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DEPT. OF ECOLOGY/SWGO

April 29, 1999

'02 JAN 22 A11:30

Ms. Ann Marie Johnson Chevron Products Company P.O. Box 6004 San Ramon, California 94583

Re:

Subsurface Site Assessment Chevron Station 9-5311 1018 Plum Street

Olympia, Washington

Dear Ms. Johnson:



Cambria Environmental Technology, Inc. (Cambria) is pleased to present the results of our site assessment activities conducted on March 17 and 18, 1999, at 1018 Plum Street in Olympia, Washington. The investigation objective was to evaluate petroleum hydrocarbons in the soil and groundwater beneath the site. The investigation included advancing four borings and completing them as groundwater monitoring wells. Soil and groundwater samples were collected and submitted for analysis for petroleum constituents. A site summary and the results of our investigation are presented below.

SITE SETTING AND HISTORY

The site is located at the intersection of Union Avenue and Plum Street in Olympia, Washington (Figure 1). The site is an active gasoline station with a small convenience store. A service bay building in northeast corner of the property is no longer in use. The site topography slopes slightly to the west and at an elevation of approximately 20 feet above mean sea level. Indian Creek and Moxlie Creek are located less than ½ mile south and southeast of the subject property, respectively. Capitol Lake is located approximately 1 mile west of the site. Surrounding land use is commercial.

An environmental investigation was conducted by others in 1993. Results of this investigation are in a report titled "Stage II Vapor Recovery System Installation", dated August 4, 1993. During these activities, four soil samples were obtained around the pump islands. Analytical results indicated gasoline-range hydrocarbons and xylenes above the corresponding Washington MTCA Method A cleanup levels in soils.

Cambria Environmental Technology, Inc.

Oakland, CA Sonoma, CA

Portland, OR

Seattle, WA

Another environmental assessment was performed in April and May 1995, during construction activities. Results of this investigation are in a report titled "Environmental Site Assessment", dated October 5, 1995. Construction activities included replacing the dispenser islands and fuel

27350 S.W. 95th Avenue Suite 3030 Wilsonville, OR 97070 Tel (503)582-8801 Fax (503)582-8901 delivery piping, installation of an additional 10,000-gallon gasoline UST, and replacing the 1,000-gallon, used oil UST. During these activities, soil samples were obtained in the UST excavations, the piping trenches, and under the fuel dispensers. The location, depth, and gasoline-range hydrocarbon concentrations for the soil samples are shown on Figure 2.

Concentrations of hydrocarbons as gasoline ranged from <1.0 to 9,900 parts per million (ppm) in the piping trenches and under the fuel dispensers. The highest concentrations were located in shallow soil samples collected on the west end of the fuel dispenser islands. Some of the soil was over-excavated for construction purposes. No petroleum hydrocarbons or associated constituents were detected above MTCA Method A cleanup levels in soil samples obtained from the gasoline and used oil UST excavations in 1995.

Approximately 294,000 gallons of groundwater was pumped into Baker Tanks from the gasoline UST excavation. Analytical test results of the water from the Baker Tanks indicated gasoline-range hydrocarbons up to 14,000 parts per billion (ppb) and benzene up to 200 ppb. The water was treated using air sparge and discharged to the storm water system.

FIELD ACTIVITIES

Cambria's investigation objective was to evaluate the horizontal and vertical extent of petroleum hydrocarbons in the soil and groundwater beneath the site. On March 17, 1999, four soil borings (MW-1 through MW-4) were advanced using an 8-inch-outside-diameter hollow-stem augur (HSA) drill rig to depths of 15 feet below ground surface (bgs). Soil samples were collected between 2-3 feet, 4-5 feet, 5-7.5 feet, 10-12.5 feet, and 15-17.5 feet in each boring and screened with a photoionization detector (PID). Soil samples collected at 4 feet and 10 feet were submitted to the analytical laboratory. The borings were completed as 2-inch-diameter wells. Boring logs are presented in Attachment A. Field procedures, well construction, well development, purging, and sampling procedures are included in Attachment B.

