5	<b>&lt;</b> 5											
MW-9	11/23/04	29.48	21.72	7.76	1,500	<250	<500	9.9	<1	<1	7.4			<b>&lt;</b> 5								
MW-9	05/26/05	29.48	20.27	9.21	320	<250	<500	<1	<1	<1	<1			<1								
MW-9	10/26/05	29.48	21.34	8.14	1,100	<250		2.1	<1	<1	2.8			<1								
MW-9	04/27/06	29.48	18.77	10.71	703	<236	<472 <476	0.973	<0.500	<0.500	1.41			<5 <5	 <50							
MW-9 MW-9	10/19/06	29.48	22.52 18.60	6.96 10.88	2,090 1 330	886		8.57 5.24	0.82	2.13	3.5		<b></b>	<b>&lt;</b> 5	<50			<b></b>		<b></b>		
MW-9	03/08/07 09/13/07	29.48 29.48	18.60 22.15	10.88 7.33	<b>1,330</b> <50.0	 780 a	 <510 d	5.24 6.98	0.640 2.78	1.41 0.610	<3.00 8.03			<5.00	<b></b> <50	<1.0	<1.0	<1.0				0.011
MW-9	03/31/08	29.48	19.49	9.99	<b>1,100</b>	240 c	71 c	60	2.76 0.61 c	4.4	2.65			3	28	<0.05	<0.052	<0.084				<0.032
MW-9	05/31/08	29.48	15.31	9.99 14.17	<250	<250	<400	14	0.61 C <1	1.3	2.65 1.5			3 2.5		<1.0	<0.032	<1.0				<1.0
1V1 V V - 2	00/12/00	∠2. <del>4</del> 0	19.91	14.1/	<b>\</b> 230	<b>\230</b>	<b>~</b> ±00	14	~1	1.3	1.5			۷.5	16	<b>\1.</b> U	<b>\1.</b> 0	<b>\1.</b> U			<b>-</b>	1.0

				_	НҮ	DROCARBO	ONS			PRIMAI	RY VOCs				0	XYGENAT	ES			METALS		PAHs
Sample ID			DTW ct Method A Cl rface Water Cl	•	TPHg 800/1000 250 ug/L	TPHd 500 250 ug/L	TPHo 500 500 ug/L	B 5 1.2 ug/L	T 1000 530 ug/L	E 700 1300 ug/L	X 1000 N/A ug/L	EDB 0.01 ug/L	EDC 5 ug/L	MTBE 20 ug/L	TBA N/A ug/L	DIPE N/A ug/L	ETBE N/A ug/L	TAME N/A ug/L	Total Lead 15 ug/L	Chromium 50 ug/L	Arsenic 5 ug/L	Total 0.1 ug/L
1.00	00/05/00	20.40	22.10	<b>5.0</b> 0	• 000	000	061	60	4.6	20	0.00			1.6								
MW-9 MW-9	09/25/08	29.48	22.10	7.38	<b>2,900</b>	990 780	86 J	69 17	1.6	20	8.82			4.6								
MW-9	12/16/08 03/17/09	29.48 29.48	19.10 19.92	10.38 9.56	1,400 1,800	1,400	<100 <100	17 8.2	1.1 <1.0	5.5 7.5	3.6 2			3.7 1.9	 77	<2.0	<2.0	<2.0		<b></b> <1	21.50	<0.10*
MW-9 **	06/10/09	29.48	19.92	9.57	860	<100	<100	<0.50	<1.0	1.2	<1.0	<0.010	<0.50	<1.0		~2.0		~2.0 	<1.00	~1 	21.50	~0.10
MW-9	09/29/09	29.48	22.50	6.98	1,500	<100	<100	<0.50	<1.0	<1.0	<1.0			<1.0					<1.00			
MW-9	12/21/09	29.48	19.62	9.86	810	630 c	<100	<0.50	<1.0	<1.0	<1.0			<1.0					<1.00			
MW-9	03/08/10	29.48	20.50	8.98	370 с	550 c	<100	< 0.50	<1.0	<1.0	<1.0			<1.0	18	<2.0	<2.0	<2.0	<1.00			
MW-9	06/22/10	29.48	18.88	10.60	140 c	110 с	<100	< 0.50	<1.0	<1.0	<1.0								<1.00			
MW-9	09/17/10	29.48	21.88	7.60	700 c	1,100 c	<100	< 0.50	<1.0	<1.0	<1.0			<1.0					<1.00			
MW-9	12/13/10	29.48	11.00	18.48	230 с	390 с	130 с	< 0.50	<1.0	<1.0	<1.0								<1.00			
MW-9	03/03/11	29.48	18.97	10.51	<100	<99.0	<99.0	<1.00	<1.00	<1.00	<3.00			<1.00	<20.0	<1.00	<1.00	<1.00	<2.00			
MW-9	06/24/11	29.48	19.00	10.48	166	<95.2	<238	<1.00	<1.00	<1.00	<3.00								<2.00			
MW-9	09/07/11	29.48	22.31	7.17	291	541e	<250	<1.00	<1.00	<1.00	<3.00								<2.00			
MW-9	12/16/11	29.48	20.83	8.65	173	183	<245	<1.00	<1.00	<1.00	<3.00											
MW-9	02/29/12	29.48	15.36	14.12	<100	<94.3	<236	<1.00	<1.00	<1.00	<3.00			<1.00	<10.0	<1.00	<1.00	<1.00				
MW-10	11/08/96	29.62	19.36	10.26	<50	341	<750 d	<0.50	<0.50	<0.50	<1.0								13.4			
MW-10	03/24/97	29.62	13.25	16.37	ND	372		0.563	ND	ND	ND											
MW-10	06/20/97	29.62	20.13	9.49	ND	ND		ND	ND	ND	ND											
MW-10	09/15/97	29.62	22.35	7.27	88.9	476		ND	ND	ND	ND E 1											
MW-10 MW-10	12/29/97 03/12/98	29.62 29.62	19.56 19.80	10.06 9.82	60.1 ND	431 291		ND ND	1.33 ND	0.53 ND	5.1 ND											
MW-10	06/24/98	29.62	20.39	9.82	ND ND	294		ND ND	ND ND	ND ND	ND ND											
MW-10	09/18/98	29.62	22.96	6.66	ND	399		ND	0.618	ND	ND											
MW-10	05/11/99	29.62	20.82	8.80																		
MW-10	11/03/99	29.62	23.21	6.41																		
MW-10	05/13/00	29.62	19.25	10.37																		
MW-10	10/23/00	29.62	21.84	7.78																		
MW-10	04/12/01	29.62	19.50	10.12																		
MW-10	10/02/01	29.62	22.97	6.65																		
MW-10	05/07/02	29.62	18.07	11.55																		
MW-10	10/19/06	29.62	22.68	6.94	<50	<238	<476	< 0.500	< 0.500	< 0.500	<1			<5	<50							

