

**Whitten Oil
Groundwater Monitoring
September 2017
Sampling Report**

**Whitty's Chevron
370 West 5th Avenue
Colville, Washington 99114**

Project Number: 172206.00

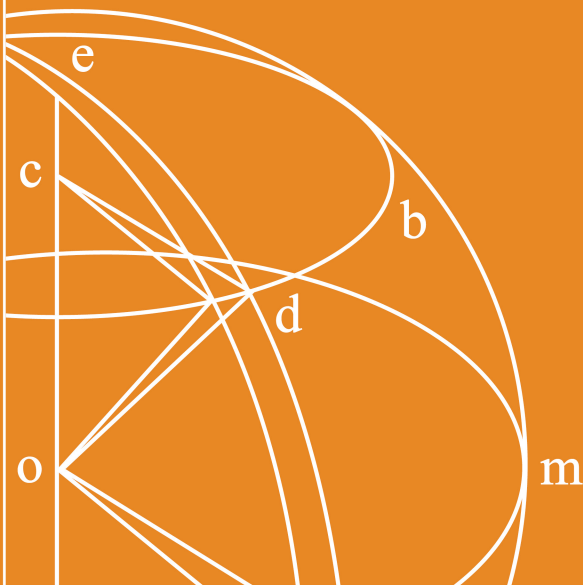
Date: June 19, 2018

Prepared for:

Jeff Whitten
1118 27th Avenue
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207 West Boone Avenue
Spokane, Washington 99201





Report Title: Whitten Oil Quarterly Groundwater Monitoring Report – September 2017

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370 West 5th Avenue
Colville, Washington 99114

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1118 27th Avenue
Seattle, Washington 98122

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Authored by:  Date: 06/19/2018

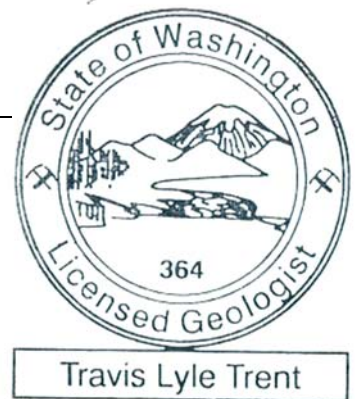
Scott Groat,
Environmental Technician

Reviewed by:  Date: 06/19/2018

Amanda S. Johnson, GIT
Environmental Geologist

Reviewed by:  Date: 06/19/2018

Travis Trent, PG, CIH
Principal



Report Integrity



Fulcrum Environmental Consulting, Inc.'s scope of service for this project was limited to those services as established in the proposal, contract, verbal direction, and/or agreement. This report is subject to applicable federal, state, and local regulations governing project-specific conditions and was performed using recognized procedures and standards of the industry. Scientific data collected in situ may document conditions that may be specific to the time and day of service, and subject to change as a result of conditions beyond Fulcrum's control or knowledge. Fulcrum makes no warranties, expressed or implied, as to the accuracy or completeness of other's work included herein. Fulcrum has performed these services in accordance with generally accepted environmental science standards of care at the time of the inspection. No warranty, expressed or implied, is made.



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1.0 INTRODUCTION

On September 13, 2017, Fulcrum Environmental Inc. (Fulcrum) completed a quarterly Groundwater Monitoring Event at Whitty's Chevron which is located at 370 West 5th Avenue in Colville, Washington. Monitoring was conducted to evaluate potential petroleum hydrocarbon impacts to site groundwater associated with a historic gasoline release identified in September 1989. A general Site Location Map is presented as Figure 1.

Site services were completed by Amanda S. Johnson, a Washington State-recognized Geologist-In-Training with Fulcrum, assisted by Scott Groat, an Environmental Technician with Fulcrum. Work was completed under the direction of Travis Trent, a Washington State Licensed Geologist and Principal with Fulcrum. Relevant professional certifications are presented in Appendix A.

1.1 Scope of Services

In September 2017, Fulcrum was retained by Whitten Oil (Whitten) to complete groundwater sampling services of existing onsite groundwater monitoring wells at Whitty's Chevron which is located at 370 West 5th Avenue in Colville, Washington. Fulcrum's scope of work consisted of review of provided historic documentation; site reconnaissance to determine the presence and condition of historic on-site groundwater monitoring wells; and sampling of five (5) existing functional groundwater monitoring wells for gasoline and benzene, toluene, ethyl benzene, and xylene (BTEX). Results of the investigation and testing are presented in this summary report.

1.2 Site Description

The site is located on the northeast corner of West Fifth Avenue (U.S. Highway 395) and North Lincoln Street in Colville, Washington. The subject facility functions as an active gasoline service station and car wash. One refueling area containing one (1) dispenser island was observed to be located south of the office building. Another gasoline/diesel refueling area containing two (2) dispenser islands was observed to be located north of the office building. Four (4) operational underground storage tanks (UST) were reported to be located west of the office building within the southern portion of the property: two (2) 10,000-gallon diesel tanks; one (1) 6,000-gallon premium gasoline tank; and one (1) 10,000-gallon unleaded gasoline tank. A six-bay carwash station is located northwest of the office building.

The entire surface of the property was observed to be covered by concrete or asphalt. Beneath the paved surface are 3 to 8 feet (ft) of sandy fill material underlain by fine-grained alluvium. Bedrock was not reported to have been encountered down to 14.5 feet below ground surface (ft bgs) during historic drilling activities.

1.3 Site Hydrogeology

The site sits approximately 1,586 ft above mean sea level (MSL). The inferred groundwater flow direction is to the northwest, generally following the surface topography of the area, with a hydraulic gradient of 0.030.

During Fulcrum's investigation, recorded site groundwater depths ranged from 5.32 to 5.91 ft bgs.



1.4 Background

The following information is summarized in part from prior project reporting provided by the owner. Fulcrum has made no independent investigation to verify accuracy of provided historic site information. A copy of select representative historic documentation is provided in Appendix B.

The subject facility has been in operation as a service station or bulk plant since the 1950s. Whitten Oil began operation around 1973, and the carwash was constructed around 1988. In September 1989 Petroleum Equipment Sales, Inc. (PES) was reportedly retained to decommission and replace onsite USTs during the construction of a new tank basin. Sunrise Environmental Services (SES) was reportedly retained by PES to observe the removal of the USTs and provide recommendations for corrective action. PES reportedly removed a total of six USTs from the site with one UST abandoned in place due to its location beneath the onsite office building. Three of the USTs were reported to have been suspect for leakage. Approximately 1,200 cubic yards of petroleum contaminated soil was removed along with the USTs.

Following removal of the USTs and associated contaminated soils, additional site investigation was conducted to evaluate the potential for residual soil and/or groundwater impact. In January 1990, Delta Environmental Consultants (Delta) supervised drilling activities performed by Budinger & Associates. Six (6) soil borings were drilled in suspected areas of petroleum hydrocarbon contamination to investigate for potential petroleum hydrocarbon impact to site soils/groundwater. The depth of soil borings ranged from 10 to 14.5 ft bgs. Soil samples were collected at five-foot intervals during the advancement of soil borings. Soil samples that exhibited a petroleum hydrocarbon odor were submitted to Technology Laboratory, Inc. of Fort Collins, Colorado for benzene, toluene, ethylbenzene, xylenes (BTEX) and total hydrocarbon analyses. Laboratory analysis identified petroleum hydrocarbons in only one of the collected samples (SB-5). Concentrations were reportedly below Washington State Department of Ecology's specified guidelines at the time.

All soil borings, with the exception of SB-5, were completed as groundwater monitoring wells, and groundwater samples were collected and submitted to Technology Laboratory, Inc. of Fort Collins, Colorado for BTEX and total hydrocarbon analyses. Laboratory analyses for BTEX and total hydrocarbons indicated that the groundwater had been impacted at the subject site. The highest hydrocarbon concentrations were detected in groundwater samples from monitoring wells MW-2 and MW-4, which were located in close proximity to the former UST basin. Detectable hydrocarbon concentrations were also found in downgradient monitoring well MW-6. It was Delta's professional opinion that site conditions posed little threat to humans or the environment due to tight soil conditions, thus preventing contamination from migrating off site. Therefore, no significant remedial action was recommended. Locations of the historic soil borings, monitoring wells, and approximate areas of excavation are presented as Figure 2. Historic soil boring and groundwater monitoring data is presented as Appendix B.

In December 2005, additional soil sampling was conducted by Northwest Environmental Solutions, Inc. to facilitate the change in ownership for the subject site. The investigation consisted of five (5) soil borings drilled in areas proximal to regions of historic soil work or current UST presence. The depth of the soil borings ranged from 5 to 15 ft bgs. One soil sample was collected at the bottom of each soil boring. All five soil samples were submitted to Spectra Laboratories of Tacoma, Washington for lead, methyl tert-butyl ether (MTBE), BTEX, and for concentrations of diesel-range hydrocarbons by Northwest Total Petroleum Hydrocarbons as diesel (NWTPH-Dx), as oil (NWTPH-Oil), and as gasoline (NWTPH-Gx). Detectable analytes (gasoline range petroleum hydrocarbons, ethyl benzene, toluene, xylene, and lead) were reported in soil boring 2-A and (toluene and xylene) were detected in soil borings 2-C and 2-D all below MTCA Method A cleanup levels for soil. The 2005 historic soil boring results and locations are presented as Appendix C.



2.0 DISCUSSION OF PERTINENT REGULATIONS AND GUIDANCE

2.1 MTCA Regulations

In Washington State, MTCA Cleanup Regulations became effective in March of 1989, with amended MTCA Cleanup Regulations effective in February of 2001. The MTCA Cleanup Regulations set standards to ensure quality of cleanup and protection of human health and the environment.