Site soils generally consisted of gravel fill and sand overlying silt with a high content of organic material. Groundwater was initially encountered at depths of 4.0-5.5 feet on the west side of the site and 14.0-15.0 feet bgs on the east side of the site. Static groundwater levels ranged from 1.95 to 5.9 feet in the newly installed monitoring wells. The well locations are shown on Figure 2.

Photoionization detector (PID) and field observations were used to screen soil samples for the presence of hydrocarbons. Soil samples were selected from depths between 4 and 5 feet and 10 to 12.5 feet from each boring and submitted for analysis for total petroleum hydrocarbons (TPH) using Washington Department of Ecology (Ecology) Methods TPH-HCID (hydrocarbon identification) and total metals (cadmium, chromium, and lead) using EPA Method 6020.

Detected hydrocarbons were quantified with Washington Ecology Methods WTPH-G (gasoline) and WTPH-D extended with silica gel cleanup (diesel and heavy oil). Soil sample MW-2/4 was also analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Method 8020A.

Groundwater samples were collected from MW-1 through MW-4 on March 18, 1999, and submitted for analysis for BTEX using EPA Method 8020A, gasoline and diesel using Washington Ecology Methods WTPH-G and WTPH-D extended, ethylene dibromide (EDB), ethylene dichloride (EDC), and methyl tert-butyl ether (MTBE) using EPA Method 8260B, and dissolved lead using EPA Method 200.8. Groundwater sample "MW-10" was obtained as a duplicate sample of Well MW-1. The duplicate results were identical. Groundwater elevations indicate a north-northeast groundwater gradient (Figure 3).

ANALYTICAL TEST RESULTS

Soil

Petroleum hydrocarbons as diesel and heavy oil were detected above Ecology MTCA Level A cleanup levels in the soil sample collected between the depths of 4 to 5 feet from boring MW-3. Diesel was detected at 249 ppm and heavy oil was detected at 434 ppm. Boring MW-3 is located on the east portion of the site (Figure 2). Gasoline and heavy oil were detected in the soil sample collected between the depths of 4 to 5 feet from boring MW-2. However, quantification results were below Ecology MTCA Level A cleanup levels. Total metals (cadmium, chromium, and lead) were not detected above Ecology MTCA Level A cleanup levels. Tables 1 and 2 present the analytical test results for hydrocarbons and metals, respectively, and the corresponding cleanup levels.

Groundwater

All analytical test results for the groundwater samples collected from MW-1, MW-3, and MW-4 were below analytical reporting limits. Benzene was detected at 5.41 ppb, ethylbenzene at 2.24 ppb, and xylenes at 2.57 ppb in the groundwater sample collected from Well MW-2. Well MW-2 is located west of the dispenser islands. Analytical test results are presented on Tables 3 and 4. Groundwater elevations and contours, and benzene concentrations are shown on Figure 3.

CONCLUSIONS

The active Chevron Station at 1018 Plum Street in Olympia, Washington has had previous environmental investigations performed. In 1995, a release was reported to the Washington Department of Ecology based on analytical test results for soil and groundwater encountered during site construction activities. Results of these analytical tests indicated the presence of hydrocarbons in shallow soils and in groundwater.

Site soils consisted of gravel fill and sand overlying silt with a high content of organic material. Our recent investigation included the drilling and installation of four monitoring wells and collection and analysis of soil and groundwater samples. Analytical test results indicated hydrocarbons above Washington Ecology cleanup levels in the soil under the eastern portion of the site and benzene in groundwater slightly above MTCA Method A cleanup levels in Well MW-2, on the west side of the site. Groundwater elevations indicate a north-northeast groundwater gradient.

No hydrocarbons were detected in any of the soil samples collected between 10 and 12.5 feet bgs. Analytical test results and field observations indicate impact to soils is limited to a depth of approximately 4 feet. Generally, groundwater does not appear to be impacted with the exception of Well MW-2, where benzene is slightly above MTCA Method A cleanup levels. Quarterly monitoring will be initiated at the site to confirm groundwater results.