					HY	DROCARBO	ONS	PRIMARY VOCs								XYGENATI	ES			METALS		PAHs
Sample ID	Date Model Toxi	TOC	DTW ct Method A C	GWE	TPHg 800/1000	TPHd 500	TPHo 500	<b>B</b> 5	T 1000	E 700	X 1000	EDB 0.01	EDC 5	MTBE	TBA N/A	DIPE N/A	ETBE N/A	TAME N/A	Total Lead	Chromium 50	Arsenic 5	Total 0.1
			ırface Water C	•	250	250	500	1.2	530	1300	N/A	0.01	3	20	14/1	1971	14/21	14/1	15	50	3	0.1
					ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-10	03/08/07	29.62	18.70	10.92	<50.0			< 0.500	<0.500	<0.500	<3.00											
MW-10	09/13/07	29.62	22.32	7.30	1,700	707 b	942	< 0.500	< 0.500	< 0.500	<3.00			<5.00	<50	<1.0	<1.0	<1.0				0.025
MW-10	03/31/08	29.62	20.20	9.42	<78	210 J	160 J	0.28 J	< 0.05	0.11 J	< 0.1			0.13 J	5.6	< 0.05	< 0.052	< 0.084				< 0.032
MW-10	06/12/08	29.62	15.50	14.12	<250	<250	<400	<1	<1	<1	<1			2.5	<5.0	<1.0	<1.0	<1.0				<1.0
MW-10	09/25/08	29.62	22.28	7.34	160	230 J	<100	< 0.35	< 0.25	< 0.34	< 0.62			< 0.31								
MW-10	12/16/08	29.62	19.45	10.17	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0								
MW-10	03/17/09	29.62	20.02	9.60	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0	<10	<2.0	<2.0	<2.0		<1	22.60	<0.10*
MW-10 **	06/10/09	29.62	20.26	9.36	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0	< 0.010	< 0.50	<1.0					<1.00			
MW-10	09/29/09	29.62	22.82	6.80	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0					<1.00			
MW-10	12/21/09	29.62	19.41	10.21	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0					<1.00			
MW-10	03/08/10	29.62	20.81	8.81	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0	<10	<2.0	<2.0	<2.0	<1.00			
MW-10	06/22/10	29.62	19.22	10.40	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0								<1.00			
MW-10	09/17/10	29.62	22.00	7.62	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0					<1.00			
MW-10	12/13/10	29.62	11.20	18.42	<100	<100	160	< 0.50	<1.0	<1.0	<1.0								<1.00			
MW-10	03/03/11	29.62	19.03	10.59	<100	<100	<100	<1.00	<1.00	<1.00	<3.00			<1.00	<20.0	<1.00	<1.00	<1.00	<2.00			
MW-10	06/24/11	29.62	19.25	10.37	<100	<99.0	<248	<1.00	<1.00	<1.00	<3.00								<2.00			
MW-10	09/07/11	29.62	22.86	6.76	<100	<95.2	<238	<1.00	<1.00	<1.00	<3.00								<2.00			
MW-11	03/08/07		11.60		<50.0			<0.500	<0.500	<0.500	<3.00											
MW-11	09/13/07	Well Ab	pandoned																			
EMW-11	09/17/97	29.57	21.58	7.99	<50	482	<750 d	<0.50	<0.50	<0.50	<1.0								29.3	83.4	25.2	<0.032
EMW-11	03/31/08	29.57	20.32	9.25	<16	24 J	41 J	0.12 J	< 0.05	< 0.1	< 0.1			< 0.074	<3.2	< 0.05	< 0.052	< 0.084				<1.0
EMW-11	06/12/08	29.57	15.43	14.14	<50.0	<250	<400	<1	<1	<5	<1			<1	<5.0	<1.0	<1.0	<1.0				
EMW-11	09/25/08	29.57	22.22	7.35	<50	<250	<400	< 0.35	< 0.25	< 0.34	< 0.61			< 0.31								
EMW-11	12/16/08	29.57	19.63	9.94	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0								
EMW-11	03/17/09	29.57	19.82	9.75	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0	<10	<2.0	<2.0	<2.0		<1	4.21	< 0.50
EMW-11	06/10/09	29.57	20.39	9.18	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0	< 0.010	< 0.50	<1.0					<1.00			
EMW-11	09/29/09	29.57	23.13	6.44	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0					<1.00			
EMW-11	12/21/09	29.57	19.14	10.43	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0					<1.00			
EMW-11	03/08/10	29.57	20.81	8.76	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0	<10	<2.0	<2.0	<2.0	<1.00			
EMW-11	06/22/10	29.57	19.25	10.32	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0								<1.00			

				_	HY	DROCARBO	ONS	-		PRIMAI	RY VOCs				О	XYGENAT	ES .			METALS		PAHs
Sample ID			DTW ct Method A Clo rface Water Clo	-	TPHg 800/1000 250	TPHd 500 250	TPHo 500 500	B 5 1.2	T 1000 530	E 700 1300	X 1000 N/A	EDB 0.01	<b>EDC</b> 5	MTBE 20	TBA N/A	DIPE N/A	ETBE N/A	TAME N/A	Total Lead 15	50	Arsenic 5	Total 0.1
					ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
EMW-11	09/17/10	29.57	22.22	7.35	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0					<1.00			
EMW-11	12/13/10	29.57	11.81	17.76	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0								<1.00			
EMW-11	03/03/11	29.57	19.02	10.55	<100	<100	<100	<1.00	<1.00	<1.00	<3.00			<1.00	<20.0	<1.00	<1.00	<1.00	< 2.00			
EMW-11	06/24/11	29.57	19.21	10.36	<100	<99.0	<248	<1.00	<1.00	<1.00	<3.00								< 2.00			
EMW-11	09/07/11	29.57	22.80	6.77	<100	<95.2	<238	<1.00	<1.00	<1.00	<3.00								<2.00			
EMW-12	09/17/97	29.61	21.59	8.02	<50	444	<750 d	<0.50	<0.50	<0.50	<1.0								5.53	<0.02	11.1	
EMW-12	03/31/08	29.61	20.20	9.41	<16	42 J	74 J	0.12 J	< 0.05	< 0.1	< 0.1			< 0.074	<3.2	< 0.05	< 0.052	< 0.084				
EMW-12	06/12/08	29.61	15.43	14.18	<50.0	<250	<400	<1	<1	<1	<1			<1	<5.0	<1.0	<1.0	<1.0				
EMW-12	09/25/08	29.61	22.36	7.25	16 J	<250	<100	< 0.35	< 0.25	< 0.34	0.33 J			< 0.31								
EMW-12	12/16/08	29.61	19.57	10.04	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0								<0.10
EMW-12	03/17/09	29.61	19.87	9.74	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0	<10	<2.0	<2.0	<2.0		<1	5.76	
EMW-12	06/10/09	29.61	20.31	9.30	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0	< 0.010	< 0.50	<1.0					<1.00			
EMW-12	09/29/09	29.61	23.20	6.41	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0					<1.00			
EMW-12	12/21/09	29.61	19.64	9.97	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0					<1.00			
EMW-12	03/08/10	29.61	20.81	8.80	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0	<10	<2.0	<2.0	<2.0	<1.00			
EMW-12	06/22/10	29.61	19.30	10.31	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0								<1.00			
EMW-12	09/17/10	29.61	22.36	7.25	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0					<1.00			
EMW-12	12/13/10	29.61	11.38	18.23	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0								<1.00			
EMW-12	03/03/11	29.61	19.02	10.59	<100	<99.0	<99.0	<1.00	<1.00	<1.00	<3.00			<1.00	<20.0	<1.00	<1.00	<1.00	<2.00			
EMW-12	06/24/11	29.61	19.30	10.31	<100	<100	<250	<1.00	<1.00	<1.00	<3.00								<2.00			
EMW-12	09/07/11	29.61	22.56	7.05	<100	<95.2	<238	<1.00	<1.00	<1.00	<3.00								<2.00			
MW-13 **	06/10/09	30.25	20.00	10.25	<100	<100	<100	<0.50	<1.0	<1.0	<1.0	<0.010	<0.50	<1.0					<1.00			
MW-13	09/29/09	30.25	23.37	6.88	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0					1.27			
MW-13	12/21/09	30.25	20.42	9.83	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0					<1.00			
MW-13	03/08/10	30.25	21.00	9.25	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0	<10	<2.0	<2.0	<2.0	<1.00			
MW-13	06/22/10	30.25	19.31	10.94	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0								<1.00			
MW-13	09/17/10	30.25	22.67	7.58	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0					<1.00			
MW-13	12/13/10	30.25	13.71	16.54	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0								<1.00			
MW-13	03/03/11	30.25	19.41	10.84	<100	<100	<100	<1.00	<1.00	<1.00	<3.00			<1.00	<20.0	<1.00	<1.00	<1.00	<2.00			
MW-13	06/24/11	30.25	19.53	10.72	<100	<98.0	<245	<1.00	<1.00	<1.00	<3.00								<2.00			

