STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

August 12, 2013

Ms. Stacy Patterson
Farallon Consulting
975 5th Avenue Northwest
Issaquah, WA 98027

Re: Opinion on Proposed Cleanup of the following Site:

- **Site Name:** BNSF - Winlock
- **Site Address:** 908 Northwest Kerron Avenue, Winlock, Washington
- **Facility/Site No.:** 3151688
- **Cleanup Site ID No.:** 2247
- **VCP Project No.:** SW0775

Dear Ms. Patterson:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your independent cleanup of the BNSF – Winlock 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?

YES. Ecology has determined that further remedial action is 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:

- Petroleum hydrocarbons into the Soil and Groundwater.

Please note that 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 following documents:

1. Tank Closure Report, Former Cummings Oil Lease Site, 908 Northwest Kerron Avenue, Winlock, WA, dated March 11, 2010 by Farallon Consulting LLC (Farallon).

2. March 2010 Groundwater Monitoring Status Report, Former Cummings Oil Lease Site, 908 Northwest Kerron Avenue, Winlock, WA, dated September 13, 2010 by Farallon.

3. June 2010 Groundwater Monitoring Status Report, Former Cummings Oil Lease Site, 908 Northwest Kerron Avenue, Winlock, WA, dated September 13, 2010 by Farallon.

4. Groundwater Monitoring Status Report, Former Cummings Oil Lease Site, 908 Northwest Kerron Avenue, Winlock, WA, dated March 24, 2011 by Farallon.

5. Groundwater Monitoring Status Report, December 2010, Former Cummings Oil Lease Site, 908 Northwest Kerron Avenue, Winlock, WA, dated May 2, 2011 by Farallon.

6. Groundwater Monitoring Status Report, March 2011, Former Cummings Oil Lease Site, 908 Northwest Kerron Avenue, Winlock, WA, dated August 19, 2011 by Farallon.

7. Groundwater Monitoring Status Report, August 2012, Former Cummings Oil Lease Site, 908 Northwest Kerron Avenue, Winlock, WA, dated December 18, 2012 by Farallon.

Those documents are kept in the Central Files of the Southwest Regional Office of Ecology (SWRO) for review by appointment only. You can make an appointment by calling the SWRO resource contact at (360) 407-6365.

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 **further remedial action** is 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 not sufficient to establish cleanup standards and select a cleanup action.

The Site is located at 908 Northwest Kerron Avenue, Winlock, Lewis County, Washington and is currently unoccupied. Structures, including an abandoned warehouse, overhead fuel racks, and four 20,000 to 30,000-gallon capacity aboveground storage tanks (ASTs), were removed in March 2008. Two underground storage tanks (USTs) (1,700-gallon and 7,000-gallon capacities) were also removed at that time.

The Site has been used as a bulk fuel storage plant from approximately 1925 through 1976. Shell Oil Company (Shell) leased the Site from BNSF for use as a bulk fuel storage facility in 1925, when the Site was first developed. In 1970, Cummings Oil Company operated the bulk fuel storage facility until approximately 1976.

The western part of the Site contains an underground stormwater line composed of 12-inch concrete or tile pipe located 18 inches below ground surface (bgs). A ditch conveys surface water discharged from a catch basin located next to the railroad tracks to a catch basin along the northwestern corner of the Site. The ditch is approximately 3 feet deep, and is uncontained until it flows into an underground pipe and drains to the catch basin. On the Site, surface water is captured by two catch basins on the western side, and by a drainage ditch to the north.

A previous subsurface investigation conducted at the Site included collecting soil samples from six test pits located in areas on the Site where either staining was observed and/or historical operations that had the potential to release chemicals of potential concern (COPCs) to soil and groundwater were conducted. Analytical results from previous investigations detected concentrations of diesel-range hydrocarbons (TPH-Dx) below the applicable MTCA Method A cleanup level of 2,000 milligrams per kilogram (mg/kg) in three soil samples. Concentrations of gasoline-range hydrocarbons (TPH-Gx) and oil-range hydrocarbons (TPH-O) were not detected above the laboratory reporting limits in the soil samples analyzed. Shallow groundwater was observed in one of the test pits at a depth of approximately 9 feet bgs; however, no groundwater sample was collected.

The second phase of the investigation included drilling five hollow-stem auger borings and installing monitoring wells in four (MW-1 through MW-4) of the five borings.

The distribution of TPH-Gx, TPH-Dx, TPH-O, benzene, ethylbenzene, and xylenes above the MTCA Method A Cleanup Levels in groundwater [800 micrograms per liter (µg/L), 500 µg/L, 500 µg/L, 5 µg/L, 700 µg/L, and 1,000 µg/L, respectively] is predominantly within the western area of the Site, with the exception of a TPH-Dx detection in boring B3 located on the southern side of the warehouse. TPH-Dx and TPH-O, exceeding MTCA Method A Cleanup Levels for groundwater, were detected between the northern Site boundary and the central portion of the warehouse on the western side of the Site. A Site location map and a Site layout map are included as Figures 1 and 2 in the Enclosures.

Concentrations of TPH-O, benzene, ethylbenzene, and xylenes exceeding groundwater cleanup levels were detected in borings near the overhead fuel racks (borings B6 and B9) and monitoring well MW-2, which is located near the western Site boundary. The groundwater flow direction at the Site was observed to the west-southwest. The direction of groundwater flow and the concentrations of TPH-Dx, TPH-O, and benzene, toluene, ethylbenzene, and xylenes (BTEX), detected above the MTCA Method A Cleanup Levels in boring B9 and monitoring well MW-2, indicate that contaminated groundwater may have migrated off the Site to the west.

Ecology prepared an opinion letter in July 2006 in response to the supplemental subsurface investigation conducted by Farallon in June 2006. The opinion letter recommended additional soil and groundwater investigation in the area between the pump house and the warehouse, and in the area between the USTs and the warehouse. In addition, Ecology requested additional monitoring wells in the area west of the Site along NW Kerron Avenue. It was also requested that the Table 830-1 constituents be added to the list of analytes for all samples submitted for laboratory analysis.

Farallon submitted a cleanup action work plan on December 23, 2008 that detailed proposed cleanup work at the Site. The work plan selected source removal and monitored natural attenuation as the remedy of choice at the Site. The soil source removal activities would address Ecology's concerns in the areas adjacent to the warehouse. Farallon also proposed two additional groundwater monitoring wells along NW Kerron Avenue to supplement the groundwater data off site to the west.

Ecology reviewed the work plan and prepared a further action opinion letter in March 2009. Ecology requested additional groundwater investigation to the west and southwest of the existing monitoring wells as well as testing for Table 830-1 constitutents during further sampling rounds. It also recommended that the storm drain along the western portion of the Site be investigated to see if it was a preferential pathway for the migrations of contaminants.