Please call at (503) 582-8801 if you have any questions or comments.

Sincerely.

Cambria Environmental Technology, Inc.

Alice Larsen
Project Engineer

Attachments:

Figure 1 –Site Location Map

Figure 2 - Site Map

Figure 3 – Groundwater Elevation Contours – March 19, 1999

Table 1 - Soil Analytical Data - Hydrocarbons

Table 2 - Soil Analytical Data - Metals

Table 3 - Groundwater Elevation and Analytical Data

Table 4 – Groundwater Analytical Data

Attachment A –Soil Boring Logs

Attachment B -- Field Sampling Protocol, Certified Analytical Reports, and Chain-of-Custody Documentation

cc: Lynn Gooding, Washington Department of Ecology, Olympia, Washington



REFERENCES

USGS 7.5 Minute Topographic Map Titled: Tumwater, Washington

Revised: 1994

Quadrangle Location

1/2 Scale (mi)

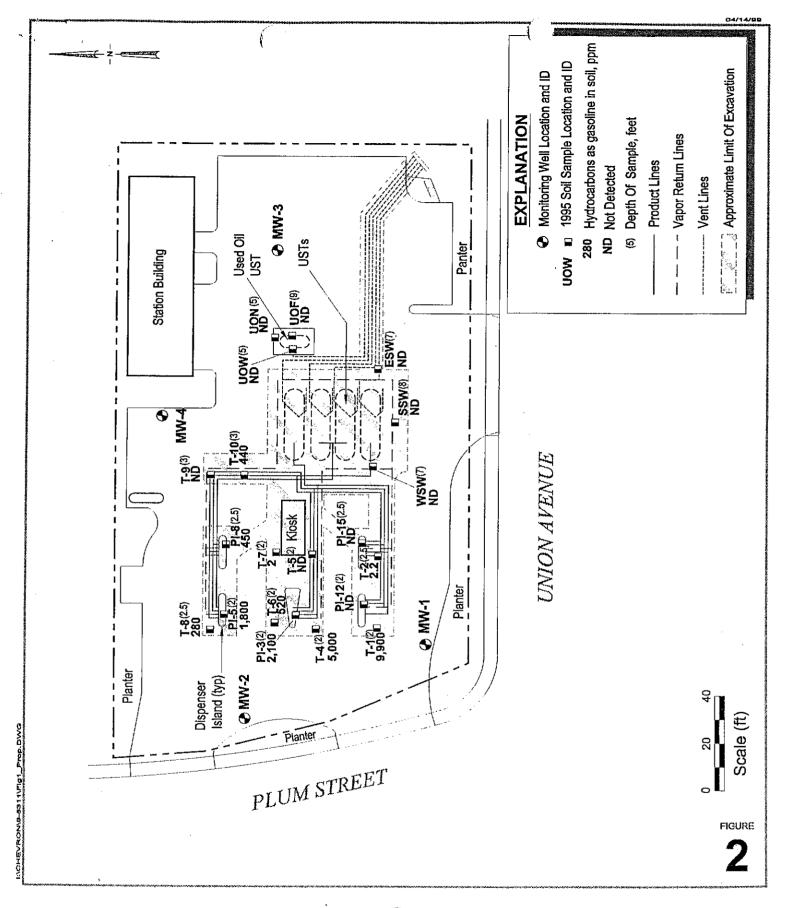
FIGURE

Chevron Station 9-5311

1018 Plum Street Olympia, Washington



Site Location Map



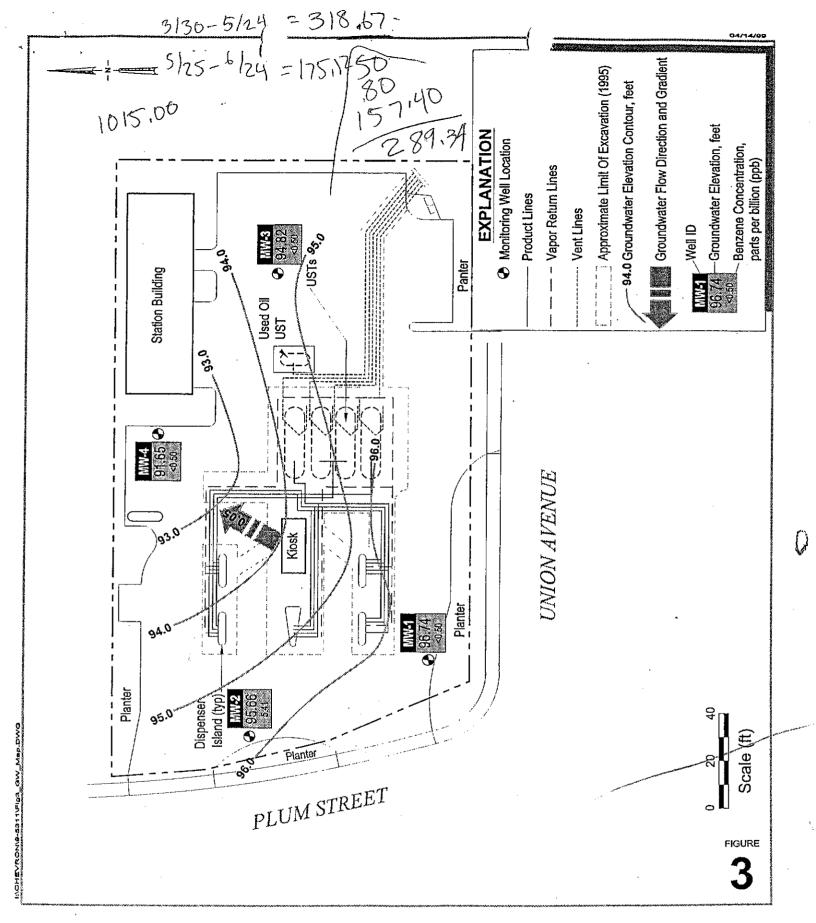
Chevron Service Station 9-5311

1018 Plum Street Olympia, Washington



Site Plan

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Chevron Service Station 9-5311

1018 Plum Street Olympia, Washington