				_	HY	DROCARBO	ONS			PRIMAI	RY VOCs				О	XYGENATI	ES			METALS		PAHs
Sample ID	Date	TOC	DTW	GWE	ТРНд	ТРНа	ТРНо	В	T	E	X	EDB	EDC	MTBE	TBA	DIPE	ЕТВЕ	TAME	Total Lead		Arsenic	Total
				leanup Levels	800/1000	500	500	5	1000	700	1000	0.01	5	20	N/A	N/A	N/A	N/A	15	50	5	0.1
	Pr	otection of Si	ırface Water C	leanup Levels	250 ug/L	250 ug/L	500 ug/L	1.2 ug/L	530 ug/L	1300 ug/L	N/A ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-13	09/07/11	30.25	23.08	7.17	<100	221	<240	<1.00	<1.00	<1.00	<3.00								<2.00			
MW-14	06/10/09	30.91	20.92	9.99	1,800	<100	<100	5.5	<1.0	10	4.2	<0.010	<0.50	<1.0					<1.00			
MW-14	09/29/09	30.91	24.03	6.88	2,500	<100	<100	4.9	<1.0	5.2	1.3			<1.0					<1.00			
MW-14	12/21/09	30.91	20.76	10.15	470	200 c	<100	1.4	<1.0	5.7	<1.0			<1.0					<1.00			
MW-14	03/08/10	30.91	21.56	9.35	220 c	130 с	<100	< 0.50	<1.0	<1.0	<1.0			<1.0	<10	<2.0	<2.0	<2.0	<1.00			
MW-14	06/22/10	30.91	20.00	10.91	270 с	<100	<100	< 0.50	<1.0	<1.0	<1.0								<1.00			
MW-14	09/17/10	30.91	23.21	7.70	460 c	250 с	<100	< 0.50	<1.0	<1.0	<1.0			<1.0					<1.00			
MW-14	12/13/10	30.91	13.81	17.10	<100	120 c	<100	< 0.50	<1.0	<1.0	<1.0								<1.00			
MW-14	03/03/11	29.48	19.57	9.91	<100	<99.0	<99.0	<1.00	<1.00	<1.00	<3.00			<1.00	<20.0	<1.00	<1.00	<1.00	<2.00			
MW-14	06/24/11	29.48	20.11	9.37	<100	<99.0	<248	<1.00	<1.00	<1.00	<3.00								<2.00			
MW-14	09/07/11	29.48	23.50	5.98	324	204	<236	<1.00	<1.00	<1.00	<3.00								<2.00			
MW-15	06/10/09	29.68	17.55	12.13	<100	<100	<100	<0.50	<1.0	<1.0	<1.0	<0.010	<0.50	<1.0					<1.00			
MW-15	09/29/09	29.68	21.20	8.48	<100	<100	<100	0.83	<1.0	<1.0	<1.0			<1.0					<1.00			
MW-15	12/21/09	29.68	16.76	12.92	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0					<1.00			
MW-15	03/08/10	29.68	18.55	11.13	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0	<10	<2.0	<2.0	<2.0	<1.00			
MW-15	06/22/10	29.68	16.51	13.17	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0								<1.00			
MW-15	09/17/10	29.68	20.76	8.92	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0			<1.0					<1.00			
MW-15	12/13/10	29.68	12.44	17.24	<100	<100	<100	< 0.50	<1.0	<1.0	<1.0								<1.00			
MW-15	03/03/11	29.68	15.57	14.11	<100	<97.1	<97.1	<1.00	<1.00	<1.00	<3.00			<1.00	<20.0	<1.00	<1.00	<1.00	<2.00			
MW-15	06/24/11	29.68	17.23	12.45	<100	<100	<250	<1.00	<1.00	<1.00	<3.00								<2.00			
MW-15	09/07/11	29.68	20.79	8.89	<100	<96.2	<240	<1.00	<1.00	<1.00	<3.00								<2.00			

#### Notes:

DTW = Depth to Water in feet

GWE = Groundwater Elevation in feet above mean sea level

TOC = Top of Casing in feet above mean sea level

All results in micrograms per liter ( $\mu g/L$ ) unless otherwise indicated.

TPHg = Total petroleum hydrocarbons as gasoline analyzed by NWTPH-Gx unless otherwise noted. The higher value is based on the assumption that

no benzene is present in the groundwater sample. If any detectable amount of benzene is present in the groundwater sample, then the lower TPHg cleanup level is applicable.

TPHd = Total petroleum hydrocarbons as diesel, analyzed by NWTPH-Dx with silica gel cleanup unless otherwise noted

TPHo = Total petroleum hydrocarbons as oil, analyzed by NWTPH-Dx with silica gel cleanup unless otherwise noted

				_	НҮІ	DROCARBO	ONS			PRIMAI	RY VOCs				O	XYGENATI	ES			METALS		PAHs
Sample ID	Date	тос	DTW	GWE	ТРНд	ТРНа	ТРНо	В	T	E	X	EDB	EDC	MTBE	TBA	DIPE	ETBE	TAME	Total Lead	Chromium	Arsenic	Total
	Model Toxics Control Act Method A Cleanup Levels					500	500	5	1000	700	1000	0.01	5	20	N/A	N/A	N/A	N/A	15	50	5	0.1
	Protection of Surface Water Cleanup Levels					250	500	1.2	530	1300	N/A											
						ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L

VOCs = Volatile organic compounds

BTEX = Benzene, toluene, ethylbenzene, and xylenes analyzed by EPA Method 8260B; before February 26, 2008, analyzed by EPA Method 8020 unless otherwise noted

EDB = 1,2-Dibromoethane analyzed by EPA Method 8011

EDC = 1,2-Dichloroethane analyzed by EPA Method 8260B

MTBE = Methyl tertiary-butyl ether analyzed by EPA Method 8260B

TBA = Tertiary-butanol analyzed by EPA Method 8260B

DIPE = Di-isopropyl ether analyzed by EPA Method 8260B

ETBE = Ethyl tertiary-butyl ether analyzed by EPA Method 8260B

TAME = Tertiary-amyl methyl ether analyzed by EPA Method 8260B

Total lead, chromium and arsenic analyzed by EPA Method 6020

PAHs = Polycyclic aromatic hydrocarbons analyzed by EPA Method 8270C-SIM

ND = Not detected at a concentration above laboratory reporting limit as previously reported by others.