In March 2010, Farallon prepared a summary report outlining the tank removal and soil excavation and disposal activities, and groundwater well installation (MW-5) conducted at the Site. Confirmation soil samples collected during the excavation activities noted that soils greater than MTCA Method A Cleanup Levels for TPH-Gx and benzene remain on the Site in the northern and western corner of the Site near the former USTs. The excavations and confirmation soil sample locations are shown on Figure 3 and the analytical data is summarized in Table 1, both included in the Enclosures. Groundwater results from wells MW-1, MW-2, and MW-3, all located on the western edge of the property, had exceedances of the MTCA Method A Cleanup Levels for TPH-Dx, TPH-O, and benzene. Farallon concluded that continued groundwater monitoring of petroleum constituents and natural attenuation parameters was a viable remedial alternative for the Site.

Groundwater monitoring was conducted quarterly in 2010, and then annually for 2011 and 2012. The latest results indicate that TPH-Dx and benzene in groundwater continue to exceed their applicable MTCA Method A Cleanup Levels. A summary of the groundwater results is shown on Figure 3 (2012) and in Table 2 (2012), both included in the Enclosures.

The study area consists of unconsolidated glacial and interglacial deposits that underlie central Pierce County. The uppermost aquifer that underlies the Site is commonly called the Vashon Drift aquifer. It includes a thick layer of low permeability glacial till overlain by coarse-grained glacial outwash deposits. Groundwater at the Site flows west-southwest with an average hydraulic gradient of 0.03 foot per foot. Site investigations encountered silt with woody debris and other organic matter underlying the surface soil to depths ranging from 5 to 8 feet bgs. Poorly sorted gravel with varying amounts of silt and sand was encountered beneath the silt and ranged in thickness from 2 to 5 feet. Groundwater was encountered in the gravel at a depth of approximately 7 feet bgs with groundwater levels rising to 0.5 to 2.5 feet bgs in the installed monitoring wells. Beneath the gravel, dense sand was encountered at a depth of approximately 9 to 11 feet bgs. This dense sand is not saturated and appears to be acting as a confining layer beneath the water-bearing zone. All soil borings and monitoring wells completed during the subsurface investigation were completed within the sand. Based on a review of the above-listed information, Ecology has the following comments:

1. The storm drain along the northern and western edge of the property and the sewer in NW Kerron Avenue should be investigated as it is likely they preferentially divert groundwater. It is recommended that water samples from within the drains be collected and evaluated for impacts.

2. The full extent of contamination in the groundwater still needs to be defined. Ecology suggests additional wells along NW Kerron Avenue west to northwest of MW-1 and west to southwest of MW-3 along the eastern edge of NW Kerron Avenue. This will assist in determining the influence of the storm drain and sewers on the local groundwater flow.

3. Ecology requires at least one round of groundwater testing for the Table 830-1 constituents, including naphthalene, Methyl *tert*-butyl ether (MTBE), 1-methyl-naphthalene, 2-methyl-naphthalene, 1,2-dibromoethane (EDB), and 1,2-dichloroethane (EDC). Please ensure the laboratory detection limits are below MTCA cleanup levels. The cleanup level for EDB in groundwater is 0.01 ug/L. Ecology recommends using EPA Method 8011 to obtain this low detection limit.

4. In accordance with WAC 173-340-7490, a Terrestrial Ecological Evaluation (TEE) needs to be completed for the Site. Please fill out the TEE form and submit it to Ecology (along with supporting information, as appropriate). The form can be found on our website at http://www.ecy.wa.gov/biblio/ecy090300.html.

5. In accordance with WAC 173-340-840(5) and Ecology Toxics Cleanup Program Policy 40 (Data Submittal Requirements), data generated for Independent Remedial Actions shall be submitted simultaneously in both a written and electronic format. For additional information regarding electronic format requirements, see the website http://www.ecy.wa.gov/eim. Be advised that according to the policy, any reports containing sampling data that are submitted for Ecology review are considered incomplete until the electronic data has been entered. Please ensure that data generated during on-site activities is submitted pursuant to this policy. **Data must be submitted to Ecology in this format for Ecology to issue a No Further Action determination.** Be advised that Ecology requires up to two weeks to process the data once it is received.

2. Establishment of cleanup standards.

Ecology has determined the cleanup levels and points of compliance you established for the Site do not meet the substantive requirements of MTCA.

a. Cleanup levels.

MTCA Method A Cleanup Levels for unrestricted land use for soil and groundwater, are being used to characterize the Site.

b. Points of compliance.

Standard points of compliance are being used for the Site. The point of compliance for protection of groundwater shall be established in the soils throughout the Site. For soil cleanup levels based on human exposure via direct contact or other exposure pathways where contact with the soil is required to complete the pathway, the point of compliance shall be established in the soils throughout the Site from the ground surface to 15 feet bgs. In addition, the point of compliance for the groundwater shall be established throughout the Site from the uppermost level of the saturated zone extending vertically to the lowest most depth that could potentially be affected by the Site.

Additional investigation is required to define the extent of impacts on the Site prior to establishing points of compliance.

3. Selection of cleanup action.

Ecology has determined the cleanup action you selected for the Site does not meet the substantive requirements of MTCA.

The selection of source removal and monitored natural attenuation appears to be effective in reducing concentrations of petroleum constituents in groundwater; however, additional investigation is required to define the extent of impacts on the Site prior to selection of a final cleanup action.

4. Cleanup.

Ecology has determined the cleanup you performed does not meet the cleanup standards established for the Site.

Approximately 330 cubic yards of impacted soil were removed from the Site and disposed at the Waste Management Hillsboro Landfill. Impacted soils still remain in the northwestern corner of the Site. As noted in Section 1, impacts to the groundwater have not been fully characterized and further investigation is required prior to completing the final cleanup action.

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 your Property under the Voluntary Cleanup Program (VCP). After you have addressed our concerns, you may resubmit your proposal for our review. Please do not hesitate to request additional services as your cleanup progresses. We look forward to working with you.

For more information about the VCP and the cleanup process, please visit our web site: www.ecy.wa.gov/programs/tcp/vcp/vcpmain.htm. If you have any questions about this opinion, please contact me at 360-407-7263.