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Groundwater Elevation Contour Map

March 18, 1999

Table 1 Soil Analytical Data - Hydrocarbons

Chevron Station 9-5311 1018 Plum Street Olympia, Washington

Sample ID	Date			HCID	ICID	TPH- Gasoline	TPH- Diesel	Heavy Oil
and Depth	and Depth Sampled PID Gas Diesel Oil		Oil	(ppm)	(ppm)	(ppm)		
MW-1/4	3/17/99	0	ND	ND	ND	<20	<50	<100
MW-1/10-12.5	3/17/99	0	ND	ND	ND	×20 ³	<50	<100
MW-2/4	3/17/99	10	Detected	ND	Detected	(28.4)	<50	124
MW-2/10-12.5	3/17/99	0	ND	ND	ND	₹20	<50	<100
MW-3/4	3/17/99	0	ND	Detected	Detected	<20	249	434
MW-3/10-12.5	3/17/99	0	ND	ND	ND	<20	<50	<100
MW-4/4	3/17/99	0	ND	ND	ND	<20	<50	<100
MW-4/10-12.5	3/17/99	0	ND	ND	ND	<20	<50	<100
MTCA, Method A	Cleanup Leve	ls:				100	200	200

ppm = parts per million

TPH - total petroleum hydrocarbons

Hydrocarbon Identification using Washington Method WTPH-HCID

TPH-Gasoline using Washington Method WTPH-G

TPH-Diesel and TPH-Oil using Washington Method WTPH-Diesel Extended with silica gel cleanup MTCA, Method A Cleanup Levels - based on Washington Department of Ecology Model Toxics Control Act (MTCA) Cleanup Regulation Chapter 173-340 WAC-p. 76.