<x = Not detected at laboratory reporting limit x

--- = Not analyzed

Concentrations in bold type indicate the analyte was detected above Model Toxics Control Act (MTCA) Method A Cleanup levels.

\*\* = Sample was also analyzed for polychlorinated biphenyls (PCBs) by EPA Method 8082. For those constituents analyzed, no concentrations exceeded the laboratory method detection limits. Please see applicable laboratory report(s) for more information.

- a = Results in the diesel organics range are primarily due to overlap from a gasoline range product.
- b = Results in the diesel organics range are primarily due to overlap from a heavy oil range product.
- c = The sample chromatographic pattern for TPH does not match the specified standard. Quantitation of the unknown hydrocarbons was based on the specified standard.
- d = Laboratory reporting limit in excess of the MTCA Method A cleanup levels
- e = Result determined to be weathered gasoline after chromatogram evaluation, TPHd value added to TPHg range for comparison to cleanup level
- J = Laboratory value estimated between method detection limit and practical quatitation limit. See laboratory report(s) for more information.
- \* = Additional sample collected on 3/24/09 and analyzed for PAHs.

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# APPENDIX A ECOLOGY OPINION LETTER



# STATE OF WASHINGTON DEPARTMENT OF ECOLOGY

Northwest Regional Office • 3190 160th Ave SE • Bellevue, WA 98008-5452 • 425-649-7000 711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341 March 1, 2011

Mr. Perry Pineda Shell Oil Products US 20945 S. Wilmington Ave Carson, CA 9810

Re: Opinion on Proposed Cleanup of the following Site:

• Site Name: Shell Station 121333

• Site Address: 501 Tukwila Pkwy Tukwila, WA 98188

Facility/Site No.: 35955167VCP Project No.: NW2090

Dear Mr. Pineda:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your proposed independent cleanup of the Shell Station 121333 facility (Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA), Chapter 70.105D RCW.

#### **Issue Presented and Opinion**

Upon completion of the proposed cleanup, will further remedial action likely be necessary to clean up contamination at the Site?

NO. Ecology has determined that, upon completion of your proposed cleanup, no further remedial action will likely be necessary to clean up contamination at the Site.

This opinion is based on an analysis of whether the remedial action meets the substantive requirements of MTCA, Chapter 70.105D RCW, and its implementing regulations, Chapter 173-340 WAC (collectively "substantive requirements of MTCA"). The analysis is provided below.

## **Description of the Site**

This opinion applies only to the Site described below. The Site is defined by the nature and extent of contamination associated with the following release:

• Gasoline- and diesel-range TPH (TPHg, TPHd) into the soil, and ground water.

Enclosure A includes a detailed description and diagram of the Site, as currently known to Ecology.

Please note a parcel of real property can be affected by multiple sites. At this time, we have no information that the parcel(s) associated with this Site are affected by other sites.

#### **Basis for the Opinion**

This opinion is based on the information contained in the documents listed in Enclosure B.

The reports listed above will be kept in the Central Files of the Northwest Regional Office of Ecology (NWRO) for review by appointment only. Appointments can be made by calling the NWRO resource contact at 425-649-7190.

This opinion is void if any of the information contained in those documents is materially false or misleading.

#### Analysis of the Cleanup

Ecology has concluded that, upon completion of your proposed cleanup, **no further remedial action** will likely be necessary to clean up contamination at the Site. That conclusion is based on the following analysis:

#### 1. Characterization of the Site.

Ecology has determined your characterization of the Site is sufficient to establish cleanup standards and select a cleanup action. The Site is described above and in **Enclosure A.** 

#### Soil

Subsurface soil investigations and compliance sampling have determined the lateral and vertical extent of the release.

#### Ground Water

Ground water at the Site has been impacted. The lateral and vertical extent of contamination has been determined as well as a reasonable estimate of the extent of post remediation plume conditions. The average depth to ground water and general flow directions have been determined and are described in Enclosure A.

#### Surface Water

No investigation of surface water was conducted. The Green River is within 180 feet and down gradient of the site. There most likely is a direct discharge of ground water to

surface water at the Site. MTCA requires sufficient surface water sampling to adequately characterize the distribution and concentrations of hazardous substances as part of the remedial investigation [WAC 173-340-350(7)(c)(iii)(A)]. However for this Site, ground water sampling indicates there is no contamination reaching the river. In addition, the ground water data indicates the plume is shrinking or stable, such that impacts to the Green River are not likely to occur in the future.

#### 2. Establishment of cleanup standards.

#### Soil

Cleanup Levels Protective of Ground Water, Direct Contact and Terrestrial Species: A terrestrial ecologic evaluation (TEE) was submitted with an exclusion based upon the condition that all contamination is 15 feet below ground level prior to remedial activities. The site does not qualify for this condition (i.e. *prior to*). The site also does not qualify for any other exclusions and does not meet the criteria for a simplified ecological evaluation. Therefore, a site-specific evaluation is required or alternatively, an evaluation of the known chemical concentrations at the site with those chemicals of ecological concern listed in <u>Table 749-3</u> can be done. Because the Site is a commercial property, only the wildlife values in Table 749-3 need to be considered.

A direct comparison of all of the soil concentrations at the site indicated that they are below the ecological indicator concentrations listed in Table 749-3 for TPH.

The Site does not meet the MTCA definition of an industrial property, therefore soil cleanup levels suitable for unrestricted land use will need to be considered. For unrestricted land use, the soil cleanup level is based on the direct contact pathway. Either MTCA Method A or Method B cleanup levels can be used.

Ground water at this Site has been impacted by the identified releases, therefore soil cleanup levels based on leaching (protection of ground water) are appropriate. To establish soil concentrations protective of ground water, either MTCA Method A cleanup levels (Table 740-1) or one or more of the methods described in WAC 173-340-747 may be used.

For this site Method A cleanup levels for soil were selected for the direct contact exposure pathway. The Method A cleanup levels are also protective of ground water via the leaching pathway. For soil concentrations below the point of compliance for direct contact, (e.g. 15 feet) an empirical demonstration (WAC 173-340-747(9)) will be used to confirm compliance for the leaching (protection of ground water) pathway.

#### Points of Compliance:

The point of compliance based on the protection of ground water is Site wide throughout the soil profile and may extend below the water table. For soil cleanup levels based on direct contact, the point of compliance is defined as throughout the site from the ground surface to fifteen feet below the ground surface.

