

**Whitten Oil
Groundwater Monitoring
March 2020
Sampling Report**

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

Project Number: 172206.00

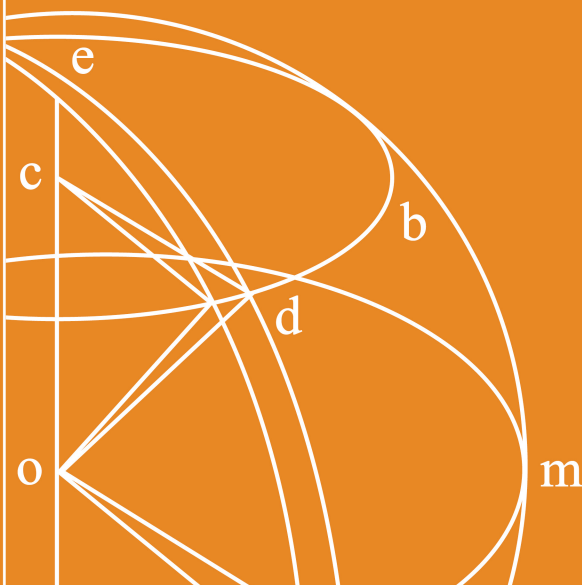
Date: April 1, 2020

Prepared for:

Jeff Whitten
1118 27th Avenue
Seattle, Washington 98122

Prepared by:

Fulcrum Environmental Consulting, Inc.
207 West Boone Avenue
Spokane, Washington 99201





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370 West 5th Avenue
Colville, Washington 99114

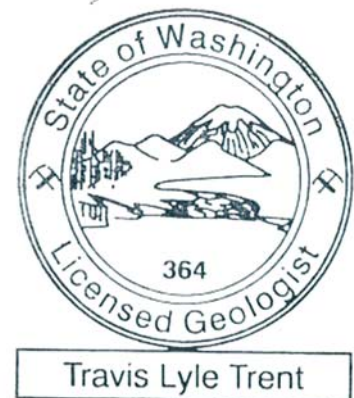
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The professionals who completed site services and prepared and reviewed this report include, but are not limited to:

Authored by:  Date: 4/01/2020
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Environmental Geologist

Reviewed by:  Date: 4/01/2020
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 March 10, 2020, Fulcrum Environmental Consulting, Inc. (Fulcrum) completed a semiannual Groundwater Monitoring Event at Whitty's Chevron located at 370 West 5th Avenue in Colville, Washington. Monitoring was conducted to evaluate petroleum hydrocarbon impacts to site groundwater associated with a historical gasoline release identified in September 1989. Figure 1 presents a general Site Location Map.

Site services were completed by Amanda Biondi, Washington State Licensed Geologist, and Scott Groat, a Washington State recognized Geologist-In-Training, both with Fulcrum. Work was completed under the direction of Travis Trent, a Washington State Licensed Geologist/Hydrogeologist and Principal with Fulcrum. Relevant professional certifications are presented in Appendix A.

1.1 Scope of Services

Fulcrum has been retained by Whitten Oil (Whitten) to complete semi-annual groundwater sampling services utilizing existing onsite groundwater monitoring wells at Whitty's Chevron located at 370 West 5th Avenue in Colville, Washington. Each semi-annual sampling event consists of measurement of water depths in five (5) onsite groundwater monitoring wells followed by collection of water samples from each well. Samples are collected in accordance with industry standard of care and submitted under chain of custody to a Washington State accredited laboratory to be analyzed for benzene, toluene, ethyl benzene, xylene (BTEX), and gasoline, diesel-range extended organics, and heavy oil-range extended organics. Results of the investigation and testing from March 2020, 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 (1) refueling area containing one (1) dispenser island was observed to be located south of the office building, while another gasoline/diesel refueling area with two (2) dispenser islands was observed to be located north of the office building. A more recently constructed dispensing island is located southeast 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 10,000-gallon diesel tanks, one 6,000-gallon premium gasoline tank, and one 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 with the exception of a small area immediately east of the office building which was finished with gravel. Historical reports indicates that beneath the paved surface are 3 to 8 feet (ft) of sandy fill material underlain by fine-grained alluvium down to 14.5 feet below ground surface (ft bgs).