Table 2 Soil Analytical Data - Metals

Chevron Station 9-5311 1018 Plum Street Olympia, Washington

Sample ID and Depth	Date Sampled	Cadmium (ppm)	Total Metals Chromium (ppm)	Lead (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Total Xylenes (ppm)
MW-1/4	3/17/99	< 0.50	39.5	31.1	-		-	-
MW-1/10-12.5	3/17/99	< 0.50	31.2	<10.0	-	-	-	-
MW-2/4	3/17/99	< 0.50	11.8	<10.0	< 0.05	< 0.05	0.189	0.373
MW-2/10-12.5	3/17/99	< 0.50	31.1	<10.0	-	_	-	_
MW-3/4	3/17/99	< 0.50	43.6	22.9	-	-	_	-
MW-3/10-12.5	3/17/99	< 0.50	43.8	24.2	-	-	-	_
MW-4/4	3/17/99	< 0.50	28.5	24.2	-	-	- -	_
MW-4/10-12.5	3/17/99	< 0.50	37.4	<10.0	-	-	-	-
MTCA, Method A Cleanup Levels:		2.0	100.0	250.0	0.5	40.0	20.0	20.0

ppm = parts per million

Total metals using EPA Method 6010A

BTEX using EPA Method 8020A

MTCA, Method A Cleanup Levels - based on Washington Department of Ecology Model Toxics Control

Act (MTCA) Cleanup Regulation Chapter 173-340 WAC-p. 76.

Table 3 Groundwater Elevation and Analytical Data

Chevron Station 9-5311 1018 Plum Street Olympia, Washington

Well/Sample Identification (toc)	Date Sampled	Benzene (ppb)	Toluene (ppb)	Ethyl- benzene (ppb)	Xylenes (ppb)	MTBE (ppb)	Dissolved Lead (ppb)	DTW (feet)	SPH Thickness (feet)	Groundwater Elevation (feet)
MW-1 (98.19)	03/18/99	<0.50	<0.50	<0.50	<1.0	<0.50	<1	1.45	0.00	96.74
MW-2 (97.23)	03/18/99	.5.41	<0.50	2.24	2.57	<0.50	<1	1.57	0.00	95.66
MW-3 (99.98)	03/18/99	<0.50	<0.50	<0.50	<1.0	<0.50	<1	5.16	0.00	94.82
MW-4 (99.31)	03/18/99	<0.50	<0.50	<0.50	<1.0	<0.50	<1	7.66	0.00	91.65
MW-10 ¹	03/18/99	<0.50	<0.50	<0.50	<1.0	<0.50	<1	-	-	-
TB-LB*	01/20/99	<0.50	<0.50	<0.50	<1.0	<0.50	<1	-	-	-
MTCA I 1 A										
MTCA, Level A Cleanup Levels:		5	40	30	20	-	5	-	-	-

⁼ Duplicate sample of MW-1

toc = Top of casing elevation relative to assigned benchmark

DTW = Depth to water

SPH = Separate-phase hydrocarbon

ppb = Parts per billion

* = TB-LB is the trip blank sample

MTBE= methyl tert-butyl ether

- = Not measured, not analyzed, not sampled, or not applicable

BTEX using BPA Method 8020A

MTBE using EPA Method 8260B

Dissolved Lead using EPA Method 200.8

Table 4 Groundwater Analytical Data

Chevron Station 9-5311 1018 Plum Street Olympia, WA

Well/Sample Identification	Date Sampled	TPH-G (ppb)	TPH-D (ppb)	TPH-HO (ppb)	EDB (ppb)	EDC (ppb)
MW-1	03/18/99	<80	<250	<500	<0.50	<0.50
MW-2	03/18/99	<80	<250	<500	<0.50	<0.50
MW-3	03/18/99	<80	<250	<500	<0.50	<0.50
MW-4	03/18/99	<80	<250	<500	<0.50	<0.50
MW-10	03/18/99	<80	<250	<500	<0.50	<0.50
TB-LB*	03/18/99	<80	-	-	< 0.50	<0.50
MTCA, Level	A					
Cleanup Level	s:	1,000	1,000	1,000	0.01	5.0
Cleanup Level	s:	1,000	1,000	1,000	0.01	5.0

ppb = Parts per billion

TPH-G = Gasoline Range Hydrocarbons

TPH-D = Diesel Range hydrocarbons

TPH-HO = Heavy Oil Range Hydrocarbons

EDB = ethylene dibromide (1,2-Dibromoethane)