#### Surface Water

#### Cleanup Levels:

Surface water cleanup levels must be set at a concentration that will allow the water to be used for those beneficial uses identified under the State's water quality laws (chapter 173-201A WAC). For the Green River, cleanup levels must be protective of both human health (people eating fish and aquatic organisms) and the environment (fish and aquatic life). Therefore, the TPH cleanup level is based on the less stringent of the natural background and PQL concentrations. For this Site the less stringent concentration is the PQL for the TPH methods identified in Table 830-1. See page 116 of TPH Draft Guidance and Focus Sheet: Developing Surface Water Cleanup Standards under the Model Toxics Control Act <a href="http://www.ecy.wa.gov/biblio/0109050.html">http://www.ecy.wa.gov/biblio/0109050.html</a>.

#### Point of Compliance:

The standard point of compliance for surface water is defined as the point or points at which hazardous substances are released to surface waters of the state.

Note: When surface water cleanup levels have been established at a site, the surface water must be sampled to demonstrate compliance with cleanup levels [WAC 173-340-730(7)(a)]. For this Site, ground water samples collected at the down gradient monitoring wells will meet this requirement.

#### Ground Water

#### Cleanup Levels:

The ground water at this site is classified as potable to protect drinking water beneficial uses. In addition, because surface water is a potential exposure pathway, ground water cleanup levels protective of surface water beneficial uses are required at this site. The cleanup level that is protective of both of these pathways is the identified PQL for the required analytical methods identified in Table 830-1.

Note: Table 720-1 ground water cleanup levels are protective of human health but are not recognized as protective of aquatic organisms.

#### Point of Compliance:

The standard point of compliance for groundwater is throughout the site from the uppermost level of the saturated zone extending vertically to the lowest depth which could potentially be affected.

Table 1. TPH Cleanup Levels

Method	Hazardous Substance	Concentration	Units
Α	TPH	- 30	mg/kg
Α	TPH	250	ug/L
Α	TPH	250	ug/L
	A A A	Method Substance A TPH A TPH A TPH	MethodSubstanceConcentrationATPH30ATPH250

The reporting limit for the NWTPH-Dx method is 0.25 mg/L (water) for the petroleum products in the elution range of jet fuels through #2 diesel. For petroleum products eluting after #2 diesel oil, e.g. motor oils, hydraulic fluids, and heavy fuel oils, the reporting limit is 0.50 mg/L (water). Because the release has a portion in the lower range the cleanup level for TPH for this Site is 250 ug/L.

#### 3. Selection of cleanup action.

Ecology has determined the cleanup action you proposed for the Site meets the substantive requirements of MTCA.

Cleanup actions at the Site consisted of three interim actions and ongoing monitored natural attenuation (MNA). In 1989, approximately 150 cubic yards of soil were removed from waste oil and heating oil UST excavations during upgrades to the system. In 2006, six USTs, product piping, dispensers, and hydraulic hoists were completely removed from the property. Soil in the UST nest area was removed to a depth of 14 feet bgs. Soil around the USTs and hoists was removed to depths between 8 to 10 feet bgs.

During 2007 an additional 10,500 tons of soil and 9,400 gallons of contaminated water in the excavations were removed from the site. The average depth of the excavation was approximately 22 feet bgs. Confirmation soil samples from the excavation work were collected in 2007, 2009 and 2010. These samples indicated that the impacted source areas were remediated via removal of the petroleum contaminated soil.

Ground water sampling indicates that there are some remaining residual impacts. An evaluation of the current ground water conditions using Ecology's workbook tools for MNA indicates that degradation is occurring and cleanup levels will be reached within a reasonable time frame (within 5 years).

A ground water performance monitoring plan is being implemented and is expected to be maintained until cleanup levels have been reached. When cleanup has been achieved complete documentation of the cleanup levels for the site and compliance sampling results will need to be submitted for the final determination and opinion by Ecology.

#### Limitations of the Opinion

#### 1. Opinion does not settle liability with the state.

Liable persons are strictly liable, jointly and severally, for all remedial action costs and for all natural resource damages resulting from the release or releases of hazardous substances at the Site. This opinion **does not**:

- Resolve or alter a person's liability to the state.
- Protect liable persons from contribution claims by third parties.

To settle liability with the state and obtain protection from contribution claims, a person must enter into a consent decree with Ecology under RCW 70.105D.040(4).

#### 2. Opinion does not constitute a determination of substantial equivalence.

To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action you proposed will be substantially equivalent. Courts make that determination. *See* RCW 70.105D.080 and WAC 173-340-545.

#### 3. Opinion is limited to proposed cleanup.

This letter does not provide an opinion on whether further remedial action will actually be necessary at the Site upon completion of your proposed cleanup. To obtain such an opinion, you must submit a report to Ecology upon completion of your cleanup and request an opinion under the VCP.

#### 4. State is immune from liability.

The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion. See RCW 70.105D.030(1)(i).

#### **Contact Information**

Thank you for choosing to clean up the Site under the Voluntary Cleanup Program (VCP). As you conduct your cleanup, please do not hesitate to request additional services. We look forward to working with you.

For more information about the VCP and the cleanup process, please visit our web site: <a href="www.ecy.wa.gov/programs/tcp/vcp/vcpmain.htm">www.ecy.wa.gov/programs/tcp/vcp/vcpmain.htm</a>. If you have any questions about this opinion or the termination of the Agreement, please contact me by phone at 425-649-7064 or e-mail at bgil461@ecy.wa.gov.

Sincerely,

Bradly Gilmore, L.G.

**NWRO Toxics Cleanup Program** 

BGG: bg

Enclosures (1): A – Description and Diagrams of the Site

cc: Brian Peters, CRA

# Enclosure A Description and Diagrams of the Site

**Site Description** 

Site Name: Shell Station 121333

Site Address: 501 Tukwila Parkway Tukwila, WA 98188

Facility/Site No.: 35955167 VCP Project No.: NW2090

Site and Property Definition: The former Shell Station 121333 is situated at the southeast corner of Tukwila Parkway and Andover Park E. in Tukwila, Washington (the Property). The Site consists of soil and ground water contamination. Identified contamination which exceeded MTCA method A cleanup levels included gasoline and diesel-range total petroleum hydrocarbons (TPHg, TPHd), benzene, ethylbenzene and xylenes.

**Area Description:** The Property is located in an area of commercial and industrial businesses. Commercial and industrial properties are located to the west and south of the property. To the east of the property is Christensen Road which borders the Green River and adjacent greenbelt. To the north is interstate 405. The nearest residential area is approximately 600 feet to the north on the other side of I-405. Southcenter Mall is approximately 1,800 feet to the west.

**Property History and Current Use:** The Property was used as a retail gasoline and service station over the period of 1965 through 2007 and is currently a vacant lot. Numerous underground storage tanks were used at the property during its operation to store leaded and unleaded gasoline, waste oil and heating oil.

Contaminant Sources and History of Releases: The source of soil and ground water contamination is attributed to leaks from underground storage tanks (USTs) and associated piping. The contamination was first observed in 1989 when updating of the UST system was undertaken. The approximate boundary of the Site is presented in the attached figure.

Physiographic Setting: The Property is relatively flat at a mean elevation of 31 feet above sea level in the Green River Valley. There are low lying hills to the north, east and west of the site. The topography of the Site slopes slightly to the east. The nearest surface water body is the Green River located 180 feet east of the property. Gilliam Creek which flows to Green River is located approximately 200 feet north of the Property adjacent to I-405. A drainage ditch is located just to the west of the property boundary and flows north into Gilliam Creek. Tukwila Pond is located approximately 2,800 feet to the southwest of the Property.