Sincerely,

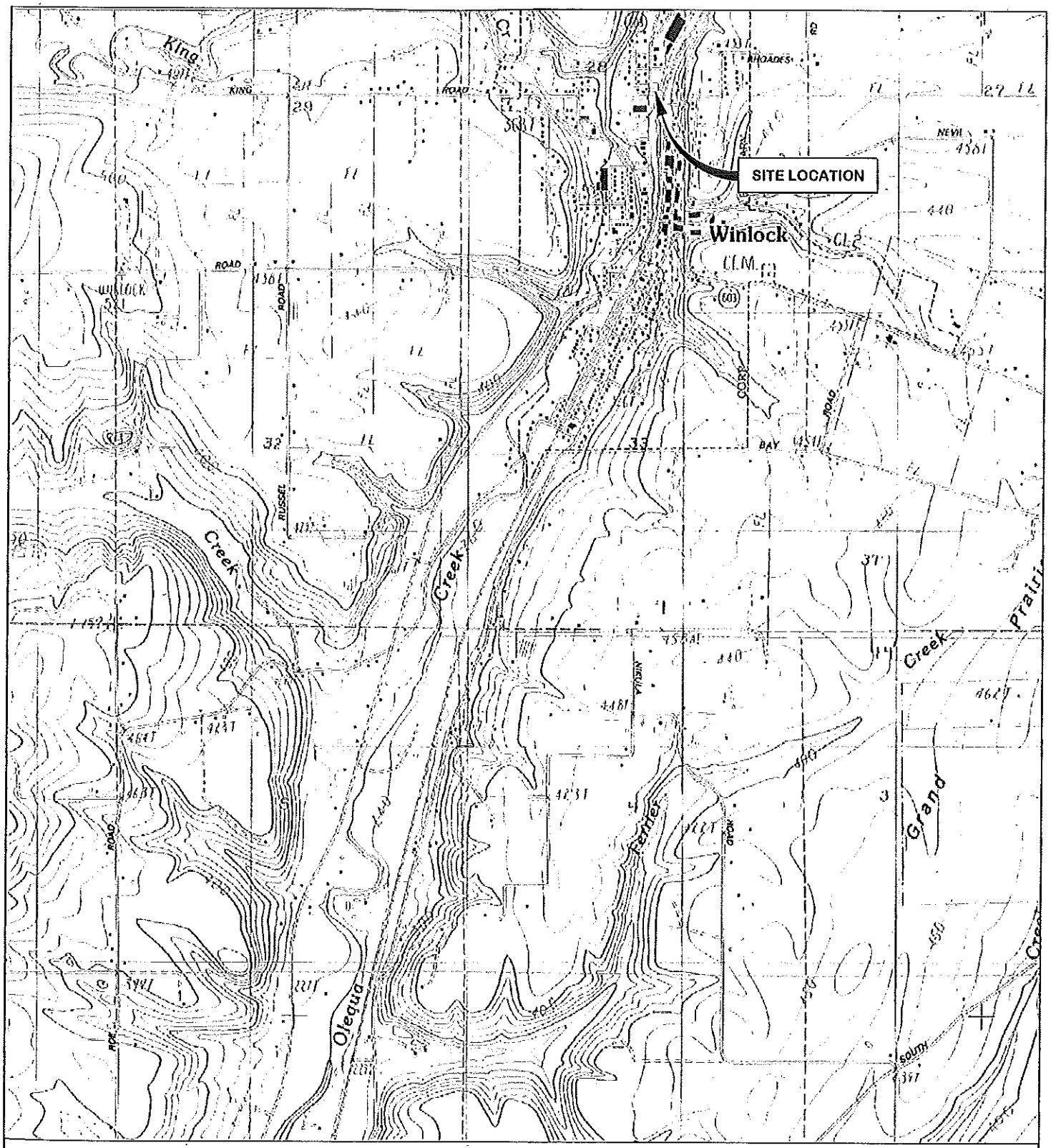
Thomas Middleton
SWRO Toxics Cleanup Program

TMM/ksc:BNSF Winlock FA SW0775

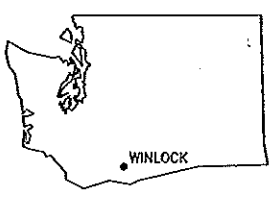
Enclosures:
Figure 1 – Site Location Map
Figure 2 – Site Layout Map
Figure 3 – Site Plan with Soil Excavation Limits (2008)
Figure 3 – Site Plan with Groundwater Analytical Results 2012
Table1 – Soil Analytical Summary
Table 2 – Groundwater Analytical Summary (Petroleum Constituents)
Table 3 – Groundwater Analytical Summary (PAHs)
Table 4 – Groundwater Analytical Summary (MNA parameters)

By certified mail: (7012 1010 0003 0195 4871)

cc: Scott MacDonald, BNSF
Bill Teitzel - Lewis Co Public Health,
Scott Rose - Ecology
Paul Turner - Ecology
Dolores Mitchell – Ecology (without enclosures)



REFERENCE: 7.5 MINUTE USGS QUADRANGLE WINLOCK, WASHINGTON. DATED 1985



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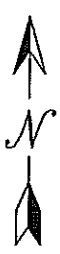