EDC = ethylene dichloride (1,2-Dichloroethane)

TPH-G using Washington Method WTPH-G

TPH-D and TPH-HO using Washington Method WTPH-D extended

EDB and EDC using EPA Method 8260B

⁻⁼ Not measured, not analyzed, not sampled, or not applicable

^{*} TB-LB is the trip blank sample

ATTACHMENT A BORING LOGS

Site Ac		18 Plum Street	, Olympia, `				MW -:
_	t #: 310-1567 gist/Engineer: A. Larsen Boring Location: Drilling Method:				See Figure 2 Hollow-Stem Auger, 8" O.D.	Date: 03/17/99	
Depth (Feet)	Sample Interval (Feet)	Sample ID	PID Reading	Blow Count	Soil Type	e and Comments	Well Construction
5	2 to 3 5 to 7.5	MW-1/2-3 MW-1/4-5 MW-1/5-7.5	0 0 0	4 8 12	Dry, gray, c Tweet, gray, fi SAND/wood Wet, gray, m	er gravel. ater at 1.95'. SILT. layey SILT. acountered at 5.5'.	Concrete seal with surface cover Bentonite seal 2-in. I.D. flush-threaded, Sch. 40 PVC 10/20 silica sand pack 2-in. I.D. flush-threaded Sch. 40 PVC 0.010-in slot well screen
	15 to	MW-1/	0	2	SAND.		Bottom cap
	17.5	15-17.5		3	Wet, blue-gra	ay, CLAY.	•

		18 Plum Street	, Olympia, '				MW-3			
Geologis	Geologist/Engineer: A. Larsen			5 == 5 to 11 5 to 11				See Figure 2 Hollow-Stem Auger, 8" O.D.	Date: 03/17/99	
Depth (Feet)	Sample Interval (Feet)	Sample ID	PID Reading	Blow Count	Soil Type	e and Comments	Well Construction			
	2 to 3	MW-2/2-3	9		Hand auger Asphalt ove ▼ Static Wa	er gravel. ater at 2.09°.	Concrete seal with surface cover Bentonite seal 2-in. I.D. flush-			
 ;	5 to	MW-2/4-5 MW-2/5-7.5	10	2	i	icountered at 4.0'.	threaded, Sch. 40 PVC 10/20 silica			
	7.5			2 2	Wet, gray, sa		sand pack 2-in. I.D. flush- threaded Sch. 40 PVC 0.010-in slot well			
)_ -	10 to 12.5	MW-2/ 10-12.5	0	4 3 4	Wet, gray, m SAND/ organ	edium to fine nic debris.	screen			
-	<i>⊘</i> 2 r	MW-2/ 15-17.5	o	3 4 6	Wet, gray, SI debris.	LT/ wood	Bottom cap			
		,			-					

	Chevron Idress: 10	18 Plum Street	, Olympia, ^v	WA			MW	7-3	
		Boring Location: See Figure 2 WEngineer: A. Larsen Boring Location: See Figure 2 Drilling Method: Hollow-Stem Auger, 8" O.D.				See Figure 2 Hollow-Stem Auger, 8" O.D.	Date: 03/17/99		
Depth (Feet)	Sample Interval (Feet)	Sample ID	PID Reading	Blow Count	Soil Typ	e and Comments	Well Construction	οn	
	2 to	MW-3/2-3	0		Hand auger Asphalt over	er gravel.	Concrete seal with surface cover Bentonite seal 2-in, I.D.		
	3	MW-3/4-5					flush- threaded, Sch. 40		
5	5 to 7.5	MW-3/4-5 MW-3/5-7.5	0	2	Dry, gray S Moist, gray ▼ Static W	SILŢ.	PVC 10/20 silica sand pack 2-in. I.D. flush-		
				2	Drilling diff decayed wo	ficult. Partially od.	threaded Sch. 40 PVC 0.010-in slot well screen		
10_	10 to 12,5	MW-3/ 10-12.5	0	2 3 5	Moist, gray, debris.	SILT/ wood			
				:	₩ Worse Es	countered at 15.0'			
	15 to 17.5	MW-3/ 15-17.5	0	8 10 13	Wet, gray, fi	пе to coarse	Bottom cap	25,53	
20		7	ttom c C D c '		eet. Well ID	4 CN1070			