1.3 Site Hydrogeology

The site sits approximately 1,586 feet (ft) above mean sea level (MSL). The inferred groundwater flow direction is to the northwest, generally following surface topography of the area, with a hydraulic gradient of 0.014.

During Fulcrum's investigation, recorded site groundwater levels ranged from 4.12 to 5.57 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 historical site information. A copy of select representative historical 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 (6) USTs from the site with one (1) UST abandoned in place due to its location beneath the onsite office building. Three (3) 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.

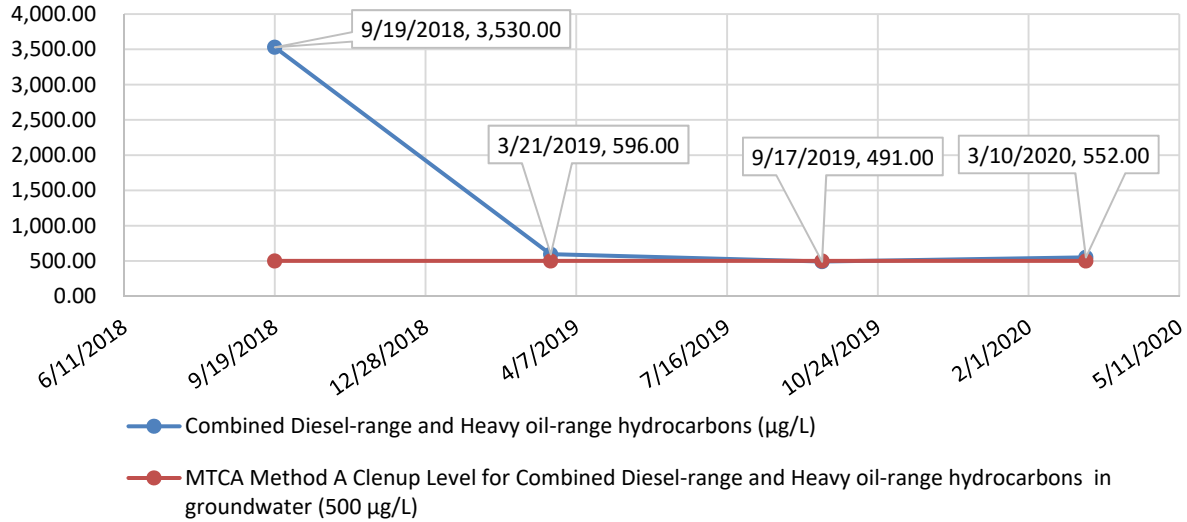
All soil borings, with the exception of SB-5, were completed as groundwater monitoring wells, and groundwater samples were collected and submitted to Technology Laboratory, Inc. of Fort Collins, Colorado for BTEX and total hydrocarbon analyses. Laboratory analyses for BTEX and total hydrocarbons indicated 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 historical soil borings, monitoring wells, and approximate areas of excavation are presented as Figure 2. Historical 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 historical 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 (5) 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 historical soil boring results and locations are presented as Appendix C.

General trending for combined diesel- and heavy oil-range hydrocarbons concentrations from September of 2018 to March of 2020 in monitoring well MW-04, is presented in the following graph.