**Ecological Setting:** The Property is located next to Christensen Road which borders the Green River and adjacent greenbelt. Christensen Road is a dead end road that provides access to the Greenbelt along the Green River in this area. There is a major highway, I-405 approximately 200 to the north of the property with an underpass for the Greenbelt that connects to Tukwila Park on the north side of the highway. The remaining property uses around the site are a mix of commercial and industrial businesses.

Geology: The Property is located in the Green River Trough between the Des Moines drift plain and the Covington drift plain which are part of the Puget Lowland physiographic province.

Geologic conditions beneath the Site consist of alluvial deposits from the Green River. The upper most layer consists of a sandy silt and clay layer to a depth of 15 to 18 feet bgs. This deposit overlays a fine grained sand with varying amounts of silt and clay that extends to the maximum depth explored of 27 feet bgs. The areas that have undergone excavation have been back filled with a gravely sand to sandy gravel.

Ground Water: Ground water is encountered at the Property at depths of approximately 16 to 19 feet bgs under unconfined conditions. Water surface elevations over the period of monitoring indicate that the ground water flow varies seasonally and appears to be influenced by the local topography and the Green River.

Water surface elevation contours indicate that there is generally a higher elevation towards the northeast corner of the site that mimics the topographic ridge that extends down towards the site from the north. The inferred flow in this area is to the southeast. Water surface elevation contours across the remainder of the site ranges from 0.003 to 0.008 ft/ft to the east towards the Green River.

Water Use: The property is served by Tukwila Water District and Tukwila Sewer District for water and sewer. No municipal wells have been identified within one-half mile to the northwest of the property.

#### The Site:

Subsurface soil investigations and compliance sampling have determined the lateral and vertical extent of the release. All contaminated soils exceeding the Method A direct contact cleanup levels have been removed. The soil contamination was located in the general vicinity of the UST tank nest, dispenser islands and system piping.

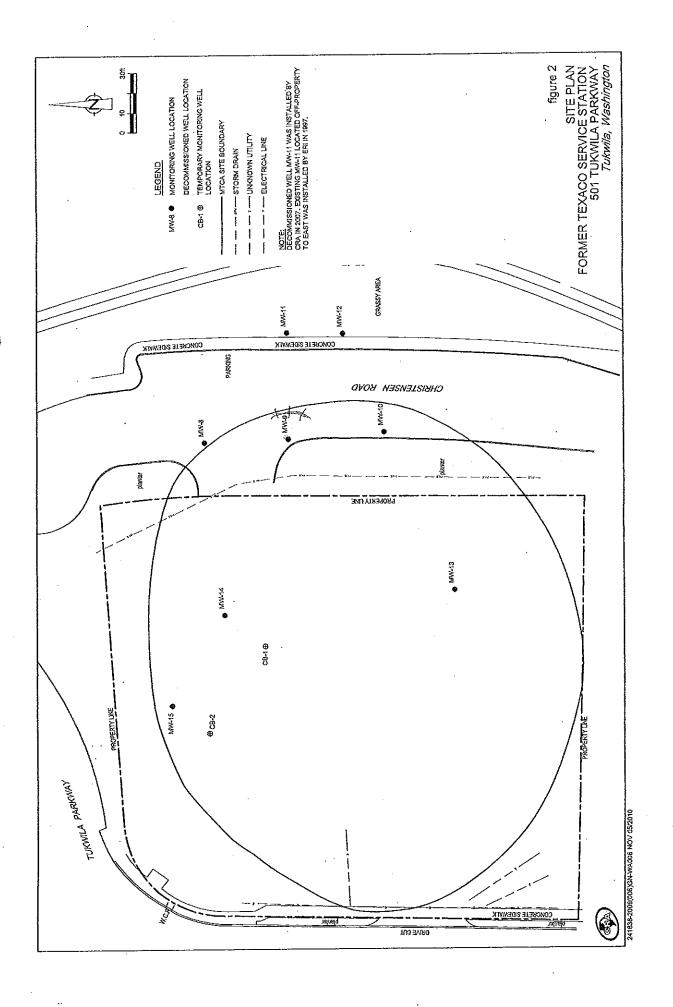
Ground water contamination (TPHg and TPHd) remains at concentrations at or above MTCA Method A cleanup levels in monitoring wells MW-9, and MW-14 after source removal excavation work. The lateral extent of the contamination has not reached the down gradient wells MW-11 and MW-12.

Evaluation of the existing contamination in the monitoring wells indicates that the plume is shrinking or stable and Method A cleanup levels will be reached within 5 years.

Interim Actions: Cleanup actions at the Site consisted of three interim actions and ongoing monitored natural attenuation (MNA). In 1989, approximately 150 cubic yards of soil were removed from waste oil and heating oil UST excavations during upgrades to the system. In 2006, six USTs, product piping, dispensers, and hydraulic hoists were completely removed from the property. Soil in the UST nest area was removed to a depth of 14 feet bgs. Soil around the USTs and hoists was removed to depths between 8 to 10 feet bgs.

3/1/11 Page 3

During 2007 an additional 10,500 tons of soil and 9,400 gallons of contaminated water in the excavations were removed from the site. The average depth of the excavation was approximately 22 feet bgs. Confirmation soil samples from the excavation work were collected in 2007, 2009 and 2010.



### **Enclosure B**

## **Basis for the Opinion:**List of Documents

	Environmental Document List: 501 Tukwila Parkway, Tukwila, WA						
Title	Author	Date -	Submitted to Ecology				
			Y/N	Date			
Environmental Assessment and Underground Storage Tank Closure	Groundwater Technology, Inc.	7/1/1990	Unknown	N/A			
Additional Environmental Activities	Groundwater Technology, Inc.	8/1/1992	Unknown	N/A			
Report of Additional Subsurface Investigation	Groundwater Technology, Inc.	2/26/1994	Y	5/10/1994			
Subsurface Investigation and Groundwater Sampling Report	EMCON Northwest, Inc.	2/8/1996	Y	2/20/1996			
Subsurface Site Investigation Report	Environmental Resolutions, Inc.	2/5/1997	Y	3/14/1997			
Semi-Annual Groundwater Monitoring - Fourth Quarter 2001	SECOR International, Inc.	11/12/2001	Y	3/6/2002			
Groundwater Monitoring Report Fourth Quarter 2002	GeoEngineers, Inc.	12/6/2002	Y	12/11/2003			
Groundwater Monitoring Report Second Quarter 2003	GeoEngineers, Inc.	5/27/2003	Y	5/28/2003			
Groundwater Monitoring Report Fourth Quarter 2003	GeoEngineers, Inc.	12/3/2003	Y	12/18/2003			
Groundwater Monitoring Report Second Quarter 2004	GeoEngineers, Inc.	6/8/2004	Y	6/15/2004			
Groundwater Monitoring Report Fourth Quarter 2004	GeoEngineers, Inc.	1/4/2005	Y	1/10/2005			
Groundwater Monitoring Report Second Quarter 2005	GeoEngineers, Inc.	7/18/2005	Y	7/20/2005			
Groundwater Monitoring Report Fourth Quarter 2005	GeoEngineers, Inc.	12/13/2005	Y	12/15/2005			
Groundwater Monitoring Report Second Quarter 2006	GeoEngineers, Inc.	6/5/2006	Y	6/8/2006			
Environmental Services Report Underground Storage Tank and Hydraulic Hoist Removal	GeoEngineers, Inc.	8/2/2006	Y	8/9/2006			
Mixed Use Geotechnical Engineering Survey Proposed Development	Earth Solutions NW, LLC	10/17/2006	N	N/A			
Groundwater Monitoring Report Fourth Quarter 2006	GeoEngineers, Inc.	11/16/2006	Y	11/20/2006			
Site Conceptual Model Summary	GeoEngineers, Inc.	10/24/2006	N	N/A			
Phase II Site Assessment Report	Cambria Environmental Technology, Inc.	2/12/2007	Y	3/9/2007			
Corrective Action Work Plan	Conestoga-Rovers & Associates	6/14/2007	Y	6/18/2007			
Technical Memorandum	Icicle Creek Engineers	11/14/2007	N	N/A			
Technical Memorandum No. 2	Icicle Creek Engineers	12/12/2007	N	. N/A			
Groundwater Monitoring Report - Third Quarter 2007	Conestoga-Rovers & Associates	1/3/2008	Y	1/8/2008			
Summary Letter Geotechnical Services During Construction Remedial Excavation and Backfill	Icicle Creek Engineers	1/29/2008	N	N/A			
0.12 e D	Conestoga-Rovers & Associates	2/14/2008	Unknown	N/A			
Soil Excavation Report				ı — ———			
Soil Excavation Report Groundwater Monitoring Report - First Quarter 2008	Conestoga-Rovers & Associates	6/19/2008	Y	6/23/2008			