A major portion of the MTCA regulations are the development of numerical cleanup standards and requirements for cleanup actions. MTCA establishes three options for site-specific cleanup levels: Method A, B, and C. Method A defines cleanup levels for 25 to 30 of the most common hazardous substances found in soil and groundwater. Method B cleanup levels are established using applicable state and federal laws, risk assessment equations, and other requirements specified for each medium. Method C is similar to Method B, but cleanup levels are based on less stringent exposure assumptions, and the lifetime cancer risk is set at 1 in 100,000 rather than 1 in 1,000,000.

2.2 MTCA Cleanup Standards

Contaminants of concern at the subject site are gasoline-range hydrocarbons and BTEX, for which regulatory cleanup limits are provided under MTCA Method A. Based on the contaminants released at the subject site, the Method A Cleanup Levels are the most appropriate and conservative for determining site cleanup.

3.0 FIELD ACTIVITIES

3.1 Groundwater Sampling

On September 13, 2017, Fulcrum completed groundwater sampling of the following five (5) onsite groundwater monitoring wells; CW-01, CW-02, MW-03, MW-04, and MW-06. Two of the historic monitoring wells, MW-01 and MW-02, were not located during Fulcrum's investigation and have likely been either decommissioned or paved over. Five (5) groundwater samples (WOS-091317-CW01, -CW02, -MW03, -MW04, and -MW06) and one (1) field duplicate sample (WOS-091317-MW7) were collected for a total of six (6) groundwater samples. Prior to sample collection, Fulcrum measured the depth to groundwater (DTW) and depth to bottom (DTB) utilizing an electronic water level indicator accurate to ± 0.01 foot. Elevation corrections were made using wellhead elevation data from the subject site. Sampling activities were completed using a peristaltic pump or submersible pump and Hanna brand water quality instruments. A site diagram map is presented as Figure 3.

Samples were placed in a pre-cooled ice chest and shipped under standard chain-of-custody for analysis to Fremont Analytical Inc. (Fremont), a Washington State certified laboratory located in Seattle, Washington. Personnel conducting analyses were trained in accordance with the laboratory's internal quality assurance/quality control (QA/QC) policy.



4.0 RESULTS

4.1 Laboratory Analytical Results

All groundwater samples were analyzed for concentrations of gasoline-range hydrocarbons by Northwest Total Petroleum Hydrocarbons as Gasoline (NWTPH-Gx), and benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8260c. Table 1 summarizes sample identification, locations, and analyte concentrations, which are reported in micrograms per liter ($\mu\text{g/L}$). Copies of current laboratory analytical results are presented in Appendix D.

Table 1: Whitty's Chevron Groundwater Analytical Results for September 13, 2017

Location	Sample #	Groundwater Elevation ¹	Results ($\mu\text{g/L}$)				
			Gasoline	Benzene	Toluene	Ethylbenzene	Xylene
CW-01	WOS-091317-CW1	93.59	ND	ND	ND	ND	ND
CW-02	WOS-091317-CW2	93.38	ND	ND	ND	ND	ND
MW-03	WOS-091317-MW3	93.02	131	ND	ND	ND	ND
MW-04	WOS-091317-MW4	92.96	558	4.03	ND	1.51	1.46
	WOS-091317-MW7		547	ND	ND	ND	ND
MW-06	WOS-091317-MW6	-	ND	ND	ND	ND	ND
MTCA Cleanup Levels ²			800*	5	1,000	700	1,000

Bold – MTCA Method A exceedance

ND – Nondetect

NR – Analysis not requested

$\mu\text{g/L}$ – Micrograms per liter ($\mu\text{g/L}$), equivalent to parts per billion (ppb)

1 – Elevations are based on an arbitrary datum of 100.00 feet

2 – Model Toxic Cleanup Act Method A Cleanup Levels for groundwater in $\mu\text{g/L}$, as established by the Washington State Department of Ecology

*Established cleanup level when benzene is present in groundwater

- No parameters collected due to an extremely reduced volume of available water within the monitoring well (less than 6 inches)

Gasoline-range hydrocarbons were detected in the groundwater sample for monitoring well MW-03 at 131 $\mu\text{g/L}$ and in MW-04 at 547 $\mu\text{g/L}$ and 558 $\mu\text{g/L}$, which are below the MTCA Method A cleanup level of 800 $\mu\text{g/L}$. Analytical results identified the presence of benzene, ethylbenzene, and xylene(s) in groundwater samples for monitoring well MW-04 at concentrations below the respective MTCA Method A Cleanup Levels. Laboratory results reported nondetect concentrations for toluene.

4.1.1 Hydraulic Results

The groundwater flow direction, as determined by this sampling and monitoring event, is north-northwest with a hydraulic gradient of 0.03 (1.00-ft change in groundwater depth over 33-feet), which is consistent with site geomorphology. A groundwater elevation map is presented as Figure 4.



4.1.2 Data Quality

Samples were shown as received by the laboratory at an acceptable temperature. Results for Fulcrum's field duplicate were within an acceptable range of variance. Qualifiers were not present in the laboratory quality control (QC) sample results report. Based on reported analytical results, identified cleanup standards, and the absence of lab data qualifiers, it is Fulcrum's opinion that field and laboratory data quality results confirm acceptable accuracy of analytical data.

5.0 DISCUSSION

Review of current groundwater analytical data indicates the following:

- **CW-01 and CW-02:** Analytical results for groundwater samples collected from CW-01 and CW-02 were reported as nondetect concentrations for gasoline-range hydrocarbons, benzene, toluene, ethyl benzene, and xylene at the laboratory method detection limit.
- **MW-03:** Analytical results for groundwater samples collected from MW-03 reported detectable concentrations of gasoline-range hydrocarbons below MTCA Method A cleanup levels. Analytical results reported nondetect concentrations for benzene, toluene, ethyl benzene, and xylene at the laboratory method detection limit.
- **MW-04:** Analytical results for groundwater samples collected from MW-04 reported detectable concentrations of gasoline-range hydrocarbons, benzene, ethyl benzene, and xylene below MTCA Method A cleanup levels. Analytical results reported nondetect concentrations for toluene at the laboratory method detection limit.
- **MW-06:** Analytical results for groundwater samples collected from MW-06 reported nondetect concentrations for all analytes at the laboratory method detection limit.

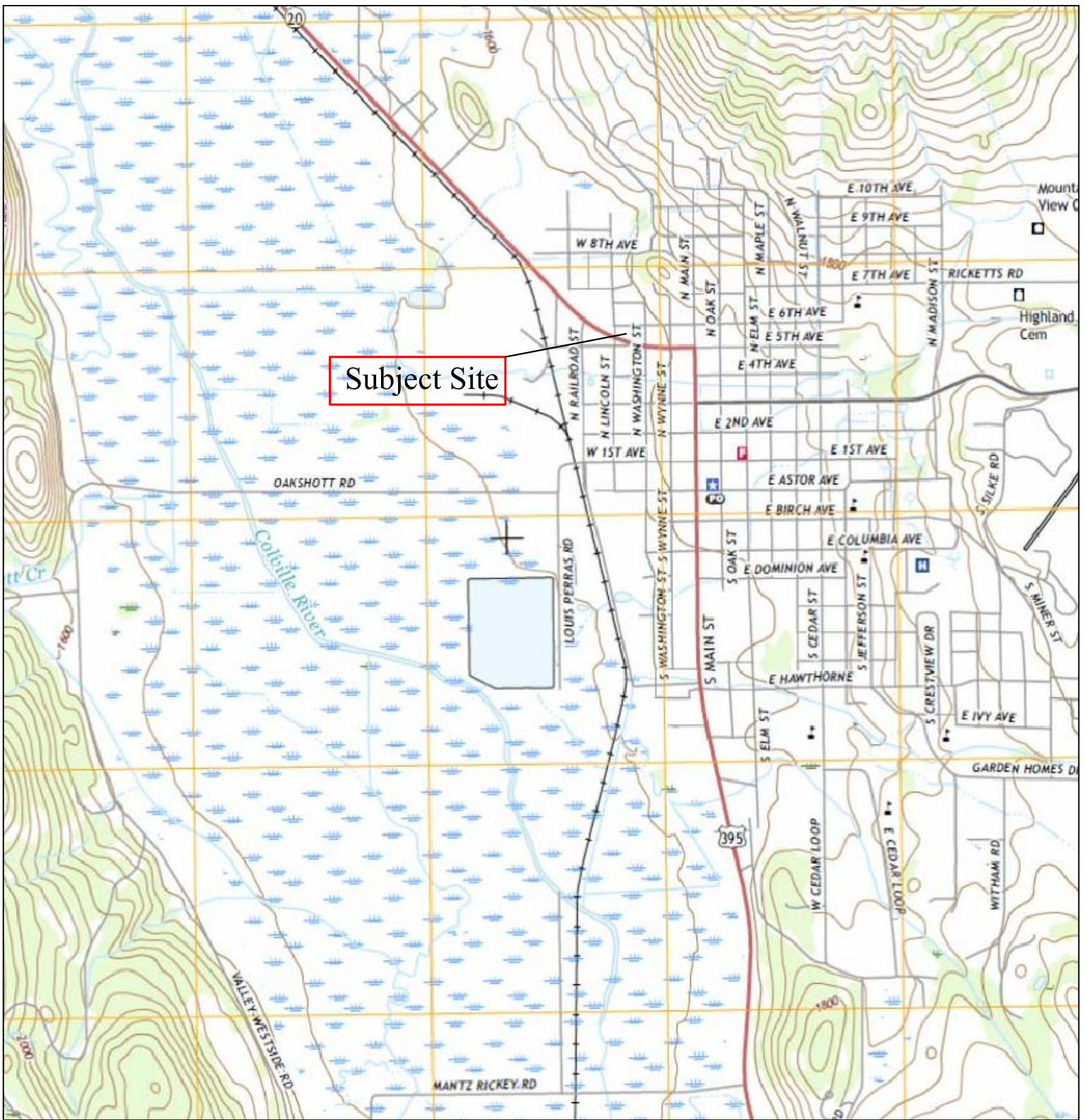
The September 2017 groundwater analytical data indicates contaminant concentrations in all wells to be below MTCA Method A cleanup levels.