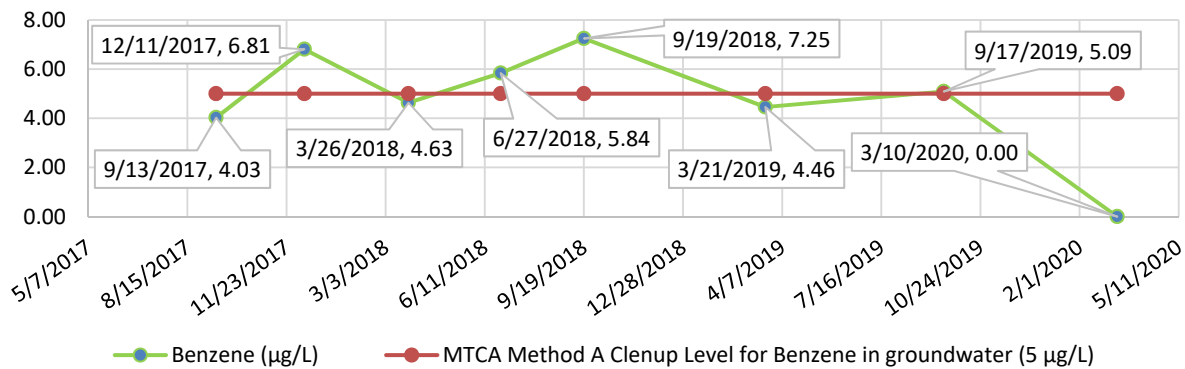
MW-04 Combined Diesel-range and Heavy Oil-range Hydrocarbon Trends



Results show relatively stable concentrations of combined diesel- and heavy oil-range hydrocarbons in MW-04 at concentrations around the Method A cleanup level over the last three quarters.

General trending of benzene concentrations from September 2017 to March 2020, is presented in the graph below

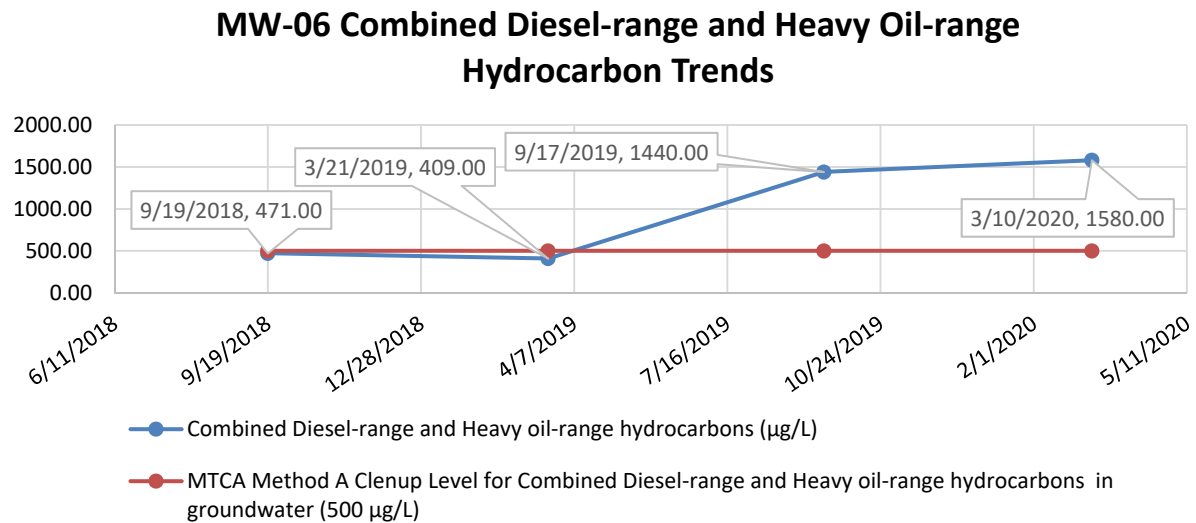
MW-04 Benzene Trends



After monitoring of benzene began in September 2017, benzene concentrations have fluctuated between non-detect and 7.25 µg/L. A generally downward trend in benzene concentrations has been observed since September of 2018. Increases and decreases in benzene concentrations appear to be associated with high and low groundwater levels, but additional data of groundwater characteristics will be necessary to predict future trends in benzene concentrations.



General trending for combined diesel- and heavy oil-range hydrocarbons concentrations from September of 2018 to March of 2020 in monitoring well MW-06, is presented in the graph below.



Analytical results show that diesel- and heavy oil-range hydrocarbon concentrations have been trending upwards since March of 2019.