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FIGURE 1

SITE VICINITY MAP
FORMER CUMMINGS OIL LEASE SITE
908 NORTHWEST KERRON AVENUE
WINLOCK, WASHINGTON

FARALLON PN: 683-009

Drawn By: DEW	Checked By: SP	Date: 2/25/09	Disk Reference: 683009

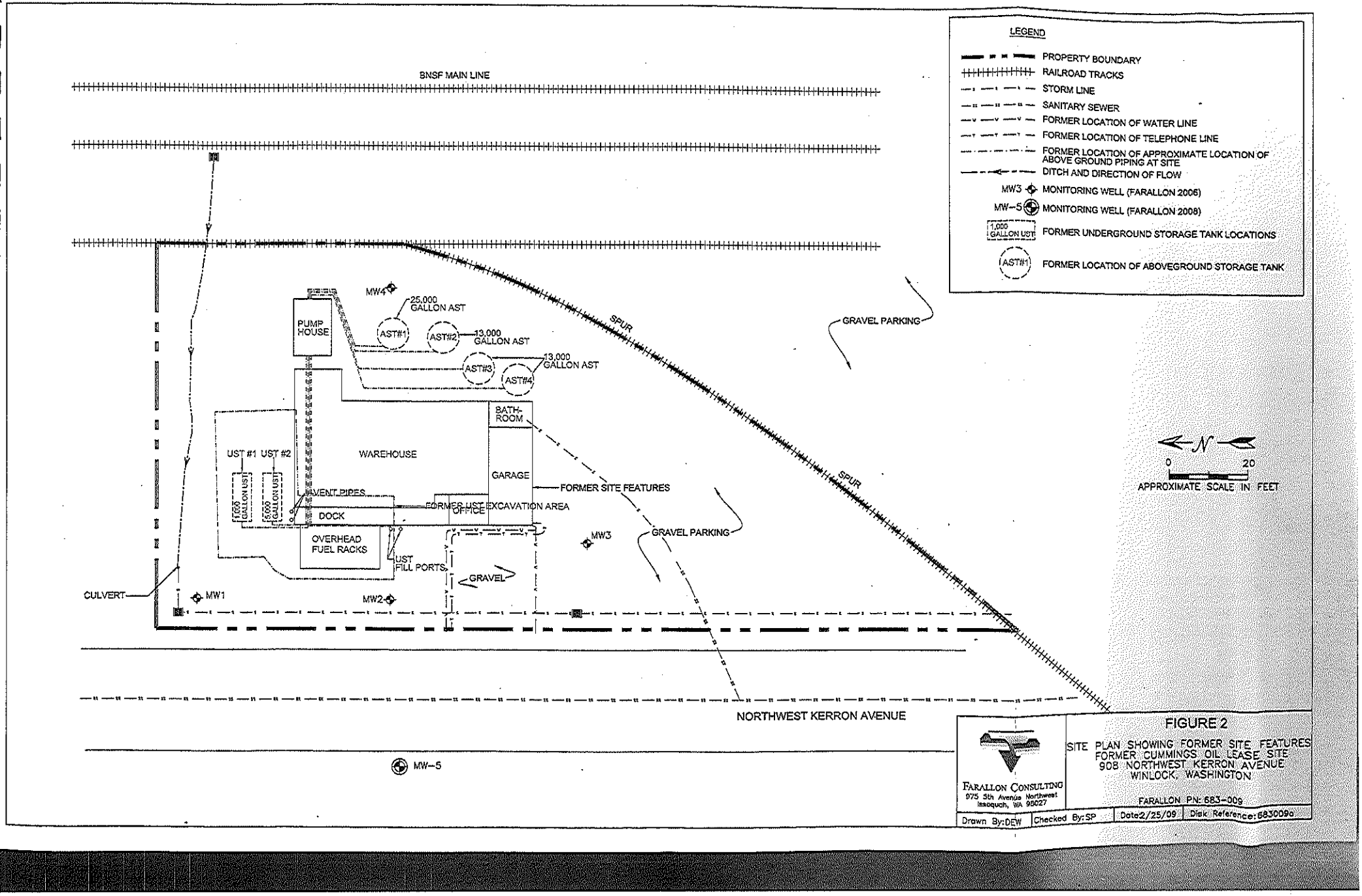


FIGURE 2

SITE PLAN SHOWING FORMER SITE FEATURES
FORMER CUMMINGS OIL LEASE SITE
908 NORTHWEST KERRON AVENUE
WINLOCK, WASHINGTON

FARALLON PN: 683-009

FARALLON CONSULTING
975 5th Avenue Northwest
Issaquah, WA 98027

Drawn By: DEW | Checked By: SP | Date: 2/25/09 | Disk Reference: 683009a

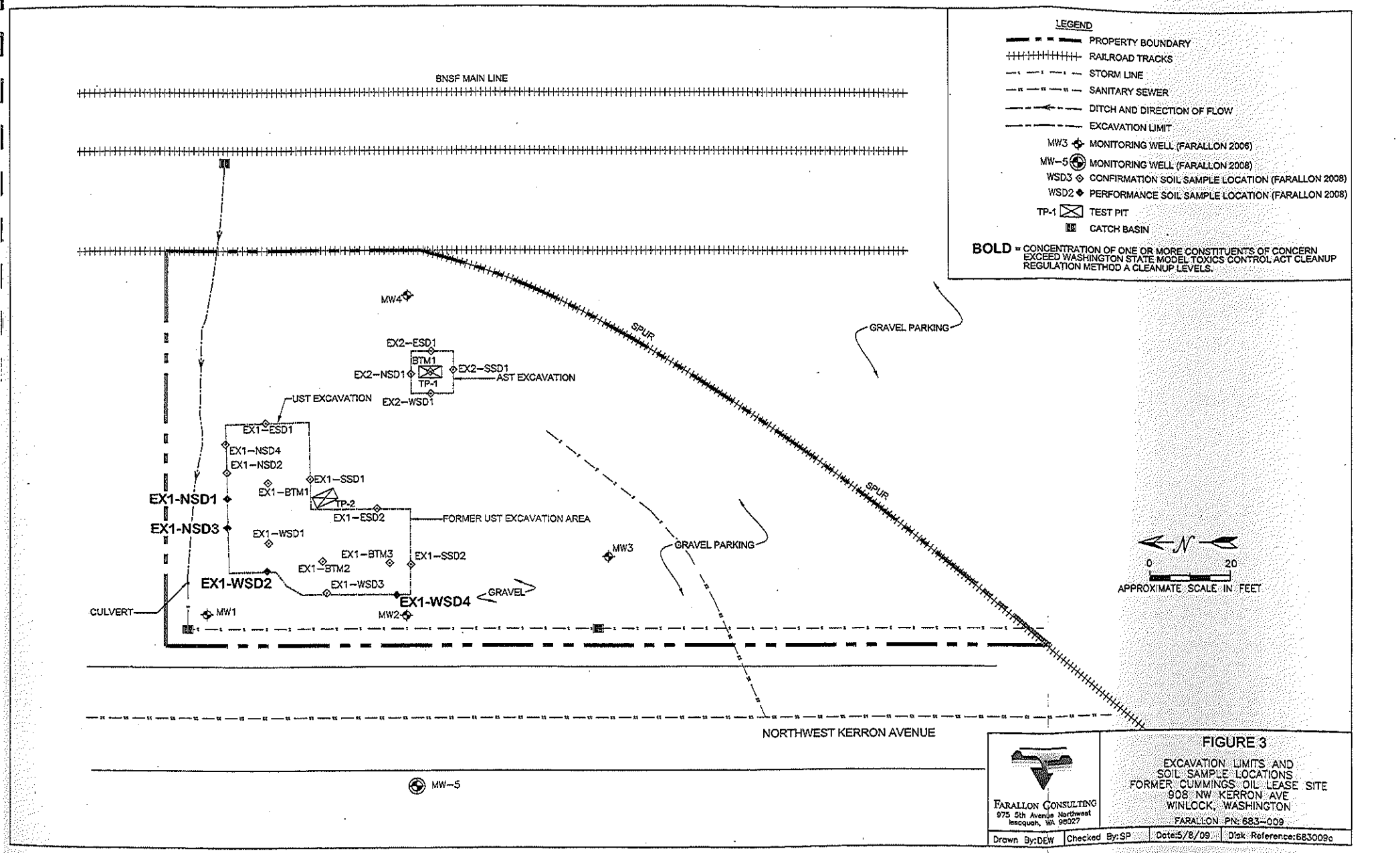


FIGURE 3

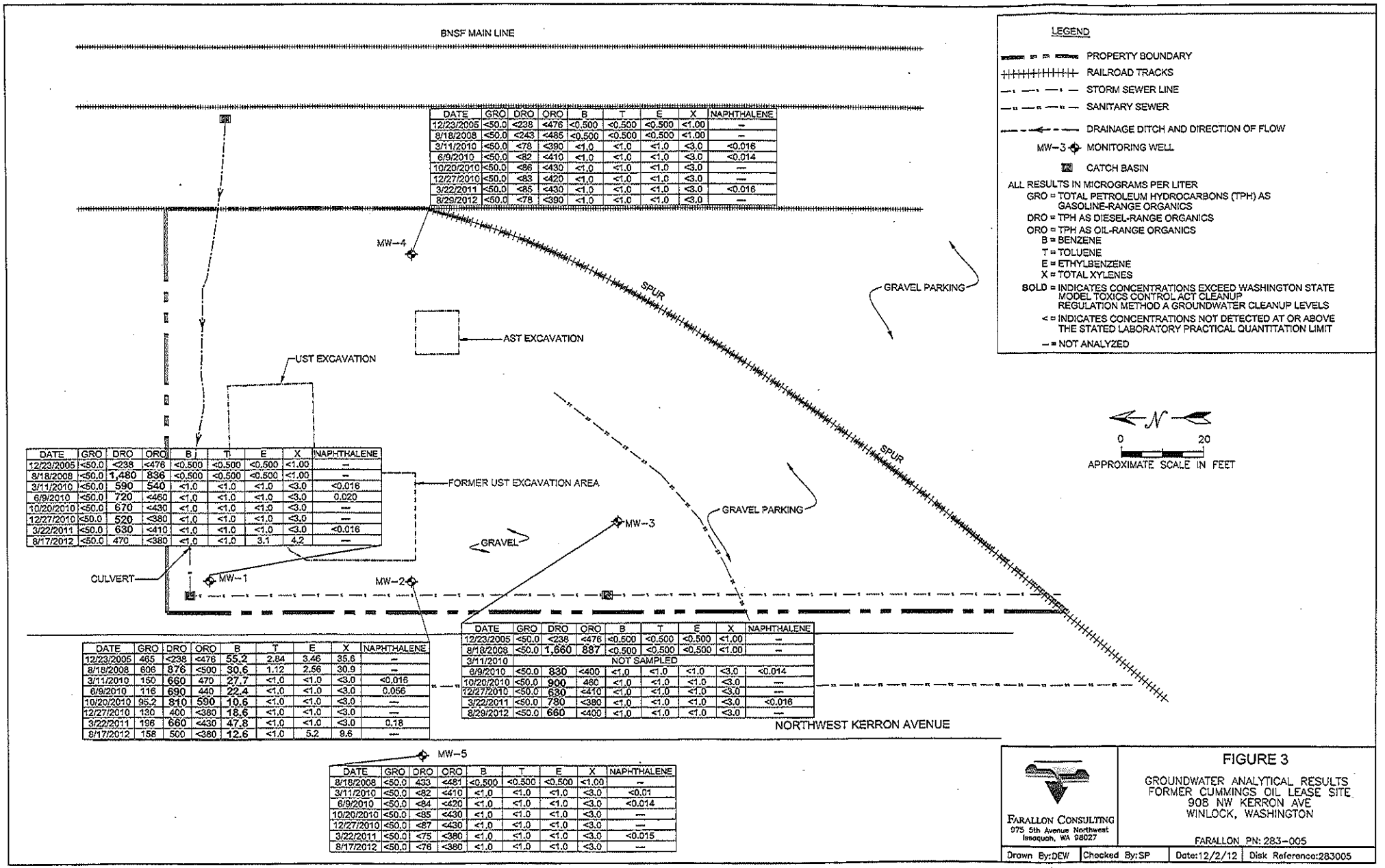
EXCAVATION LIMITS AND SOIL SAMPLE LOCATIONS
FORMER CUMMINGS OIL LEASE SITE
908 NW KERRON AVE
WINLOCK, WASHINGTON

FARALLON PN: 683-009

FARALLON CONSULTING
975 5th Avenue Northwest
Issaquah, WA 98027

Drawn By: DEW	Checked By: SP	Date: 5/8/09	Disk Reference: 683009a

2007



DATE	GRO	DRO	ORO	B	T	E	X	NAPHTHALENE
12/23/2005	<50.0	<238	<476	<0.500	<0.500	<0.500	<1.00	—
8/18/2008	<50.0	<243	<485	<0.500	<0.500	<0.500	<1.00	—
3/11/2010	<50.0	<78	<390	<1.0	<1.0	<1.0	<3.0	<0.016
6/9/2010	<50.0	<82	<410	<1.0	<1.0	<1.0	<3.0	<0.014
10/20/2010	<50.0	<86	<430	<1.0	<1.0	<1.0	<3.0	—
12/27/2010	<50.0	<83	<420	<1.0	<1.0	<1.0	<3.0	—
3/22/2011	<50.0	<85	<430	<1.0	<1.0	<1.0	<3.0	<0.016
8/29/2012	<50.0	<78	<390	<1.0	<1.0	<1.0	<3.0	—

DATE	GRO	DRO	ORO	B	T	E	X	NAPHTHALENE
12/23/2005	<50.0	<238	<476	<0.500	<0.500	<0.500	<1.00	—
8/18/2008	<50.0	**1,460**	836	<0.500	<0.500	<0.500	<1.00	—