6.0 RECOMMENDATIONS

Based on the results of this investigation, Fulcrum recommends continued monitoring of existing groundwater monitoring wells to further characterize site groundwater.



FIGURES



Subject Site

LEGEND

Map Location

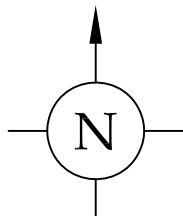


Figure 1: General Site Location Map

Third Quarter Groundwater Sampling Event September 2017
 Whitty's Chevron
 370 West 5th Avenue
 Colville, Washington



FULCRUM ENVIRONMENTAL CONSULTING, INC.
 207 W. BOONE AVENUE
 SPOKANE, WASHINGTON 99201
 (509) 459-9220 www.efulcrum.net

MAP BY: S. Groat

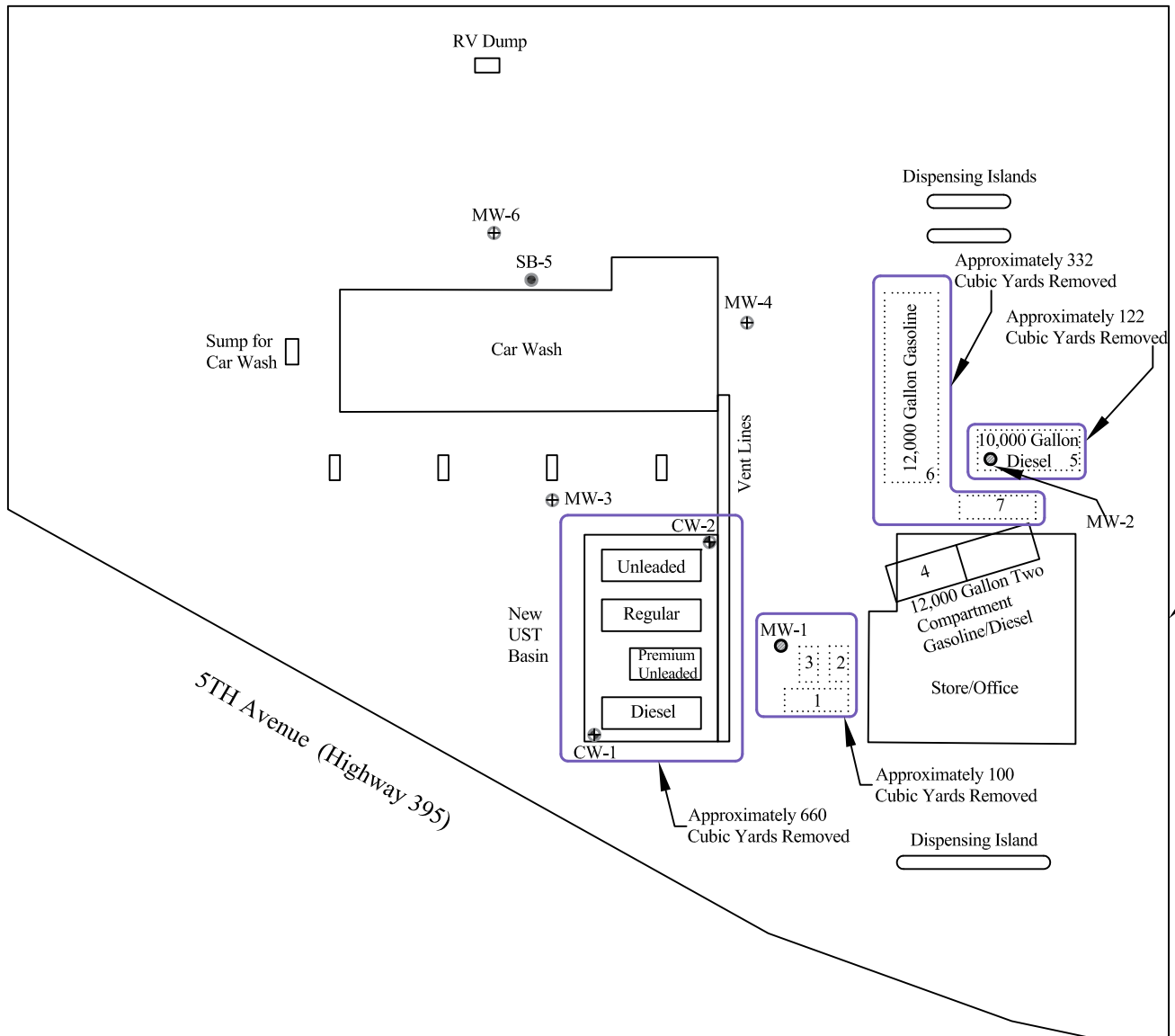
PROJECT NUMBER: 172206.00

DATE: December 4, 2017

REVIEWED BY: T. Trent

6TH Avenue

Lincoln Street

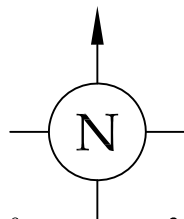


Approximate Property Boundary

5TH Avenue (Highway 395)

LEGEND

- Approximate extent of soil excavation
- Existing onsite UST
- Historic UST removed from site
- Historic Soil Boring
- Historic Monitoring Well
- Existing onsite Monitoring Well
- Existing onsite Compliance Well



Approximate Scale In Feet

Figure 2: Historic USTs, Soil Borings, and Monitoring Wells Site Diagram Map

Third Quarter Groundwater Sampling Event September 2017
 Whitty's Chevron
 370 West 5th Avenue
 Colville, Washington



FULCRUM ENVIRONMENTAL CONSULTING, INC.
 207 W. BOONE AVENUE
 SPOKANE, WASHINGTON 99201
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MAP BY: S. Groat

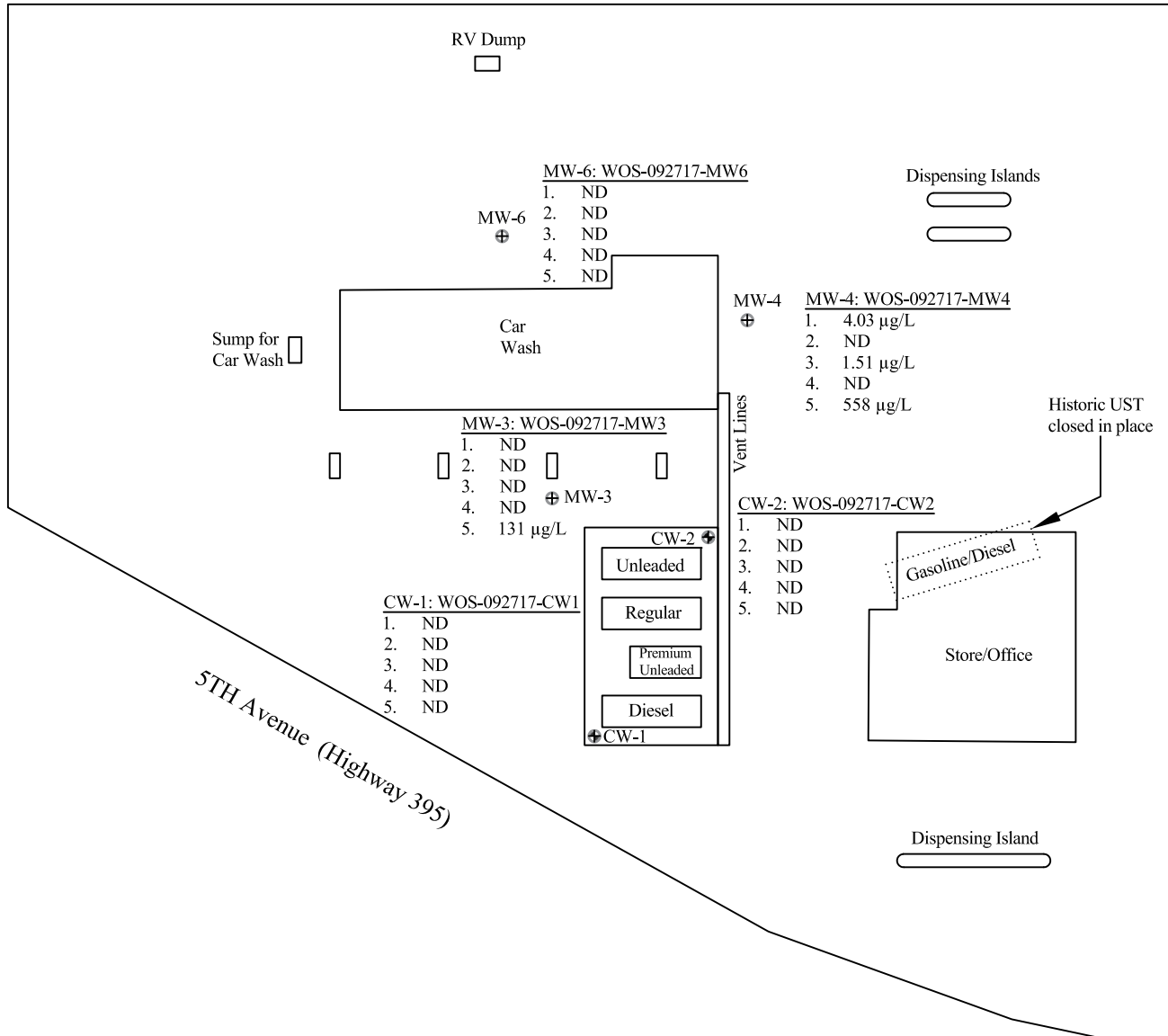
PROJECT NUMBER: 172206.00

DATE: December 4, 2017

REVIEWED BY: T. Trent

6TH Avenue

Lincoln Street



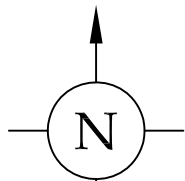
LEGEND

Parameters (µg/L)