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, diesel-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 March 20, 2020, Fulcrum completed groundwater sampling of the following five (5) monitoring wells; CW-01, CW-02, MW-03, MW-04, and MW-06. Five (5) groundwater samples (WOS-031020-CW01, -CW02, -MW03, -MW04, -MW06) and one (1) field duplicate sample (WOS-031020-MW07) were collected for a total of six (6) groundwater samples.

Two samples WOS-031020-MW04 and -MW06 were observed to have elevated suspended solids consistent with historical sampling at these locations. To evaluate the potential for hydrocarbon concentrations to be entrained onto particulate matter, duplicate samples were collected with the second sample identified for laboratory filtration prior to analysis.

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 field water quality instruments. In each location the monitoring well was either pumped dry or for a minimum of three well volumes. Field parameters were measure prior to, during, and following completion of the monitoring well pumping to ensure that they stabilized indicating that sampled water was representative of groundwater.

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 analysis are trained in accordance with the laboratory's internal quality assurance/quality control (QA/QC) policy. A site diagram map is presented as Figure 3.

While onsite, Fulcrum noted damage to the surface mount of MW-06 (broken well pipe and poorly fitted compression cap) that could put the monitoring well at risk for adverse impact associated



with runoff from the proximal car wash bay. Although, the location is at low risk for adverse impact, minor repair is recommended.

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), diesel-range and heavy oil-range hydrocarbons by Northwest Total Petroleum Hydrocarbons as diesel (NWTPH-Dx), 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 March 10, 2020

Location	Sample Number	Groundwater Elevation ¹	Results (µg/L)						
			NWTPH-Dx		NWTPH-Gx	Benzene	Toluene	Ethyl-benzene	Xylene
			Diesel-range hydrocarbons	Heavy oil-range hydrocarbons					
CW-01	WOS-031020-CW01	94.61	ND	ND	ND	ND	ND	ND	ND
CW-02	WOS-031020-CW02	93.81	ND	255	ND	ND	ND	ND	ND
	WOS-031020-MW07		ND	233	ND	ND	ND	ND	ND
MW-03	WOS-031020-MW03	92.99	ND	122	ND	ND	ND	ND	ND
MW-04	WOS-031020-MW04	94.15	ND	552	96	ND	ND	2.6	ND
MW-06	WOS-031020-MW06	92.76	ND	1,580	ND	ND	ND	ND	ND
Laboratory Filtered Groundwater Samples Results (µg/L)									
MW-04	WOS-031020-MW04	94.15	ND	602	80.1	ND	ND	2.61	ND
MW-06	WOS-031020-MW06	92.76	ND	1,350	ND	ND	ND	ND	ND
MTCA Cleanup Levels ²			500 ⁺		800*	5	1,000	700	1,000

Bold – MTCA Method A exceedance

ND – Nondetect

µg/L – Micrograms per liter (µg/L), equivalent to parts per billion (ppb)

¹Elevations are based on an arbitrary datum of 100.00 feet

²Model Toxic Cleanup Act Method A Cleanup Levels for groundwater in µg/L, as established by the Washington State Department of Ecology

*Established cleanup level when benzene is present in groundwater

+ Diesel-range and heavy oil-range hydrocarbon concentrations are combined together per MTCA Method A cleanup standards for groundwater



4.2 Diesel-Range and Heavy Oil-Range Extended Organics

Laboratory analytical results report non-detect concentrations of diesel-range hydrocarbons in monitoring wells MW-04 and MW-06, laboratory analytical results report detectable concentrations for heavy oil-range hydrocarbons in monitoring wells MW-04 at 552 µg/L and MW-06 at 1,580 µg/L which are both above the MTCA Method A cleanup level of 500 µg/L.

Laboratory analytical results of the laboratory filtered groundwater samples from monitoring wells MW-04 and MW-06 report concentrations substantially similar to the non-filtered samples indicating that entrainment of hydrocarbons on suspended solids is not a likely source of the detected hydrocarbon concentrations.

Laboratory analytical results report non-detect concentrations of diesel-range hydrocarbons in monitoring wells CW-02 and MW-03, laboratory analytical results report detectable concentrations for heavy oil-range hydrocarbons in monitoring wells CW-02 at 255 µg/L and MW-03 at 122 µg/L, which are both below MTCA Method A cleanup level of 500 µg/L.