	: Chevron Idress: 10	18 Plum Street	, Olympia, ¹	WA		MW-4	
Project #: 310-1567 Geologist/Engineer: A. Larsen							
Depth (Feet)	Sample Interval (Feet)	Sample ID	PID Reading	Blow Count	Soil Type and Comments	Well Construction	
	2 to 3	MW-4/2-3	0		Hand auger to 4 feet. Asphalt over sand/cobble. Dry, brown, SAND and gravel.	Concrete seal with surface cover Bentonite seal 2-in. I.D. flush-threaded,	
 5	5 to	MW-4/4-5 MW-4/5-7.5	0 23	3	▼ Static Water at 4.6'. Dry, gray SILT.	Sch. 40 PVC 10/20 silica sand pack	
	7.5			3	Drilling difficult. Partially decayed wood.	2-in. I.D. flush- threaded Sch. 40 decayed 0.010-in slot well screen	
	10 to 12.5	MW-4/ 10-12.5	0	6 13 13	Dry, gray/orange, coarse to fine SAND/wood debris. (no recovery with standard SS sampler/ 100% recovery with 3-in-dia SS sampler) • Water Encountered at 14.0'		
5_	15 to 17.5	MW-4/ 15-17.5	0	10 24 44	Wet, medium to fine SAND.	Bottom cap	
-							
				İ		!	

FORM 2 NOTIFICATION OF DANGEROUS WASTE ACTIVITIES

APR 2 3 1999

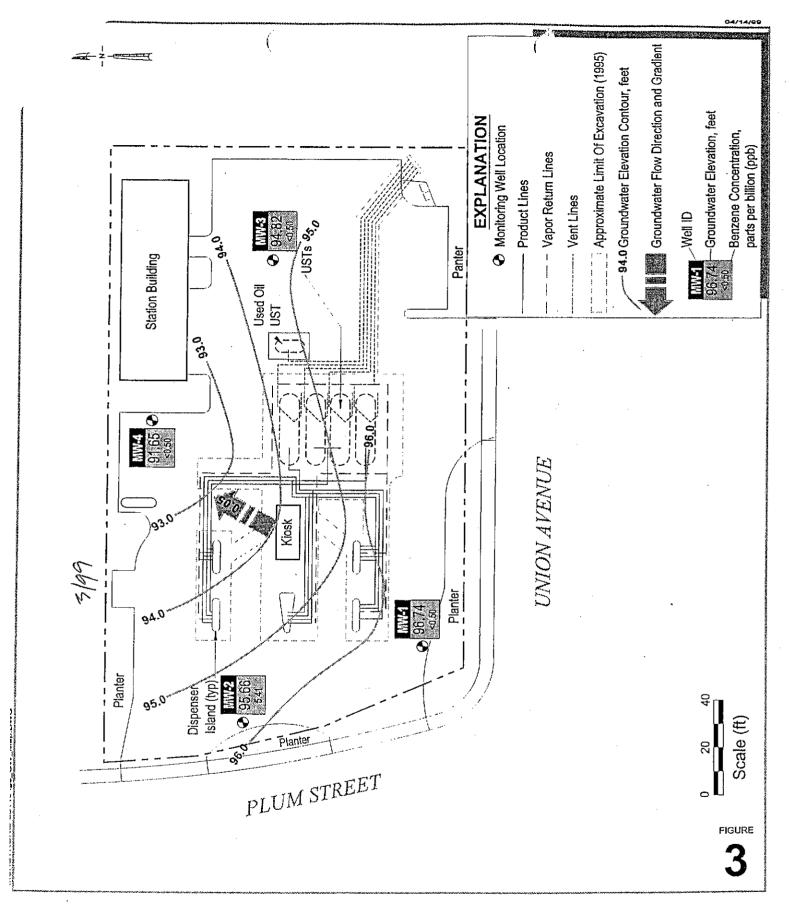
Washington State Department of Ecology Attn: DW Notifications P.O. Box 47658 Olympia, WA 98504-7658 (360) 407-6737