- 1. Benzene
- 2. Toluene
- 3. Ethylbenzene
- 4. Xylenes
- 5. NWTPH-GX

⊕ Monitoring Well

⊕ Compliance Well



Approximate Scale In Feet

Figure 3: Site Diagram Map

Third Quarter Groundwater Sampling Event September 2017
 Whitty's Chevron
 370 West 5th Avenue
 Colville, Washington



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 SPOKANE, WASHINGTON 99201
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MAP BY: S. Groat

PROJECT NUMBER: 172206.00

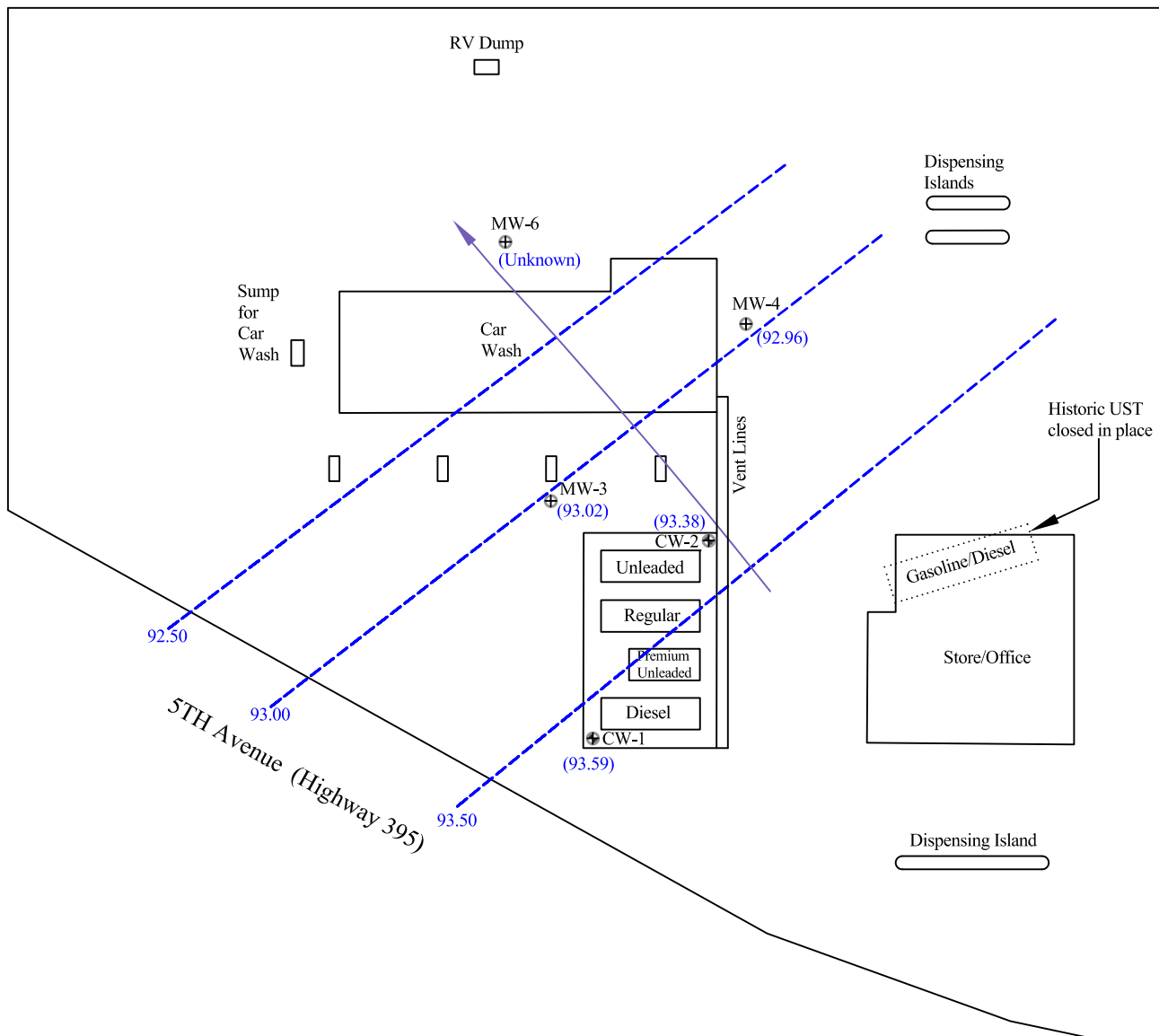
DATE: December 4, 2017

REVIEWED BY: T. Trent

6TH Avenue

Lincoln Street






Approximate Property Boundary

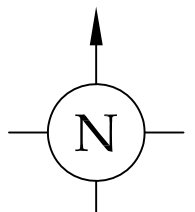


Note:

Elevations are based on an arbitrary datum of 100.00 feet.

LEGEND

-  Approximate Groundwater Flow Direction & Gradient
-  Groundwater Elevation Contour (In Feet)
93.00
-  Monitoring Well
Groundwater Elevation (In Feet)
93.00
-  Monitoring Well
-  Compliance Well



0 30
Approximate Scale In Feet

Figure 4: Groundwater Elevation Map

Third Quarter Groundwater Sampling Event September 2017
Whitty's Chevron
370 West 5th Avenue
Colville, Washington

 FULCRUM ENVIRONMENTAL CONSULTING, INC.
207 W. BOONE AVENUE
SPOKANE, WASHINGTON 99201
(509) 459-9220 www.efulcrum.net

MAP BY: S. Groat	PROJECT NUMBER: 172206.00
DATE: December 6, 2017	REVIEWED BY: T. Trent



APPENDIX A

Professional Certifications

STATE OF WASHINGTON

DEPARTMENT OF LICENSING – BUSINESS AND PROFESSIONS DIVISION



THIS CERTIFIES THAT THE PERSON OR BUSINESS NAMED BELOW IS AUTHORIZED AS A

**GEOLOGIST
HYDROGEOLOGIST**

**TRAVIS LYLE TRENT
FULCRUM ENVIRONMENTAL CONSULT.
207 WEST BOONE AVENUE
SPOKANE WA 99201**

364

License Number

01/08/2002

Issued Date

06/06/2018

Expiration Date


Pat Kohler, Director



APPENDIX B

Historic Data

HISTORIC GROUNDWATER ELEVATION AND ANALYTICAL DATA

Whitty's Chervon

370 West Fifth Avenue
Colville, Washington

Boring ID	Sampling Date	ERP (feet)	DS (feet)	TD (feet)	TPH (µg/L)	NWTPH-Gx (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)
SB-1	1/8/1990	<i>100.20</i>	---	<i>15.00</i>	---	---	---	---	---	---
SB-2	1/8/1990	<i>99.39</i>	<i>10.00</i>	<i>15.00</i>	ND	ND	ND	ND	ND	ND
SB-3	1/9/1990	<i>99.30</i>	---	<i>15.00</i>	---	---	---	---	---	---
SB-4	1/9/1990	<i>98.96</i>	<i>5.00</i>	<i>15.00</i>	ND	ND	ND	ND	ND	ND
SB-5	1/9/1990	<i>99.29</i>	<i>5.00</i>	<i>15.00</i>	<i>1,220</i>	---	<i>0.476</i>	<i>1.38</i>	<i>5.62</i>	<i>50.2</i>
SB-6	1/9/1990	<i>97.87</i>	---	<i>15.00</i>	---	---	---	---	---	---

Well ID	Sampling Date	ERP (feet)	DTW (feet)	GWE (feet)	TPH (µg/L)	NWTPH-Gx (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)
CW-1	1/10/1990	<i>99.50</i>	<i>5.82</i>	<i>93.68</i>	---	---	---	---	---	---
	9/13/2017	<i>99.50</i>	<i>5.91</i>	<i>93.59</i>	---	ND	ND	ND	ND	ND
CW-2	1/10/1990	<i>99.01</i>	<i>5.33</i>	<i>93.68</i>	---	---	---	---	---	---
	9/13/2017	<i>99.01</i>	<i>5.64</i>	<i>93.36</i>	---	ND	ND	ND	ND	ND
MW-1	1/10/1990	<i>100.00</i>	<i>5.59</i>	<i>94.41</i>	ND	---	ND	ND	ND	ND
	9/13/2017	<i>100.00</i>	---	---	---	---	---	---	---	---
MW-2	1/10/1990	<i>98.92</i>	<i>4.51</i>	<i>94.41</i>	<i>2,460</i>	---	<i>1,643.0</i>	<i>409.00</i>	<i>ND</i>	<i>2955.00</i>
	9/13/2017	<i>98.92</i>	---	---	---	---	---	---	---	---
MW-3	1/10/1990	<i>98.56</i>	<i>5.77</i>	<i>92.79</i>	ND	---	ND	ND	ND	ND
	9/13/2017	<i>98.56</i>	<i>5.55</i>	<i>93.02</i>	---	131.00	ND	ND	ND	ND
MW-4	1/10/1990	<i>98.27</i>	<i>4.06</i>	<i>94.21</i>	<i>3,050</i>	---	<i>118</i>	<i>23.00</i>	<i>ND</i>	<i>284.00</i>
	9/13/2017	<i>98.27</i>	<i>5.32</i>	<i>92.96</i>	---	558.00	4.03	ND	1.51	1.46
	9/13/2017	<i>98.27</i>	<i>5.32</i>	<i>92.96</i>	---	547.00	ND	ND	ND	ND
MW-6	1/10/1990	<i>97.27</i>	<i>9.01</i>	<i>88.26</i>	ND	---	<i>9.00</i>	<i>5.00</i>	<i>15.00</i>	<i>80.00</i>
	9/13/2017	<i>97.27</i>	---	---	---	ND	ND	ND	ND	ND

2001 MTCA Method A Cleanup Levels for Groundwater	NE	800	5	1000	700	1000
--	-----------	------------	----------	-------------	------------	-------------

Notes :