Laboratory analytical results report non-detect concentrations for diesel-range hydrocarbons and heavy oil-range hydrocarbons by NWTPH-Dx for monitoring wells CW-01.

4.3 Gasoline-Range Extended Organics

Laboratory analytical results report detectable concentrations of gasoline-range hydrocarbons by NWTPH-Gx for monitoring well MW-04 at 96 µg/L, which is below the MTCA Method A cleanup level of 800 µg/L.

Laboratory analytical results of the laboratory filtered groundwater samples from monitoring well MW-04 report detectable concentrations of gasoline-range hydrocarbons by NWTPH-Gx at 80.1 µg/L, which is below the MTCA Method A cleanup level of 800 µg/L.

Laboratory analytical results report non-detect concentrations of gasoline-range hydrocarbons by NWTPH-Gx for monitoring wells CW-01, CW-02, MW-03, and MW-06.

Laboratory analytical results of the laboratory filtered groundwater sample from monitoring well MW-06 report non-detect concentrations of gasoline-range hydrocarbons by NWTPH-Gx.



4.4 Benzene, Toluene, Ethylbenzene and Xylenes

Laboratory analytical results report detectable concentrations of ethyl-benzene for monitoring well MW-04 at 2.6 µg/L which is below the MTCA Method A cleanup level of 700 µg/L.

Laboratory analytical results report non-detect concentrations of benzene, toluene, and xylene for monitoring well MW-04.

Laboratory analytical results report non-detect concentrations for BTEX in monitoring wells CW-01, CW-02, MW-03, and MW-06.

Laboratory analytical results of the laboratory filtered groundwater samples from monitoring wells MW-04 and MW-06 report non-detect concentrations for BTEX in both monitoring wells.

4.5 Hydraulic Results

The groundwater flow direction, as determined by this sampling and monitoring event, is northwest with a hydraulic gradient of 0.015 (1.39-ft change in groundwater depth over 95-feet), which is consistent with site geomorphology. A groundwater elevation map is presented as Figure 4.

4.6 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:** Analytical results for groundwater samples collected from the CW-01 reported non-detectable concentrations for diesel-range hydrocarbons, heavy oil-range hydrocarbons, gasoline-range hydrocarbons, benzene, toluene, ethyl benzene and xylene at the laboratory method detection limit.



- **CW-02:** Analytical results for groundwater samples collected from CW-02 reported detectable concentrations of heavy oil-range hydrocarbons below MTCA Method A cleanup levels. Analytical results for groundwater samples report non-detectable concentrations for diesel-range hydrocarbons, gasoline-range hydrocarbons, benzene, toluene, ethyl-benzene, and xylene at the laboratory method detection limit.
- **MW-03:** Analytical results for groundwater samples collected from CW-02 reported detectable concentrations of heavy oil-range hydrocarbons below MTCA Method A cleanup levels. Analytical results for groundwater samples report non-detectable concentrations for diesel-range hydrocarbons, gasoline-range hydrocarbons, benzene, toluene, ethyl-benzene, and xylene at the laboratory method detection limit.
- **MW-04:** Analytical results for unfiltered and laboratory filtered groundwater samples collected from MW-04 reported detectable concentrations of **heavy oil-range hydrocarbons above MTCA Method A cleanup levels**. Analytical results reported detectable concentrations of ethyl-benzene below MTCA Method A cleanup levels, and reported non-detectable concentrations for diesel-range hydrocarbons, gasoline-range hydrocarbons, benzene, toluene, ethyl benzene and xylene at the laboratory method detection limit.
- **MW-06:** Analytical results for unfiltered and filtered groundwater samples collected from MW-06 reported detectable concentrations of **heavy oil-range hydrocarbons above MTCA Method A cleanup levels**. Analytical results reported non-detectable concentrations for diesel-range hydrocarbons, gasoline-range hydrocarbons, benzene, toluene, ethyl benzene and xylene at the laboratory method detection limit.