3/11/2010	<50.0	590	540	<1.0	<1.0	<1.0	<3.0	<0.016
6/9/2010	<50.0	720	<460	<1.0	<1.0	<1.0	<3.0	0.020
10/20/2010	<50.0	670	<430	<1.0	<1.0	<1.0	<3.0	—
12/27/2010	<50.0	520	<380	<1.0	<1.0	<1.0	<3.0	—
3/22/2011	<50.0	630	<410	<1.0	<1.0	<1.0	<3.0	<0.016
8/17/2012	<50.0	470	<380	<1.0	<1.0	3.1	4.2	—

DATE	GRO	DRO	ORO	B	T	E	X	NAPHTHALENE
12/23/2005	465	<238	<476	55.2	2.84	3.46	35.6	—
8/18/2008	606	376	<500	30.6	1.12	2.56	30.9	—
3/11/2010	150	660	470	27.7	<1.0	<1.0	<3.0	<0.016
6/9/2010	116	690	440	22.4	<1.0	<1.0	<3.0	0.056
10/20/2010	95.2	810	590	10.6	<1.0	<1.0	<3.0	—
12/27/2010	130	400	<380	18.6	<1.0	<1.0	<3.0	—
3/22/2011	196	660	<430	47.8	<1.0	<1.0	<3.0	0.18
8/17/2012	158	500	<380	12.6	<1.0	5.2	9.6	—

DATE	GRO	DRO	ORO	B	T	E	X	NAPHTHALENE
12/23/2005	<50.0	<238	<476	<0.500	<0.500	<0.500	<1.00	—
8/18/2008	<50.0	**1,660**	887	<0.500	<0.500	<0.500	<1.00	—
3/11/2010	NOT SAMPLED							
6/9/2010	<50.0	830	<400	<1.0	<1.0	<1.0	<3.0	<0.014
10/20/2010	<50.0	900	460	<1.0	<1.0	<1.0	<3.0	—
12/27/2010	<50.0	630	<410	<1.0	<1.0	<1.0	<3.0	—
3/22/2011	<50.0	780	<380	<1.0	<1.0	<1.0	<3.0	<0.016
8/29/2012	<50.0	660	<400	<1.0	<1.0	<1.0	<3.0	—

DATE	GRO	DRO	ORO	B	T	E	X	NAPHTHALENE
8/18/2008	<50.0	433	<481	<0.500	<0.500	<0.500	<1.00	—
3/11/2010	<50.0	<82	<410	<1.0	<1.0	<1.0	<3.0	<0.01
6/9/2010	<50.0	<84	<420	<1.0	<1.0	<1.0	<3.0	<0.014
10/20/2010	<50.0	<85	<430	<1.0	<1.0	<1.0	<3.0	—
12/27/2010	<50.0	<87	<430	<1.0	<1.0	<1.0	<3.0	—
3/22/2011	<50.0	<75	<380	<1.0	<1.0	<1.0	<3.0	<0.015
8/17/2012	<50.0	<76	<380	<1.0	<1.0	<1.0	<3.0	—