MTCA Method A exceedences shown in bold

Historic Data not collected by Fulcrum shown in italics

NE Not Established. Individual analyte thresholds for Total Petroleum Hydrocarbons (TPH) have not been established are referenced as the appropriate regulatory values above

TPH Total Petroleum Hydrocarbons

TD Total Boring Depth

DS Depth Sampled

ERP Elevation of riser pipe based on an arbitrary datum of 100.00 feet

DTW Depth to water

GWE Groundwater elevation based on an arbitrary datum of 100.00 feet

NWTPHGx Northwest total petroleum hydrocarbons as gasoline;

BTEX Benzene, toluene, ethylbenzene and total xylenes

µg/L micrograms per liter or parts per billion

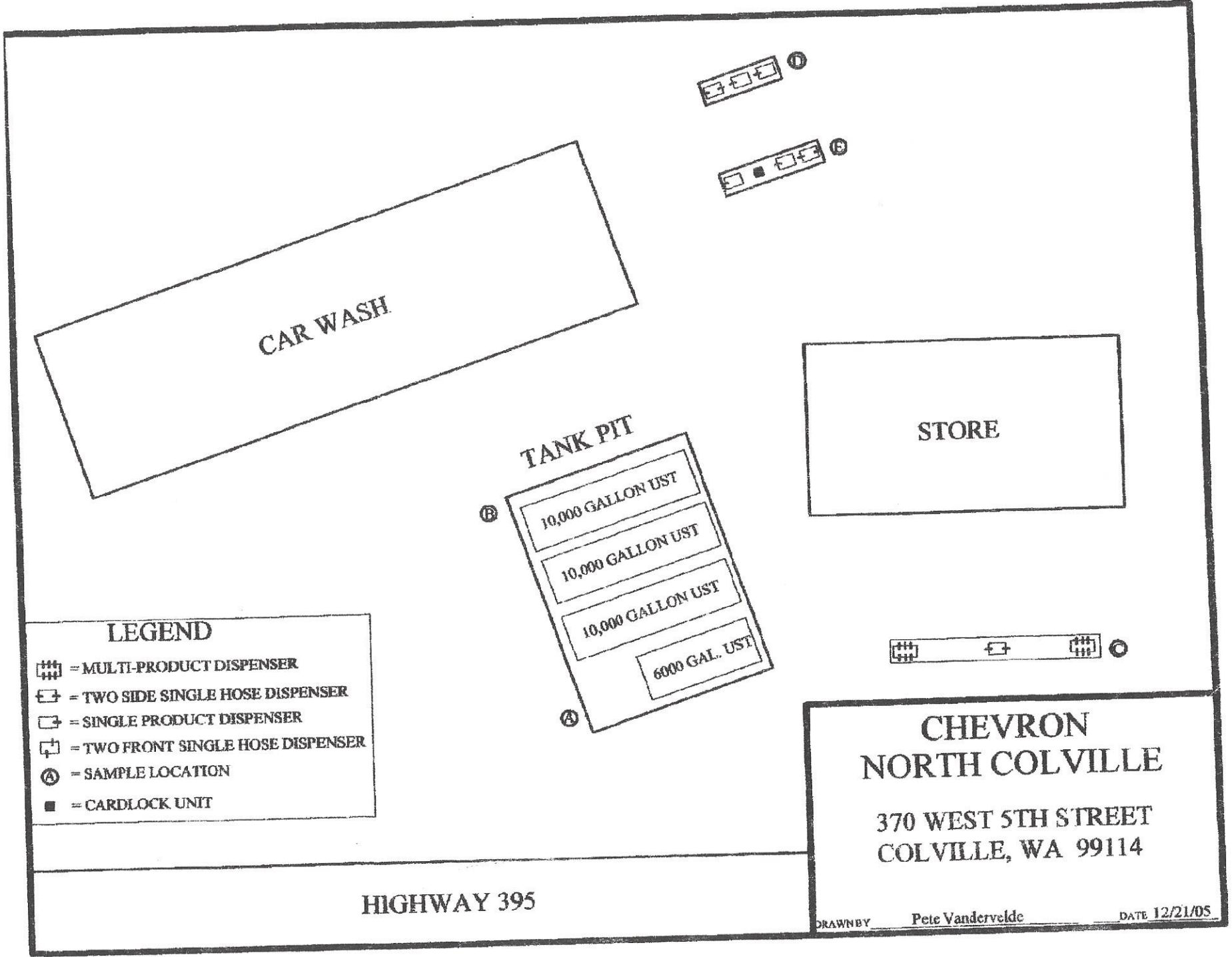
ND Not detected in concentrations exceeding laboratory method detection limit

--- Not available, not tested, not measured



APPENDIX C

2005 Soil Sampling Results



CAR WASH

TANK PIT

STORE

LEGEND

- = MULTI-PRODUCT DISPENSER
- = TWO SIDE SINGLE HOSE DISPENSER
- = SINGLE PRODUCT DISPENSER
- = TWO FRONT SINGLE HOSE DISPENSER
- = SAMPLE LOCATION
- = CARDLOCK UNIT

HIGHWAY 395

CHEVRON
NORTH COLVILLE

370 WEST 5TH STREET
COLVILLE, WA 99114

DRAWN BY Pete Vanderveide DATE 12/21/05

**TABLE 1
SOIL SAMPLE RESULTS
CHEVRON
NORTH COLVILLE**

DEPTH OF SAMPLE	15'	14	5'	5'	5'	
ANALYSES	2-A	2-B	2-C	2-D	2-E	CLEANUP STANDARD
NWTPH-OIL	<100	<100	<100	<100	<100	2000 mg/Kg
NWTPH-DIESEL	<10	<10	<10	<10	<10	2000 mg/Kg
NWTPH-GAS	8	<5.0	<5.0	<5.0	<5.0	100 mg/Kg OR 30mg/Kg
BENZENE	<0.025	<0.025	<0.025	<0.025	<0.025	0.03 mg/Kg
ETHYLBENZENE	0.12	<0.025	<0.025	<0.025	<0.025	6.0 mg/Kg
MTBE	<0.025	<0.025	<0.025	<0.025	<0.025	0.1 mg/Kg
TOLUENE	0.229	<0.05	0.111	0.066	<0.05	7.0 mg/Kg
XYLENE	0.69	<0.05	0.099	0.081	<0.05	9.0 mg/Kg
TOTAL LEAD	13	N/A	N/A	N/A	N/A	250 mg/Kg

N/A = NOT ANALYZED (verifys analyte is below cleanup standards for highest NWTPH-G concentration reported)

BOLDED RESULTS = ABOVE CLEANUP STANDARDS

ITALICIZED RESULTS = ESTIMATED CONCENTRATION. RESULT IS ABOVE NORMAL CALIBRATION RANGE. FINAL RESULT IS MOST LIKELY HIGHER

<1.25 ? = SAMPLE METHOD DETECTION LIMIT WAS DILUTED ABOVE CLEANUP STANDARD DUE TO HIGH CONCENTRATION OF OTHER ANALYTE DETECTED



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12/16/2005

Northwest Environmental Solutions, Inc
 PO Box 1583
 Sumner, WA 98390
 Attn: Pete Vanderveide

P.O.#: Pd Ck #7160319036
 Project: Whitton Oil
 Client ID: 2-A
 Sample Matrix: Soil
 Date Sampled: 12/08/2005
 Date Received: 12/12/2005
 Spectra Project: 2005120166
 Spectra Number: 1
 Rush

Analyte	Result	Units	Method
Diesel	<10	mg/Kg	NWIPH-D
Oil	<100	mg/Kg	NWIPH-U
Gasoline	8	mg/Kg	NWIPH-G
Benzene	<0.025	mg/Kg	SW846 8200B
Ethylbenzene	0.12	mg/Kg	SW846 8200B
Methyl-tert-Butyl Ether	<0.025	mg/Kg	SW846 8200B
Toluene	0.229	mg/Kg	SW846 8200B
Total Xylenes	0.69	mg/Kg	SW846 8200B

Substrate	Recovery	Method
Technical Oil	113	NWIPH-D
2,2,4-Trimethylpentane	118	NWIPH-D
n-Heptane	100	NWIPH-D

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12/16/2005


Northwest Environmental Solutions, Inc
 PO Box 1583
 Sumner, WA 98390
 Attn: Pete Vanderveide

P.O.#: Pd Ck #7160319036
 Project: Whirton Oil
 Client ID: 2-B
 Sample Matrix: Soil
 Date Sampled: 12/08/2005
 Date Received: 12/12/2005
 Spectra Project: 2005120166
 Spectra Number: 2
 Rush

Analyte	Result	Units	Method
Diesel	<10	mg/Kg	NWTPH-D
Oil	<100	mg/Kg	NWTPH-D
Gasoline	<5	mg/Kg	NWTPH-G
Benzene	<0.025	mg/Kg	SW846 8260B
Ethylbenzene	<0.025	mg/Kg	SW846 8260B
Methyl-tert-Butyl Ether	<0.025	mg/Kg	SW846 8260B
Toluene	<0.05	mg/Kg	SW846 8260B
Total Xylenes	<0.05	mg/Kg	SW846 8260B

Substrate	Recovery	Method
Toluene-d8	118	NWTPH-G
4-Fluorofluorobenzene	111	NWTPH-G
p-Terphenyl	60	NWTPH-D

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Steve Hibbs, Laboratory Manager

sh/hh



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12/16/2005

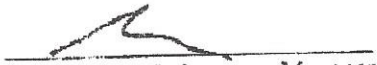
Northwest Environmental Solutions, Inc
 PO Box 1583
 Sumner, WA 98390
 Attn: Pete Vandervelde

P.O.#: Pd Ck #7160319036
 Project: Whitton Oil
 Client ID: 2-C
 Sample Matrix: Soil
 Date Sampled: 12/08/2005
 Date Received: 12/12/2005
 Spectra Project: 2005120166
 Spectra Number: 3
 Rush