Environmental Document List: 501 Tukwila Parkway, Tukwila, WA						
Title	Author	Date	Submitted to Ecology			
			Y/N	Date		
Site Investigation Report & Preliminary Evaluation of Monitored Natural Attenuation	Conestoga-Rovers & Associates	8/20/2008	Y	0 /01 /0000		
		0/20/2008	<u> </u>	8/21/2008		
Groundwater Monitoring Report - Third Quarter 2008	Conestoga-Rovers & Associates	12/16/2008	Y	12/19/2008		
Groundwater Monitoring Report - Fourth Quarter 2008	Conestoga-Rovers & Associates	2/26/2009	Y	Unknown		
Site Investigation Work Plan	Conestoga-Rovers & Associates	4/23/2009	Unknown	Unknown		
Groundwater Monitoring Report - First Quarter 2009	Conestoga-Rovers & Associates	6/25/2009	Y	Unknown		

#### APPENDIX B

SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIVITIES

#### SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIVITIES

1990 Environmental Assessment and Underground Storage Tank Closure: In September 1989, three first generation gasoline underground storage tanks (USTs) were removed from the Property under supervision by Groundwater Technology, Inc. (GTI), including one 10,000-gallon leaded gasoline UST, one 10,000-gallon unleaded gasoline UST, and one 6,000-gallon super unleaded gasoline UST. Soil samples collected from soil excavated from the gasoline UST excavation contained petroleum hydrocarbons above the Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) Method A cleanup levels. The excavated material was aerated until analyte concentrations were below Ecology's draft guideline cleanup requirements and used as backfill. One 550-gallon waste oil UST and one 1,000-gallon heating oil UST were additionally removed from the Site in an excavation that reached a total maximum depth of approximately 12 feet below ground surface (bgs). Approximately 150 cubic yards of petroleum-impacted soils were excavated from the waste oil and heating oil UST excavations and removed from the Site. Further lateral extension of the excavation was not possible, without undermining site infrastructure. Final excavation bottom samples from beneath the waste oil UST and heating oil UST contained total petroleum hydrocarbons (TPH) at concentrations of 731 milligrams per kilogram (mg/kg) and 8,210 mg/kg, respectively. To further investigate the extent of hydrocarbons in the vicinity of the former waste oil and heating oil USTs, GTI installed monitoring wells MW-1 and MW-2, collecting soil and groundwater samples from each well boring. The soil sample from MW-1 at 15.5 feet bgs contained TPH at a concentration of 4,200 mg/kg. The soil samples from MW-2 did not contain TPH above MTCA Method A cleanup levels. The groundwater samples collected from the wells in April 1990 indicated no petroleum hydrocarbons above the MTCA Method A cleanup levels. More information is available in GTI's Environmental Assessment and Underground Storage Tank Closure, dated July 1990.

1992 Additional Environmental Activities: In 1992, GTI provided Texaco Environmental Services with a feasibility/cost study, outlining the options and cost for remediation work at the Site at that time. GTI summarized Site conditions and determined further definition of the extent of hydrocarbons at the Site was necessary prior to determining an appropriate remedial action. More information is available in GTI's Additional Environmental Activities report, dated August 1992.

**1994** Report of Additional Subsurface Investigation: In 1994, GTI installed two additional monitoring wells at the Site, including MW-3 and MW-4. The wells were installed to a total depth of 25 feet bgs and soil samples were collected from each well and analyzed for TPH as gasoline (TPHg), TPH hydrocarbon screen, benzene, toluene,

ethylbenzene, and xylenes (BTEX), and polycyclic aromatic hydrocarbons (PAHs). Analytical results indicated no soil sample contained any analyte above the MTCA Method A cleanup levels. Groundwater samples collected from MW-3 contained BTEX, TPHg, and total arsenic above the MTCA Method A cleanup levels. The groundwater samples collected from wells MW-1, MW-2, and MW-4 additionally exceeded the MTCA Method A cleanup level for arsenic. No other groundwater sample contained any other analyte above the MTCA Method A cleanup levels. More information in GTI's Report of Additional Subsurface Investigation, dated April 26, 1994.

1996 Subsurface Investigation and Groundwater Sampling Report: In October 1995, EMCON Northwest, Inc. (EMCON) installed three additional monitoring wells at the Site, including MW-5 through MW-7. The wells were installed to a total depth of 26.5 feet bgs and screened from 5 to 25 feet bgs. Two soil samples were collected from each well; analytical results indicated that no soil samples contained petroleum hydrocarbons above current MTCA Method A cleanup levels. Analytical results for groundwater samples collected from monitoring wells indicated existing wells MW-3 and MW-4 and new well MW-5 contained hydrocarbons above MTCA Method A cleanup levels. No other groundwater sample contained any other analyte above the MTCA Method A cleanup levels. More information is available in EMCON's Subsurface Investigation and Groundwater Sampling Report, dated February 8, 1996.

1997 Subsurface Site Investigation Report: In 1997, Environmental Resolutions, Inc. (ERI) conducted an environmental investigation at the Site, including installation of three additional monitoring wells (MW-8 through MW-10) to a total depth of 24 feet bgs. One soil sample was collected from each well from approximately 9 to 10 feet bgs. No soil sample contained hydrocarbons above the MTCA Method A cleanup levels. Groundwater results from wells MW-8 through MW-10 indicated well MW-9 contained benzene above the MTCA Method A cleanup level. No other groundwater sample contained hydrocarbons above cleanup levels. More information is available in ERI's Subsurface Site Investigation Report, dated February 5, 1997.