LEGEND

- PROPERTY BOUNDARY
- RAILROAD TRACKS
- STORM SEWER LINE
- SANITARY SEWER
- DRAINAGE DITCH AND DIRECTION OF FLOW
- MW-3 MONITORING WELL
- CB CATCH BASIN

ALL RESULTS IN MICROGRAMS PER LITER

GRO = TOTAL PETROLEUM HYDROCARBONS (TPH) AS GASOLINE-RANGE ORGANICS

DRO = TPH AS DIESEL-RANGE ORGANICS

ORO = TPH AS OIL-RANGE ORGANICS

B = BENZENE

T = TOLUENE

E = ETHYLBENZENE

X = TOTAL XYLENES

BOLD = INDICATES CONCENTRATIONS EXCEED WASHINGTON STATE MODEL TOXICS CONTROL ACT CLEANUP REGULATION METHOD A GROUNDWATER CLEANUP LEVELS

< = INDICATES CONCENTRATIONS NOT DETECTED AT OR ABOVE THE STATED LABORATORY PRACTICAL QUANTITATION LIMIT

— = NOT ANALYZED

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Issaquah, WA 98027

FIGURE 3

GROUNDWATER ANALYTICAL RESULTS
FORMER CUMMINGS OIL LEASE SITE
908 NW KERRON AVE
WINLOCK, WASHINGTON

FARALLON PN: 283-005

Drawn By:DEW	Checked By:SP	Date:12/2/12	Disk Reference:283005

2612

Table 1
Summary of Soil Analytical Results
Former Cummings Oil Lease Site Tank Closure
Winlock, Washington
Farallon PN: 683-009

Sample Number	Depth (feet bgs)	Date Collected	Soil Analytical Results (milligrams per kilogram)								
			GRO[1]	DRO[2]	ORO[2]	Benzene[3]	Toluene[3]	Ethylbenzene[3]	Total Xylenes[3]	Total Naphthalenes[4]	cPAHs[5]
Performance Soil Samples - UST Excavation											
EX1-NSD1-6	6	7/29/2008	**160**	<25	<40	<0.02	0.52	1.05	1.16	—	—
EX1-NSD3-6	6	7/30/2008	**295**	<25	<40	**0.84**	3.62	1.61	6.20	—	—
EX1-WSD2-6	6	7/29/2008	**222**	1860	<40	**0.93**	0.54	3.23	2.54	—	—
EX1-WSD4-6	6	7/30/2008	**276**	119	<40	**1.53**	1.6	3.2	5.31	2.30	<0.01
FD-072908[6]	6	7/29/2008	**230**	760	<40	**0.44**	0.52	2.82	2.73	—	—
Confirmation Soil Samples - UST Excavation											
EX1-NSD2-6	6	7/30/2008	<10	<25	<40	<0.02	<0.10	<0.05	<0.15	—	—
EX1-NSD4-6	6	7/31/2008	<10	<25	<40	<0.02	<0.10	<0.05	<0.15	—	—
EX1-ESD1-6	6	7/29/2008	<10	<25	<40	<0.02	<0.10	<0.05	<0.15	—	—
EX1-ESD2-6	6	7/30/2008	<10	<25	<40	<0.02	<0.10	<0.05	0.11	—	—
EX1-SSD1-6	6	7/29/2008	15	<25	<40	<0.02	<0.10	<0.05	<0.15	—	—
EX1-SSD2-6	6	7/30/2008	<10	<25	<40	<0.02	<0.10	<0.05	<0.15	<0.20	—
EX1-WSD1-6	6	7/29/2008	<10	<25	<40	<0.02	<0.10	<0.05	<0.15	—	—
EX1-WSD3-7	7	7/29/2008	10	<25	<40	<0.02	<0.10	<0.05	<0.15	<0.20	—
EX1-BTM1-8	8	7/29/2008	<10	<25	<40	<0.02	<0.10	<0.05	<0.15	—	—
EX1-BTM2-8	8	7/29/2008	11	<25	<40	<0.02	<0.10	<0.05	<0.15	<0.20	<0.01
EX1-BTM3-8	8	7/30/2008	<10	<25	<40	<0.02	<0.10	<0.05	<0.15	<0.20	—
Confirmation Soil Samples - AST Excavation											
EX2-NSD1-6	6	7/30/2008	<10	<25	<40	<0.02	<0.10	<0.05	<0.15	—	—
EX2-ESD1-6	6	7/30/2008	<10	130	<40	<0.02	<0.10	<0.05	<0.15	—	—
EX2-SSD1-6	6	7/30/2008	<10	<25	<40	<0.02	<0.10	<0.05	<0.15	—	—
EX2-WSD1-6	6	7/30/2008	<10	<25	<40	<0.02	<0.10	<0.05	<0.15	—	—
EX2-BTM1-8	8	7/30/2008	<10	<25	<40	<0.02	<0.10	<0.05	<0.15	—	—
MTCA Method A Soil Cleanup Level[7]			**30**	**2,000**	**2,000**	**0.03**	**7**	**6**	**9**	**5**	**0.1**

Table 1
Summary of Soil Analytical Results
Former Cummings Oil Lease Site Tank Closure
Winlock, Washington
Farallon PN: 683-009

Sample Number	Depth (feet bgs)	Date Collected	Soil Analytical Results (milligrams per kilogram)								
			GRO[1]	DRO[2]	ORO[2]	Benzene[3]	Toluene[3]	Ethylbenzene[3]	Total Xylenes[3]	Total Naphthalenes[4]	cPAHs[5]
Stockpile Samples											
EX1-SP1	NA	7/28/2008	<10	<25	<40	<0.02	<0.10	<0.05	<0.15	—	—
EX1-SP2	NA	7/28/2008	<10	<25	<40	<0.02	<0.10	<0.05	<0.15	—	—
EX1-SP3	NA	7/28/2008	<10	<25	990	<0.02	<0.10	<0.05	<0.15	—	—
EX2-SP1	NA	7/30/2008	<10	<25	<40	<0.02	<0.10	<0.05	<0.15	—	—
EX2-SP2	NA	7/30/2008	<10	<25	<40	<0.02	<0.10	<0.05	<0.15	—	—
EX2-SP3	NA	7/30/2008	65	<25	<40	**0.099**	0.88	0.49	2.28	—	—
Test Pit Samples											
EX1-TP1-4	3	7/28/2008	<10	<25	<40	<0.02	<0.10	<0.05	<0.15	—	—
EX1-TP1-7	7	7/28/2008	15	<25	<40	**0.18**	0.16	0.39	0.53	—	—
EX1-TP2-8	8	7/29/2008	<10	<25	<40	<0.02	<0.10	<0.05	<0.15	—	—
Monitoring Well Sample											
MW-5-5	NA	8/4/2008	<6.32	<12.6	<31.6	<0.0379	<0.0632	<0.0632	<0.126	<0.0128	<0.0128
MTCA Method A Soil Cleanup Level[7]			**30**	**2,000**	**2,000**	**0.03**	**7**	**6**	**9**	**5**	**0.1**

NOTES

— denotes sample not analyzed.