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Diesel	<10	mg/Kg	NWTPH-D
Oil	<100	mg/Kg	NWTPH-D
Gasoline	<5	mg/Kg	NWTPH-G
Benzene	<0.025	mg/Kg	SW846 8260B
Ethylbenzene	<0.025	mg/Kg	SW846 8260B
Methyl-tert-Butyl Ether	<0.025	mg/Kg	SW846 8260B
Toluene	0.111	mg/Kg	SW846 8260B
Total Xylenes	0.099	mg/Kg	SW846 8260B

<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
1,2,4-Trichlorobenzene	111	NWTPH-G
4-Bromofluorobenzene	119	NWTPH-G
p-Terphenyl	62	NWTPH-D

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12/16/2005

Northwest Environmental Solutions, Inc
 PO Box 1583
 Sumner, WA 98390
 Attn: Pete Vandervelde

P.O.#: Pd Ck #7160319036
 Project: Whitton Oil
 Client ID: 2-D
 Sample Matrix: Soil
 Date Sampled: 12/08/2005
 Date Received: 12/12/2005
 Spectra Project: 2005120166
 Spectra Number: 4
 Rush

Analyte	Result	Units	Method
Diesel	<10	mg/Kg	NWTPH-D
Oil	<100	mg/Kg	NWTPH-D
Gasoline	<5	mg/Kg	NWTPH-G
Benzene	<0.025	mg/Kg	SW846 8260B
Ethylbenzene	<0.025	mg/Kg	SW846 8260B
Methyl-tert-Butyl Ether	<0.025	mg/Kg	SW846 8260B
Toluene	0.066	mg/Kg	SW846 8260B
Total Xylenes	0.081	mg/Kg	SW846 8260B

Substrate	Recovery	Method
Toluene IS	115	NWTPH-G
4-Methylchlorobenzene	112	NWTPH-G
p-Terphenyl	76	NWTPH-D

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12/16/2005

Northwest Environmental Solutions, Inc
PO Box 1583
Sumner, WA 98390
Attn: Pete Vandervelde

P.O.#: Pd Ck #7160319036
Project: Whitton Oil
Client ID: 2-E
Sample Matrix: Soil
Date Sampled: 12/08/2005
Date Received: 12/12/2005
Spectra Project: 2005120166
Spectra Number: 5
Rush

Analyte	Result	Units	Method
Diesel	<10	mg/Kg	NWTPH-D
Oil	<100	mg/Kg	NWTPH-D
Gasoline	<5	mg/Kg	NWTPH-G
Benzene	<0.025	mg/Kg	SW846 8260B
Ethylbenzene	<0.025	mg/Kg	SW846 8260B
Methyl-tert-Butyl Ether	<0.025	mg/Kg	SW846 8260B
Toluene	<0.05	mg/Kg	SW846 8260B
Total Xylenes	<0.05	mg/Kg	SW846 8260B

Surrogate	Recovery	Method
Toluene-d8	112	NWTPH-G
4-Bromofluorobenzene	113	NWTPH-G
p-Terphenyl	62	NWTPH-D

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Steve Hibbs, Laboratory Manager



APPENDIX D

Laboratory Analytical Results



Fulcrum Environmental

Amanda Johnson
207 W Boone Ave.
Spokane, WA 99201

RE: Whitten Oil Soil
Work Order Number: 1709141

September 22, 2017

Attention Amanda Johnson:

Fremont Analytical, Inc. received 7 sample(s) on 9/15/2017 for the analyses presented in the following report.

Gasoline by NWTPH-Gx
Volatile Organic Compounds by EPA Method 8260C

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Chelsea Ward
Project Manager

CC:
Scott Groat
Travis Trent



Date: 09/22/2017

CLIENT: Fulcrum Environmental
Project: Whitten Oil Soil
Work Order: 1709141

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1709141-001	WOS-091317-CW1	09/13/2017 4:13 PM	09/15/2017 10:00 AM
1709141-002	WOS-091317-CW2	09/13/2017 2:13 PM	09/15/2017 10:00 AM
1709141-003	WOS-091317-MW3	09/13/2017 5:45 PM	09/15/2017 10:00 AM
1709141-004	WOS-091317-MW4	09/13/2017 5:30 PM	09/15/2017 10:00 AM
1709141-005	WOS-091317-MW6	09/13/2017 1:35 PM	09/15/2017 10:00 AM
1709141-006	WOS-091317-MW7	09/13/2017 5:40 PM	09/15/2017 10:00 AM
1709141-007	Trip Blank	09/05/2017 9:31 AM	09/15/2017 10:00 AM

CLIENT: Fulcrum Environmental

Project: Whitten Oil Soil

I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

- * - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit
- R - High relative percent difference observed

Acronyms:

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



Client: Fulcrum Environmental

Collection Date: 9/13/2017 4:13:00 PM

Project: Whitten Oil Soil

Lab ID: 1709141-001

Matrix: Water

Client Sample ID: WOS-091317-CW1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Gasoline by NWTPH-Gx

Batch ID: 18218 Analyst: MW

Gasoline	ND	50.0		µg/L	1	9/20/2017 10:08:45 PM
Surr: Toluene-d8	93.8	65 - 135		%Rec	1	9/20/2017 10:08:45 PM
Surr: 4-Bromofluorobenzene	96.8	65 - 135		%Rec	1	9/20/2017 10:08:45 PM

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18218 Analyst: MW

Benzene	ND	1.00		µg/L	1	9/20/2017 10:08:45 PM
Toluene	ND	1.00		µg/L	1	9/20/2017 10:08:45 PM
Ethylbenzene	ND	1.00		µg/L	1	9/20/2017 10:08:45 PM
m,p-Xylene	ND	1.00		µg/L	1	9/20/2017 10:08:45 PM
o-Xylene	ND	1.00		µg/L	1	9/20/2017 10:08:45 PM
Surr: Dibromofluoromethane	104	45.4 - 152		%Rec	1	9/20/2017 10:08:45 PM
Surr: Toluene-d8	97.3	40.1 - 139		%Rec	1	9/20/2017 10:08:45 PM
Surr: 1-Bromo-4-fluorobenzene	92.4	64.2 - 128		%Rec	1	9/20/2017 10:08:45 PM



Client: Fulcrum Environmental

Collection Date: 9/13/2017 2:13:00 PM

Project: Whitten Oil Soil

Lab ID: 1709141-002

Matrix: Water

Client Sample ID: WOS-091317-CW2

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Gasoline by NWTPH-Gx

Batch ID: 18218 Analyst: MW

Gasoline	ND	50.0		µg/L	1	9/20/2017 10:38:32 PM
Surr: Toluene-d8	95.4	65 - 135		%Rec	1	9/20/2017 10:38:32 PM
Surr: 4-Bromofluorobenzene	95.6	65 - 135		%Rec	1	9/20/2017 10:38:32 PM

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18218 Analyst: MW

Benzene	ND	1.00		µg/L	1	9/20/2017 10:38:32 PM
Toluene	ND	1.00		µg/L	1	9/20/2017 10:38:32 PM
Ethylbenzene	ND	1.00		µg/L	1	9/20/2017 10:38:32 PM
m,p-Xylene	ND	1.00		µg/L	1	9/20/2017 10:38:32 PM
o-Xylene	ND	1.00		µg/L	1	9/20/2017 10:38:32 PM
Surr: Dibromofluoromethane	105	45.4 - 152		%Rec	1	9/20/2017 10:38:32 PM
Surr: Toluene-d8	98.9	40.1 - 139		%Rec	1	9/20/2017 10:38:32 PM
Surr: 1-Bromo-4-fluorobenzene	91.3	64.2 - 128		%Rec	1	9/20/2017 10:38:32 PM



Client: Fulcrum Environmental

Collection Date: 9/13/2017 5:45:00 PM

Project: Whitten Oil Soil

Lab ID: 1709141-003

Matrix: Water

Client Sample ID: WOS-091317-MW3

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Gasoline by NWTPH-Gx

Batch ID: 18218 Analyst: MW

Gasoline	131	50.0		µg/L	1	9/20/2017 11:08:13 PM
Surr: Toluene-d8	95.9	65 - 135		%Rec	1	9/20/2017 11:08:13 PM
Surr: 4-Bromofluorobenzene	95.3	65 - 135		%Rec	1	9/20/2017 11:08:13 PM

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18218 Analyst: MW

Benzene	ND	1.00		µg/L	1	9/20/2017 11:08:13 PM
Toluene	ND	1.00		µg/L	1	9/20/2017 11:08:13 PM
Ethylbenzene	ND	1.00		µg/L	1	9/20/2017 11:08:13 PM
m,p-Xylene	ND	1.00		µg/L	1	9/20/2017 11:08:13 PM
o-Xylene	ND	1.00		µg/L	1	9/20/2017 11:08:13 PM
Surr: Dibromofluoromethane	103	45.4 - 152		%Rec	1	9/20/2017 11:08:13 PM
Surr: Toluene-d8	98.7	40.1 - 139		%Rec	1	9/20/2017 11:08:13 PM
Surr: 1-Bromo-4-fluorobenzene	90.7	64.2 - 128		%Rec	1	9/20/2017 11:08:13 PM



Client: Fulcrum Environmental

Collection Date: 9/13/2017 5:30:00 PM

Project: Whitten Oil Soil

Lab ID: 1709141-004

Matrix: Water

Client Sample ID: WOS-091317-MW4

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Gasoline by NWTPH-Gx

Batch ID: 18218 Analyst: MW

Gasoline	558	50.0		µg/L	1	9/21/2017 12:32:08 PM
Surr: Toluene-d8	92.1	65 - 135		%Rec	1	9/21/2017 12:32:08 PM
Surr: 4-Bromofluorobenzene	105	65 - 135		%Rec	1	9/21/2017 12:32:08 PM