1997 Subsurface Site Investigation Report: In September 1997, ERI supervised the completion of five soil borings at the site (B11 through B15), two of which were installed as off-Property monitoring wells MW-11 and MW-12 completed to a total depth of approximately 27 and 25 feet bgs, respectively. Borings B13 through B15 were completed to an approximate depth of 21 feet bgs on the eastern and western sidewalls and the bottom of the former UST pit. Soil analytical results from wells MW-11 and MW-12 and soil boring B13 did not contain any concentrations of petroleum hydrocarbons above the MTCA Method A cleanup levels. The soil samples from borings B14 and B15 at a depth of 15.5 feet bgs contained TPHg, ethylbenzene, and xylenes above the MTCA Method A

cleanup levels. Although benzene was not detected in either sample, the method reporting limits for benzene exceeded the MTCA Method cleanup level in both samples. The soil sample from B14 at 12 feet bgs contained benzene at a concentration exceeding the MTCA Method A cleanup level. No other soil sample contained any other analyte above the MTCA Method A cleanup levels. Analytical results for groundwater samples collected from MW-11 and MW-12 from the September 1997 sampling event indicated MW-11 contained chromium, arsenic, and total lead above the MTCA Method A cleanup levels and MW-12 contained arsenic above the MTCA Method A cleanup levels. It does not appear that MW-11 and MW-12 were sampled subsequent to 1997 until 2008. More information is available in ERI's *Site Subsurface Investigation Report*, dated December 1, 1997.

**2006** Environmental Services Report: In July 2006, GeoEngineers, Inc. (GeoEngineers) supervised the removal of six USTs, associated product piping and dispensers and two hydraulic hoists. The USTs removed included three 10,000-gallon gasoline USTs, one 10,000-gallon diesel UST, one 1,000-gallon heating oil UST, and one 500-gallon waste oil UST. GeoEngineers reported that all tanks appeared to be intact upon removal. The gasoline and diesel UST excavation was completed to a depth of approximately 14 feet bgs, the heating oil UST excavation was completed to approximately 9 feet bgs, and the waste oil UST excavation was completed to approximately 8 feet bgs. A total of 26 soil samples were collected from the limits of the UST and dispenser islands excavations. The excavation for the hydraulic hoists was completed to approximately 10 feet bgs. Two soil samples were collected from the base of each hoist excavation. Analytical results indicated that confirmation soil samples from the base of the northern gasoline UST, the northwest sidewall of the main UST excavation, and from the base of the northeastern dispenser islands contained benzene at concentrations exceeding the MTCA Method A cleanup levels. No other soil samples from the UST or dispenser island excavations contained any analyte above the cleanup levels. The soil samples from the hydraulic hoist excavation did not contain any hydrocarbons above the MTCA Method A cleanup levels. No overexcavation was completed during the UST removal activities. Pea gravel originally removed from the excavations was used as backfill. More information is available in GeoEngineers' Environmental Services Report Underground Storage Tank and Hydraulic Hoist Removal, dated August 2, 2006.

2007 Phase II Site Assessment: Prior to Site development, Cambria Environmental Technology, Inc. (Cambria) completed a Phase II Site assessment, including 29 soil borings in the locations of the former gasoline and diesel USTs, the dispenser islands, and the waste oil and heating oil USTs. Soil analytical data suggests four areas of concern exist at the Site, including the former northern dispenser island, the southern portion of the former main UST pit, shallow soil near the former waste oil UST, and east

of the former heating oil UST. Cambria also noted that the former wells west of MW-5 appeared to be damaged and well MW-1 could not be located. More information is available in Cambria's *Phase II Site Assessment Report*, dated February 12, 2007.

**2008** Soil Excavation Report: Between June 2007 and December 2007, Conestoga-Rovers & Associates (CRA) supervised extensive soil excavation of areas identified as containing impacted soil. Approximately 10,500 tons of excavated soil were transported off-Site for disposal and approximately 9,400 gallons of water was removed from the Site for disposal. Icicle Creek Engineers, Inc. (ICE) was contracted to complete compaction testing following backfilling of the excavation. Analytical results from confirmation soil samples indicated that soil samples CS27-21 and CS31-22, collected from the bottom of the excavation north of the dispenser islands were the only confirmation samples containing hydrocarbon concentrations above the MTCA Method A cleanup levels. Attempts were made to overexcavate the sample locations; however, further excavation was not possible due to rising groundwater levels to above 20 feet bgs. More information is available in CRA's Soil Excavation Report, dated February 14, 2008.

2009 Site Assessment: In 2009, CRA supervised the installation of three additional monitoring wells, including wells MW-13 through MW-15. Well MW-13 was installed in the southeastern portion of the Site, well MW-14 was installed north of the first generation UST pit (northeastern portion of the Site), and well MW-15 was installed along the northern Property boundary. Each well was installed to a total depth of 25 feet bgs and no soil samples were collected from the wells. Groundwater results from the June 2009 monitoring event indicated new well MW-14 contained TPHg and benzene at concentration above the MTCA Method A cleanup levels. No other existing or new well contained any analyte above cleanup levels.

### APPENDIX C SHELL GLOBAL SOLUTIONS LETTER



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March 26, 2012

Re: Review of data of a groundwater sample from 501 Tukwila Parkway, Tukwila, WA.

#### Dear Brian:

I compared the chromatograms of a groundwater sample collected at a former Shell site located at 501 Tukwila Parkway, Tukwila, WA with the chromatogram from a diesel standard reference provided by TestAmerica. The material present in the groundwater sample is not indicative of diesel. The chromatograms are provided in Figure 1.

The expanded chromatogram of the groundwater sample shows resolved peaks that elute relatively earlier than diesel with the signal returning to baseline well before expected for a diesel fuel. These resolved peaks may be more indicative of residual gasoline.

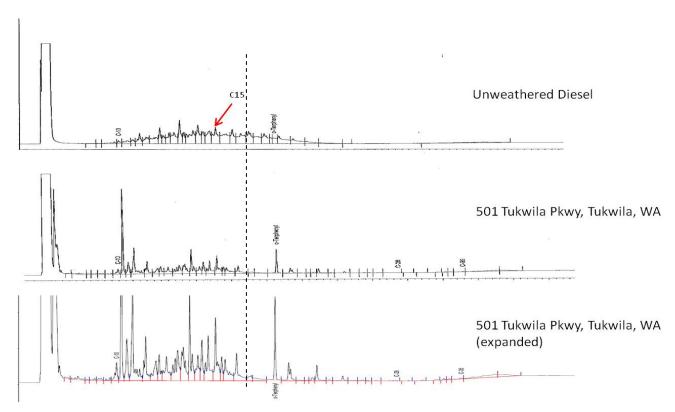
Let me know if you have any questions and/or comments or if you would like additional details.

Best regards,

Ileana Rhodes, Ph.D. Principal Consultant

cc: P. V. Pineda

E.M. Hinojosa



**Figure 1**: Gas chromatography with flame ionization detection analysis of a diesel fuel lab standard and of a groundwater sample from 501 Tukwila Parkway, Tukwila, WA. The expanded chromatogram of the groundwater sample is indicative of weathered residual gasoline. The material in the groundwater sample is relatively lighter than the diesel standard provided by TestAmerica for comparison.