Note: Failure to properly and completely fill out your form may delay processing and/or cause your form to be returned for completion. Associated page numbers with detailed instructions are listed for each section.

1.	Notification. Please select one of the following choices. (p. 5)
	1.a. □ New notification OR 1.b □ Existing RCRA Site ID# WAD9 88 485090
	If 1.a., complete entire form. If 1.b., choose desired action below and fill in effective date.
	DEPARTMENTAL USE ONLY Revise Notification (complete entire form)
	WA □ Reactivate Site ID# (complete entire form)
	Withdraw Site ID #(skip sections 11 and 12)
	☐ Cancel Site ID#(skip sections 11 and 12)
	Effective date:/
2.1	SIC Code: (p.7)554 / (Primary)
	2.b. Type of business conducted at this site: (p.7) Gasoline Station
	Ob 01/200 4/2311
3.	Name of site (p. 7) Cheuron 45311
4.	Location of sits (p. 7)
	Street 1018 Plum St SE
٠	City or Town Olympia
	County Thurston State WA Zip 98501
5.	Site mailing address (p. 7)
	Street or P.O. Box P.O. BOX 6004
	city San Ramen state CN zip 94583
6.	Site contact (person Ecology should contact for clarification on this form, p. 7)
	Name Kathy Doms
	Job Title Compliance MA Phone Number 925 8425931
	Mailing Address, P.O. Box GOOU
	city San Ramon State CA Zip 94583

NOTIFICATION OF	DANGEROUS	WASTE	ACTIVITIES
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11.		ty (Mark "X" in the appropriate boxe	
	11.a. Dangerous waste activit 1. Generator □ a. Greater than 1000 kg/mo (2,200 lbs.) □ b. 100 to 1000 kg/mo (220-2,200 lbs.) □ c. Less than 100 kg/mo (220 lbs.) 2. Frequency □ a. Monthly □ b. Batch □ c. One-time only 3. Transporter (indicate mode in boxes 1–5 below). □ a. Transport own waste	4. (Continued) Which of the following RCRA permitted activities occur at this facility? 1. Treatment 2. Disposal 3. Storage 5. Dangerous waste fuel a. Generator marketing to burner b. Other marketers c. Boiler and/or industrial furnace 1. Smelter deferral 2. Small quantity exemption	11.b. Used oil fuel activities 1. Used oil fuel marketer a. Marketer directs shipment of used oil to off-specification burner b. Marketer who first claims the used oil meets the specifications 2. Used oil burner—indicate type(s) of combustion device(s). a. Utility boiler b. Industrial boiler c. industrial furnace 3. Used oil transporter—indicate type(s) of activity(ies).
	□ b. Transport for commercial purposes Mode of Transportation □ 1. Air □ 2. Rail □ 3. Highway □ 4. Water □ 5. Other-specify: 4. Traster, Storer, Disposer (at installation). Note: A RCRA Permit is required for this activity.	Indicate type of combustion device(s): 1. Utility boiler 2. Industrial boller 3. Industrial furnace 6. Underground injection control 7. Immediate recycler 8. Permit-by-rule facility	 □ a. Transporter □ b. Transfer facility 4. Used oil processor/re-refiner—indicate type(s) of activity(ies). □ a. Process □ b. Re-refine
	 a. for waste generated at this facility b. For waste generated by other facilities 	9. Treatment by generator	
2.6	Spill absorba	and sump pi	mpout



Chevron Service Station 9-5311

1018 Plum Street Olympia, Washington



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Groundwater Elevation
Contour Map

March 18, 1999