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18218 Analyst: MW

Benzene	4.03	1.00		µg/L	1	9/21/2017 12:32:08 PM
Toluene	ND	1.00		µg/L	1	9/21/2017 12:32:08 PM
Ethylbenzene	1.51	1.00		µg/L	1	9/21/2017 12:32:08 PM
m,p-Xylene	1.46	1.00		µg/L	1	9/21/2017 12:32:08 PM
o-Xylene	ND	1.00		µg/L	1	9/21/2017 12:32:08 PM
Surr: Dibromofluoromethane	104	45.4 - 152		%Rec	1	9/21/2017 12:32:08 PM
Surr: Toluene-d8	102	40.1 - 139		%Rec	1	9/21/2017 12:32:08 PM
Surr: 1-Bromo-4-fluorobenzene	99.4	64.2 - 128		%Rec	1	9/21/2017 12:32:08 PM



Client: Fulcrum Environmental

Collection Date: 9/13/2017 1:35:00 PM

Project: Whitten Oil Soil

Lab ID: 1709141-005

Matrix: Water

Client Sample ID: WOS-091317-MW6

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Gasoline by NWTPH-Gx

Batch ID: 18218 Analyst: MW

Gasoline	ND	50.0		µg/L	1	9/21/2017 3:35:51 AM
Surr: Toluene-d8	95.0	65 - 135		%Rec	1	9/21/2017 3:35:51 AM
Surr: 4-Bromofluorobenzene	98.9	65 - 135		%Rec	1	9/21/2017 3:35:51 AM

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18218 Analyst: MW

Benzene	ND	1.00		µg/L	1	9/21/2017 3:35:51 AM
Toluene	ND	1.00		µg/L	1	9/21/2017 3:35:51 AM
Ethylbenzene	ND	1.00		µg/L	1	9/21/2017 3:35:51 AM
m,p-Xylene	ND	1.00		µg/L	1	9/21/2017 3:35:51 AM
o-Xylene	ND	1.00		µg/L	1	9/21/2017 3:35:51 AM
Surr: Dibromofluoromethane	103	45.4 - 152		%Rec	1	9/21/2017 3:35:51 AM
Surr: Toluene-d8	97.9	40.1 - 139		%Rec	1	9/21/2017 3:35:51 AM
Surr: 1-Bromo-4-fluorobenzene	94.3	64.2 - 128		%Rec	1	9/21/2017 3:35:51 AM



Client: Fulcrum Environmental

Collection Date: 9/13/2017 5:40:00 PM

Project: Whitten Oil Soil

Lab ID: 1709141-006

Matrix: Water

Client Sample ID: WOS-091317-MW7

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Gasoline by NWTPH-Gx

Batch ID: 18259 Analyst: MW

Gasoline	547	50.0		µg/L	1	9/21/2017 11:32:30 AM
Surr: Toluene-d8	94.1	65 - 135		%Rec	1	9/21/2017 11:32:30 AM
Surr: 4-Bromofluorobenzene	106	65 - 135		%Rec	1	9/21/2017 11:32:30 AM

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18259 Analyst: MW

Benzene	ND	1.00		µg/L	1	9/21/2017 11:32:30 AM
Toluene	ND	1.00		µg/L	1	9/21/2017 11:32:30 AM
Ethylbenzene	ND	1.00		µg/L	1	9/21/2017 11:32:30 AM
m,p-Xylene	ND	1.00		µg/L	1	9/21/2017 11:32:30 AM
o-Xylene	ND	1.00		µg/L	1	9/21/2017 11:32:30 AM
Surr: Dibromofluoromethane	104	45.4 - 152		%Rec	1	9/21/2017 11:32:30 AM
Surr: Toluene-d8	101	40.1 - 139		%Rec	1	9/21/2017 11:32:30 AM
Surr: 1-Bromo-4-fluorobenzene	101	64.2 - 128		%Rec	1	9/21/2017 11:32:30 AM

Work Order: 1709141
CLIENT: Fulcrum Environmental
Project: Whitten Oil Soil

QC SUMMARY REPORT
Gasoline by NWTPH-Gx

Sample ID MB-18259	SampType: MBLK	Units: µg/L			Prep Date: 9/20/2017	RunNo: 38732					
Client ID: MBLKW	Batch ID: 18259				Analysis Date: 9/21/2017	SeqNo: 744298					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	ND	50.0									
Surr: Toluene-d8	23.9		25.00		95.5	65	135				
Surr: 4-Bromofluorobenzene	24.0		25.00		95.8	65	135				

Sample ID LCS-18259	SampType: LCS	Units: µg/L			Prep Date: 9/20/2017	RunNo: 38732					
Client ID: LCSW	Batch ID: 18259				Analysis Date: 9/21/2017	SeqNo: 744297					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	562	50.0	500.0	0	112	65	135				
Surr: Toluene-d8	23.4		25.00		93.5	65	135				
Surr: 4-Bromofluorobenzene	25.2		25.00		101	65	135				

Sample ID LCSD-18259	SampType: LCSD	Units: µg/L			Prep Date: 9/20/2017	RunNo: 38732					
Client ID: LCSW02	Batch ID: 18259				Analysis Date: 9/21/2017	SeqNo: 744296					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	557	50.0	500.0	0	111	65	135	562.3	0.900	20	
Surr: Toluene-d8	23.2		25.00		92.9	65	135		0		
Surr: 4-Bromofluorobenzene	25.2		25.00		101	65	135		0		

Sample ID 1709236-001ADUP	SampType: DUP	Units: µg/L			Prep Date: 9/20/2017	RunNo: 38732					
Client ID: BATCH	Batch ID: 18259				Analysis Date: 9/21/2017	SeqNo: 744293					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	ND	50.0						0		30	
Surr: Toluene-d8	23.2		25.00		92.9	65	135		0		
Surr: 4-Bromofluorobenzene	24.5		25.00		98.0	65	135		0		

Work Order: 1709141
CLIENT: Fulcrum Environmental
Project: Whitten Oil Soil

QC SUMMARY REPORT
Gasoline by NWTPH-Gx

Sample ID LCS-18218	SampType: LCS	Units: µg/L				Prep Date: 9/18/2017	RunNo: 38723				
Client ID: LCSW	Batch ID: 18218					Analysis Date: 9/20/2017	SeqNo: 744213				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	527	50.0	500.0	0	105	65	135				
Surr: Toluene-d8	23.7		25.00		94.8	65	135				
Surr: 4-Bromofluorobenzene	24.8		25.00		99.0	65	135				

Sample ID MB-18218	SampType: MBLK	Units: µg/L				Prep Date: 9/18/2017	RunNo: 38723				
Client ID: MBLKW	Batch ID: 18218					Analysis Date: 9/20/2017	SeqNo: 744214				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	ND	50.0									
Surr: Toluene-d8	23.8		25.00		95.4	65	135				
Surr: 4-Bromofluorobenzene	24.0		25.00		96.1	65	135				

Sample ID 1709137-002AMS	SampType: MS	Units: µg/L				Prep Date: 9/18/2017	RunNo: 38723				
Client ID: BATCH	Batch ID: 18218					Analysis Date: 9/21/2017	SeqNo: 744202				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	519	50.0	500.0	52.63	93.2	65	135				
Surr: Toluene-d8	23.0		25.00		91.8	65	135				
Surr: 4-Bromofluorobenzene	26.2		25.00		105	65	135				

Sample ID 1709137-002AMSD	SampType: MSD	Units: µg/L				Prep Date: 9/18/2017	RunNo: 38723				
Client ID: BATCH	Batch ID: 18218					Analysis Date: 9/21/2017	SeqNo: 744203				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	495	50.0	500.0	52.63	88.4	65	135	518.7	4.72	30	
Surr: Toluene-d8	23.3		25.00		93.1	65	135		0		
Surr: 4-Bromofluorobenzene	25.3		25.00		101	65	135		0		

Work Order: 1709141
 CLIENT: Fulcrum Environmental
 Project: Whitten Oil Soil

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260C

Sample ID	MB-18259	SampType:	MBLK	Units:	µg/L	Prep Date:	9/20/2017	RunNo:	38731		
Client ID:	MBLKW	Batch ID:	18259			Analysis Date:	9/21/2017	SeqNo:	744271		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.00									
Toluene	ND	1.00									
Ethylbenzene	ND	1.00									
m,p-Xylene	ND	1.00									
o-Xylene	ND	1.00									
Surr: Dibromofluoromethane	24.0		25.00		95.8	45.4	152				
Surr: Toluene-d8	24.7		25.00		98.8	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	22.9		25.00		91.5	64.2	128				

Sample ID	LCS-18259	SampType:	LCS	Units:	µg/L	Prep Date:	9/20/2017	RunNo:	38731		
Client ID:	LCSW	Batch ID:	18259			Analysis Date:	9/21/2017	SeqNo:	744270		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20.7	1.00	20.00	0	103	69.3	132				
Toluene	20.8	1.00	20.00	0	104	61.3	145				
Ethylbenzene	21.5	1.00	20.00	0	108	72	130				
m,p-Xylene	40.7	1.00	40.00	0	102	70.3	134				
o-Xylene	19.7	1.00	20.00	0	98.3	72.1	131				
Surr: Dibromofluoromethane	25.3		25.00		101	45.4	152				
Surr: Toluene-d8	26.0		25.00		104	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	26.7		25.00		107	64.2	128				

Sample ID	LCSD-18259	SampType:	LCSD	Units:	µg/L	Prep Date:	9/20/2017	RunNo:	38731		
Client ID:	LCSW02	Batch ID:	18259			Analysis Date:	9/21/2017	SeqNo:	744269		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.1	1.00	20.00	0	105	69.3	132	20.65	2.00	20	
Toluene	20.7	1.00	20.00	0	104	61.3	145	20.78	0.214	20	
Ethylbenzene	22.4	1.00	20.00	0	112	72	130	21.53	4.07	20	
m,p-Xylene	41.9	1.00	40.00	0	105	70.3	134	40.69	3.00	20	