< denotes analyte not detected at or above the reporting limit listed.

[1]Analyzed by Northwest Method NWTPH-Gx.

[2]Analyzed by Northwest Method NWTPH-Dx.

[3]Analyzed by U.S. Environmental Protection Agency (EPA) Method 8021B.

[4]Analyzed by EPA Method 8260B.

[5]Analyzed by EPA Method 8270C.

[6]Quality Assurance/Quality Control duplicate sample. FD-072908 is a duplicate of EX1-WSD2-6.

[7]Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Uses, Table 740-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as revised November 2007.

AST = aboveground storage tank

bgs = below ground surface

cPAHs = benzo (a) anthracene, benzo (a) pyrene, benzo (b) fluoranthene, benzo (k) fluoranthene, chrysene, dibenz(a,h)anthracene, indeno (1,2,3-cd) pyrene

DRO = total petroleum hydrocarbons (TPH) as diesel-range organics

GRO = TPH as gasoline-range organics

NA = not applicable

ORO = TPH as oil-range organics

UST = underground storage tank

Table 2
Groundwater Analytical Results for Petroleum Hydrocarbon Constituents
Former Cummings Oil Lease Site
Winlock, Washington
Farallon PN: 283-005

Sample Identification	Well Identification	Sample Date	Analytical Results (micrograms per liter)						
			GRO[1]	DRO[2]	ORO[2]	Benzene[3]	Toluene[3]	Ethylbenzene[3]	Total Xylenes[3]
MW1-122305	MW-1	12/23/2005	<50.0	<238	<476	<0.500	<0.500	<0.500	<1.00
MW1-081808		8/18/2008	<50.0	**1,480**	**836**	<0.500	<0.500	<0.500	<1.00
MW1-031110		3/11/2010	<50.0	**590**	**540**	<1.0	<1.0	<1.0	<6.0
MW1-060910		6/9/2010	<50.0	**720**	<460	<1.0	<1.0	<1.0	<3.0
MW1-102010		10/20/2010	<50.0	**670**	<430	<1.0	<1.0	<1.0	<3.0
MW1-122710		12/27/2010	<50.0	**520**	<380	<1.0	<1.0	<1.0	<3.0
MW1-032211		3/22/2011	<50.0	**630**	<410	<1.0	<1.0	<1.0	<3.0
MW1-081712		8/17/2012	<50.0	470	<380	<1.0	<1.0	3.1	4.2
MW2-122305	MW-2	12/23/2005	465	<238	<476	**55.2**	2.84	3.46	35.6
MW2-081808		8/18/2008	606	**876**	<500	**30.6**	1.12	2.56	30.9
MW2-031110		3/11/2010	150	**660**	470	**27.7**	<1.0	<1.0	<6.0
MW2-060910		6/9/2010	116	**690**	440	**22.4**	<1.0	<1.0	<3.0
MW2-102010		10/20/2010	95.2	**810**	**590**	**10.6**	<1.0	<1.0	<3.0
MW2-122710		12/27/2010	130	400	<380	**18.6**	<1.0	<1.0	<3.0
MW2-032211		3/22/2011	196	**660**	<430	**47.8**	<1.0	<1.0	<3.0
MW2-081712		8/17/2012	158	500	<380	**12.6**	<1.0	5.2	9.6
MW3-122305	MW-3	12/23/2005	<50.0	<238	<476	<0.500	<0.500	<0.500	<1.00
MW3-081808		8/18/2008	<50.0	**1,660**	**887**	<0.500	<0.500	<0.500	<1.00
Not Sampled		3/11/2010	--	--	--	--	--	--	--
MW3-060910		6/9/2010	<50.0	**830**	<400	<1.0	<1.0	<1.0	<3.0
MW3-102010		10/20/2010	<50.0	**900**	460	<1.0	<1.0	<1.0	<3.0
MW3-122710		12/27/2010	<50.0	**630**	<410	<1.0	<1.0	<1.0	<3.0
MW3-032211		3/22/2011	<50.0	**780**	<380	<1.0	<1.0	<1.0	<3.0
MW3-082912		8/29/2012	<50.0	**660**	<400	<1.0	<1.0	<1.0	<3.0
MW4-122305	MW-4	12/23/2005	<50.0	<238	<476	<0.500	<0.500	<0.500	<1.00
MW4-081808		8/18/2008	<50.0	<243	<485	<0.500	<0.500	<0.500	<1.00
MW4-031110		3/11/2010	<50.0	<78	<390	<1.0	<1.0	<1.0	<6.0
MW4-060910		6/9/2010	<50.0	<82	<410	<1.0	<1.0	<1.0	<3.0
MW4-102010		10/20/2010	<50.0	<86	<430	<1.0	<1.0	<1.0	<3.0
MW4-122710		12/27/2010	<50.0	<83	<420	<1.0	<1.0	<1.0	<3.0
MW4-032211		3/22/2011	<50.0	<85	<430	<1.0	<1.0	<1.0	<3.0
MW4-082912		8/29/2012	<50.0	<78	<390	<1.0	<1.0	<1.0	<3.0
MW5-081808	MW-5	8/18/2008	<50.0	433	<481	<0.500	<0.500	<0.500	<1.00
MW5-031110		3/11/2010	<50.0	<82	<410	<1.0	<1.0	<1.0	<6.0
MW5-060910		6/9/2010	<50.0	<84	<420	<1.0	<1.0	<1.0	<3.0
MW5-102010		10/20/2010	<50.0	<85	<430	<1.0	<1.0	<1.0	<3.0
MW5-122710		12/27/2010	<50.0	<87	<430	<1.0	<1.0	<1.0	<3.0
MW5-032211		3/22/2011	<50.0	<75	<380	<1.0	<1.0	<1.0	<3.0
MW5-081712		8/17/2012	<50.0	<76	<380	<1.0	<1.0	<1.0	<3.0
MTCA Method A Cleanup Levels[4]			**800**	**500**	**500**	**5**	**1,000**	**700**	**1,000**

NOTES:

Results in bold denote concentrations above applicable cleanup levels.

< denotes analyte not detected at or above the reporting limit listed.

-- denotes sample not analyzed.

[1] Analyzed by Northwest Method NWTPH-Gx.

[2] Analyzed by Northwest Method NWTPH-Dx.

[3] Analyzed by U.S. Environmental Protection Agency (EPA) Method 8260B.

[4] Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Cleanup Levels for Groundwater, Table 720-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as revised November 2007.