Work Order: 1709141
CLIENT: Fulcrum Environmental
Project: Whitten Oil Soil

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260C

Sample ID LCSD-18259	SampType: LCSD	Units: µg/L				Prep Date: 9/20/2017	RunNo: 38731				
Client ID: LCSW02	Batch ID: 18259					Analysis Date: 9/21/2017	SeqNo: 744269				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
o-Xylene	20.4	1.00	20.00	0	102	72.1	131	19.65	3.50	20	
Surr: Dibromofluoromethane	25.1		25.00		101	45.4	152		0		
Surr: Toluene-d8	25.7		25.00		103	40.1	139		0		
Surr: 1-Bromo-4-fluorobenzene	26.9		25.00		108	64.2	128		0		

Sample ID 1709236-001ADUP	SampType: DUP	Units: µg/L				Prep Date: 9/20/2017	RunNo: 38731				
Client ID: BATCH	Batch ID: 18259					Analysis Date: 9/21/2017	SeqNo: 744266				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.00						0		30	
Toluene	ND	1.00						0		30	
Ethylbenzene	ND	1.00						0		30	
m,p-Xylene	ND	1.00						0		30	
o-Xylene	ND	1.00						0		30	
Surr: Dibromofluoromethane	26.2		25.00		105	45.4	152		0		
Surr: Toluene-d8	24.5		25.00		97.9	40.1	139		0		
Surr: 1-Bromo-4-fluorobenzene	23.3		25.00		93.4	64.2	128		0		

Work Order: 1709141
 CLIENT: Fulcrum Environmental
 Project: Whitten Oil Soil

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260C

Sample ID	LCS-18218	SampType:	LCS	Units:	µg/L	Prep Date:	9/18/2017	RunNo:	38722		
Client ID:	LCSW	Batch ID:	18218	Analysis Date:	9/20/2017	SeqNo:	744192				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.3	1.00	20.00	0	106	69.3	132				
Toluene	21.2	1.00	20.00	0	106	61.3	145				
Ethylbenzene	22.8	1.00	20.00	0	114	72	130				
m,p-Xylene	42.1	1.00	40.00	0	105	70.3	134				
o-Xylene	21.0	1.00	20.00	0	105	72.1	131				
Surr: Dibromofluoromethane	25.2		25.00		101	45.4	152				
Surr: Toluene-d8	26.3		25.00		105	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	26.8		25.00		107	64.2	128				

Sample ID	MB-18218	SampType:	MBLK	Units:	µg/L	Prep Date:	9/18/2017	RunNo:	38722		
Client ID:	MBLKW	Batch ID:	18218	Analysis Date:	9/20/2017	SeqNo:	744193				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.00									
Toluene	ND	1.00									
Ethylbenzene	ND	1.00									
m,p-Xylene	ND	1.00									
o-Xylene	ND	1.00									
Surr: Dibromofluoromethane	24.2		25.00		96.9	45.4	152				
Surr: Toluene-d8	24.5		25.00		97.9	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	22.9		25.00		91.8	64.2	128				

Sample ID	1709137-001AMS	SampType:	MS	Units:	µg/L	Prep Date:	9/18/2017	RunNo:	38722		
Client ID:	BATCH	Batch ID:	18218	Analysis Date:	9/21/2017	SeqNo:	744177				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.7	1.00	20.00	0	109	65.4	138				
Toluene	21.3	1.00	20.00	0	107	52	147				
Ethylbenzene	22.9	1.00	20.00	0	114	64.5	136				
m,p-Xylene	42.3	1.00	40.00	0	106	63.3	135				

Work Order: 1709141
 CLIENT: Fulcrum Environmental
 Project: Whitten Oil Soil

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260C

Sample ID 1709137-001AMS	SampType: MS	Units: µg/L				Prep Date: 9/18/2017	RunNo: 38722				
Client ID: BATCH	Batch ID: 18218					Analysis Date: 9/21/2017	SeqNo: 744177				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

o-Xylene	20.6	1.00	20.00	0	103	64.8	150				
Surr: Dibromofluoromethane	26.5		25.00		106	45.4	152				
Surr: Toluene-d8	26.1		25.00		104	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	27.1		25.00		108	64.2	128				

Sample ID 1709137-001AMSD	SampType: MSD	Units: µg/L				Prep Date: 9/18/2017	RunNo: 38722				
Client ID: BATCH	Batch ID: 18218					Analysis Date: 9/21/2017	SeqNo: 744178				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Benzene	21.6	1.00	20.00	0	108	65.4	138	21.75	0.564	30	
Toluene	21.2	1.00	20.00	0	106	52	147	21.31	0.609	30	
Ethylbenzene	23.0	1.00	20.00	0	115	64.5	136	22.89	0.582	30	
m,p-Xylene	42.7	1.00	40.00	0	107	63.3	135	42.27	1.09	30	
o-Xylene	21.2	1.00	20.00	0	106	64.8	150	20.64	2.80	30	
Surr: Dibromofluoromethane	26.3		25.00		105	45.4	152		0		
Surr: Toluene-d8	25.6		25.00		103	40.1	139		0		
Surr: 1-Bromo-4-fluorobenzene	26.6		25.00		106	64.2	128		0		

Client Name: **FES**

 Work Order Number: **1709141**

 Logged by: **Clare Griggs**

 Date Received: **9/15/2017 10:00:00 AM**

Chain of Custody

1. Is Chain of Custody complete? Yes No Not Present
2. How was the sample delivered? FedEx

Log In

3. Coolers are present? Yes No NA
4. Shipping container/cooler in good condition? Yes No
5. Custody Seals present on shipping container/cooler?
(Refer to comments for Custody Seals not intact) Yes No Not Required
6. Was an attempt made to cool the samples? Yes No NA
7. Were all items received at a temperature of >0°C to 10.0°C* Yes No NA
8. Sample(s) in proper container(s)? Yes No
9. Sufficient sample volume for indicated test(s)? Yes No
10. Are samples properly preserved? Yes No
11. Was preservative added to bottles? Yes No NA
12. Is there headspace in the VOA vials? Yes No NA
13. Did all samples containers arrive in good condition(unbroken)? Yes No
14. Does paperwork match bottle labels? Yes No
15. Are matrices correctly identified on Chain of Custody? Yes No
16. Is it clear what analyses were requested? Yes No
17. Were all holding times able to be met? Yes No

Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes No NA

Person Notified:	<u>Amanda Johnson</u>	Date:	<u>9/18/2017</u>
By Whom:	<u>Clare Griggs</u>	Via:	<input checked="" type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<u>Confirming samples to be analyzed.</u>		
Client Instructions:	<u>Run all samples.</u>		

19. Additional remarks:

Item Information

Item #	Temp °C
Cooler	1.1
Sample	3.6

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C



3600 Fremont Ave N.
Seattle, WA 98103

Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record and Laboratory Services Agreement

Date: 09/14/17

Laboratory Project No (internal): 1709114

Page: 1 of: 1

Project Name: Whitman Oil Soil

Project No: 172206.00

Collected by: AS/SL

Location: Colville, WA

Report To (PM): Amanda Johnson

PM Email: AJohnson@fulcrum.net

Client: Fulcrum Environmental
Address: 207 W. Boone Ave.
City, State, Zip: Spokane, WA, 99201
Telephone: 509-459-9220 Fax: 509-459-9219

Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	Analytes												Comments			
				VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DH)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM / 625)	PCBs (EPA 8082 / 608)	Metals*** (EPA 6020 / 200.8)	Total (T) / Dissolved (D)	Anions (C)***		EDB (8011)		
W05-091317-CW1	09/13/17	1613	W	X															
W05-091317-CW2	09/13/17	1413	W	X															
W05-091317-MW3		1745	W	X															
W05-091317-MW4		1730	W	X															
W05-091317-MW6		1335	W	X															
W05-091317-MW7		1740	W																
7																			
8																			
9																			
10																			

**Metals Analysis (Circle): MTCA-5 RCHA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sp Se Sr Sn Tl U V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite
 Return to Client Disposal by Lab (Samples will be held for 30 days unless otherwise noted. A fee may be assessed if samples are retained after 30 days.)

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished Scott Groat Date/Time 09/14/17 @ 1015 Received Bill Reddy Date/Time 9/15/17 10:00

Relinquished Scott Groat Date/Time 09/14/17 @ 1015 Received Bill Reddy Date/Time 9/15/17 10:00

TAT → SameDay^ NextDay^ 2 Day 3 Day ETD
 ^Please coordinate with the lab in advance



3600 Fremont Ave N.
Seattle, WA 98103

Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record and Laboratory Services Agreement

Date: 09/14/17

Laboratory Project No (Internal): 170914

Page: 1 of 1

Client: Eylcrum Environmental

Project Name: Whittem Oil Soil

Address: 207 W. Boone Ave.

Project No: 172206.00

City, State, Zip: Spokane, WA, 99201

Location: Colville, WA

Telephone: 509-459-9220 Fax: 509-459-9219

Report To (PM): Amanda Johnson
PM Email: AJohnson@eylcrum.net / Sgroat@eylcrum.net

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GYBTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 - SIM / 625)	PAHs (EPA 8270 - SIM / 625)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) Dissolved (D)	Anions (C)***	EDB (801)	Comments
W05-091317-CW1	09/13/17	1613	W	X													
W05-091317-CW2	09/13/17	1413	W	X													
W05-091317-MW3		1745	W	X													
W05-091317-MW4		1730	W	X													
W05-091317-MW6		1335	W	X													
W05-091317-MW7		1740	W	X													
7																	
8																	
9																	
10																	

Return per A.J. 9/18/17-eg

Special Remarks: Please cc. trent@eylcrum.net

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Sample Disposal: Return to Client Disposal by Lab (Samples will be held for 30 days unless otherwise noted. A fee may be assessed if samples are retained after 30 days.)

Relinquished: Scott Groat Date/Time: 09/14/17 @ 1015 Received: Bill Rogers Date/Time: 9/15/17 10:00

Relinquished: Scott Groat Date/Time: 09/14/17 @ 1015 Received: Bill Rogers Date/Time: 9/15/17 10:00