DRO = total petroleum hydrocarbons (TPH) as diesel-range organics

GRO = TPH as gasoline-range organics

ORO = TPH as oil-range organics

Table 3
Summary of Groundwater Analytical Results for Polycyclic Aromatic Hydrocarbons
Former Cummings Oil Lease Site
Winlock, Washington
Farallon PN: 283-005

Sample Identification	Well Identification	Sample Date	Analytical Results (micrograms per liter)												Total cPAHs TEC [2,3]
			Naphthalene	Acenaphthene	Acenaphthylene	Fluorene [1]	Phenanthrene [1]	Carcinogenic Polycyclic Aromatic Hydrocarbons [1]							
								Benzo(a)pyrene	Chrysene	Dibenzo(a,h)anthracene	Indeno(1,2,3-c,d)pyrene	Benzo(a)anthracene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	
MW1-031110	MW-1	3/11/2010	<0.016	<0.016	<0.015	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	0.0121
MW1-060910		6/9/2010	0.020	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	0.0106
MW1-032511		3/25/2011	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	0.0121
MW2-031110	MW-2	3/11/2010	<0.016	0.059	<0.015	0.12	0.023	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	0.0121
MW2-060910		6/9/2010	0.056	0.074	0.019	0.26	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	0.0106
MW2-032511		3/25/2011	0.18	0.075	<0.017	0.17	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	0.0128
MW3-031110	MW-3	3/11/2010	Not Sampled												
MW3-060910		6/9/2011	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	0.0106
MW3-032511		3/25/2011	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	0.0121
MW4-031110	MW-4	3/11/2010	<0.015	<0.016	<0.015	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	0.0121
MW4-060910		6/9/2010	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	0.0106
MW4-032511		3/25/2011	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	0.0121
MW5-031110	MW-5	3/11/2010	<0.016	<0.016	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.0113
MW5-060910		6/9/2010	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	0.0106
MW5-032511		3/25/2011	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.0113
MTCA Method A Cleanup Levels for Groundwater			**160** [4]	**960** [5]	**NR**	**160** [5]	**NR**								**0.10**

NOTES:

< Denotes analyte not detected at or above the reporting limit listed.

[1] Analyzed by U.S. Environmental Protection Agency Method 8270C.

[2] Total carcinogenic polycyclic aromatic hydrocarbons derived using the total toxicity equivalency method in Section 708(8) of Chapter 173-340 of the Washington Administrative Code.

[3] For concentrations reported at less than the laboratory reporting limit, half the reporting limit was use to calculate the TEC.

[4] Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Cleanup Levels for Groundwater, Table 720-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as revised November 2007.

[5] Washington State Department of Ecology Cleanup Levels and Risk Calculations under MTCA Standard Method B Formula Values for Groundwater

cPAHs = carcinogenic polycyclic aromatic hydrocarbons

NR = not researched

TEC = toxic equivalent concentration

Table 4
Summary of Groundwater Geochemical Parameters
Former Cummings Oil Lease Site
Winlock, Washington
Farallon PN: 283-005

Well Identification	Sample Date	Temperature (°C)	Specific Conductance (mS/cm)	pH (pH units)	Dissolved Oxygen (mg/l)	Oxidation-Reduction Potential (mV)	Sulfate[1] (mg/l)	Nitrate[1] (mg/l as Nitrogen)	Nitrite[1] (mg/l)	Methane[2] (µg/l)	Ferrous Iron[3] (mg/l)
MW-1	8/18/2008	17.60	0.221	6.03	0.92	-7.70	—	—	—	—	—
	3/11/2010	10.08	0.289	6.70	0.47	117.7	74.4	<0.20	<0.20	289	—
	6/9/2010	14.21	0.348	6.21	0.42	11.1	59.4	<0.050	0.012	520	9.8
	10/20/2010	16.20	0.234	6.13	0.64	12.1	59.1	<0.20	<0.10	388	2.3
	12/27/2010	10.65	0.28	6.16	0.29	-1.2	38.3	<0.20	<0.10	668	15.3
	3/22/2011	9.27	0.308	7.29	0.15	-61.9	34.3	0.080[4]	—	22.0	3.2
MW-2	8/18/2008	17.65	0.316	6.64	0.99	-77.20	0.420	<0.200	—	1,660	—
	3/11/2010	9.93	0.247	7.28	0.77	101.2	30.31	<0.20	<0.10	1,620	—
	6/9/2010	14.48	0.277	6.84	1.00	75.8	7.9	<0.050	<0.010	3,500	3.2
	10/20/2010	16.76	0.279	6.61	0.91	-50.3	11.2	<0.20	<0.10	6,320	1.3
	12/27/2010	10.39	0.305	6.60	0.39	-78.5	12.5	<0.20	<0.10	2,980	30.2
	3/22/2011	8.97	0.253	6.63	0.57	191.6	8.3	0.10[4]	—	1,160	1.8
MW-3	8/18/2008	17.38	0.382	6.34	1.08	-75.60	—	—	—	—	—
	3/11/2010	—	—	—	—	—	—	—	—	—	—
	6/9/2010	13.87	0.387	6.36	0.50	-6.80	13.4	<0.050	<0.010	380	3.90
	10/20/2010	17.26	0.321	6.57	0.87	-33.4	14.6	<0.20	<0.10	338	1.50
	12/27/2010	11.09	0.378	6.48	0.45	-50.8	13.9	<0.20	<0.10	339	23.2
	3/22/2011	9.72	0.416	8.06	0.25	-78.2	17.8	0.073[4]	—	224	4.2
MW-4	8/18/2008	13.78	0.241	6.75	0.97	-74.90	16.7	<0.200	—	22.8	—
	3/11/2010	9.59	0.255	7.92	0.57	85.60	17.6	<0.20	<0.20	47.6	—
	6/9/2010	12.42	0.260	7.16	0.51	85.5	12.5	<0.050	0.011	93	1.2
	10/20/2010	12.96	0.206	7.42	0.66	-77.8	14.1	<0.20	<0.10	16.9	0.52
	12/27/2010	10.84	0.205	6.11	0.49	53.5	9.1	<0.20	<0.10	51.6	19.5
	3/22/2011	9.20	0.196	6.01	0.91	211.2	14.3	0.12[4]	—	<10.0	2.2
MW-5	8/18/2008	17.57	0.466	6.62	1.45	-31.60	8.03	<0.200	—	40.6	—
	3/11/2010	10.30	0.067	7.63	5.66	107.9	3.2	0.61	<0.10	<10.0	—
	6/9/2010	14.74	0.074	5.76	2.27	213.5	4.7	0.87	<0.010	<2.3	<0.17
	10/20/2010	17.59	0.085	6.03	1.34	75.5	6.3	0.65	<0.10	<10.0	<0.20
	12/27/2010	10.69	0.073	5.72	5.62	140.7	3.9	1.2	<0.10	<10.0	<0.20
	3/22/2011	8.89	0.072	5.62	6.02	47.2	7.0	0.48[4]	—	<10.0	0.50

NOTES:

— = not measured/analyzed

[1]Analyzed by U.S. Environmental Protection Agency (EPA) Method 300.0. Samples collected on March 22, 2011 were analyzed by EPA Method 353.2.

[2]Analyzed by Method RSK 175.

[3]Analyzed by SM 3500-FE B/4. Samples collected on March 22, 2011 were analyzed in the field using Ferrous iron reagent test kits.

[4]Total nitrogen

°C = degrees Celsius

µg/l = micrograms per liter

mg/l = milligrams per liter

mS/cm = millisiemens per centimeter

mV = millivolts