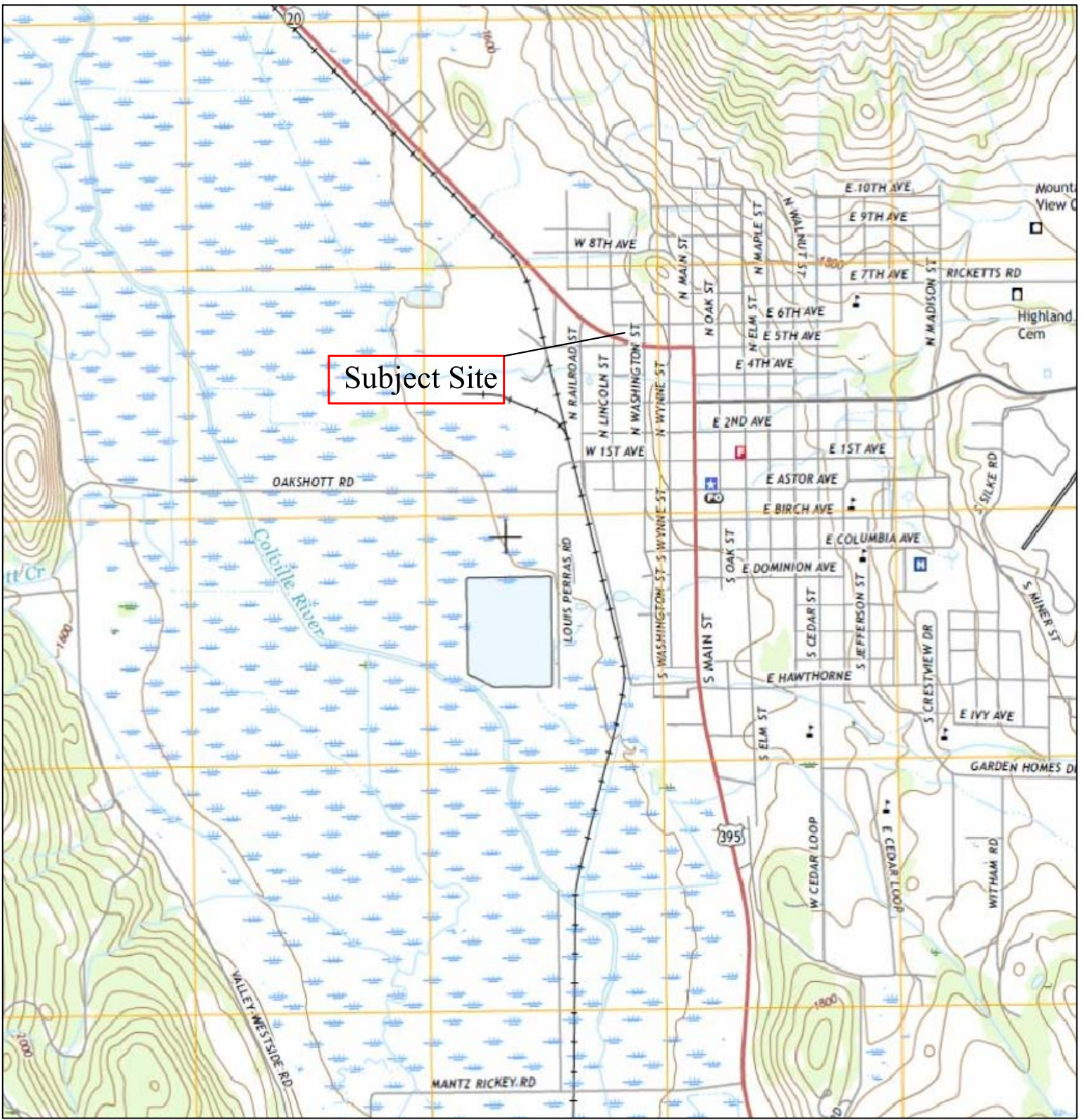
The March 2020 groundwater analytical data indicates contaminant concentrations in all wells to be below MTCA method A cleanup levels with the exception of heavy oil-range hydrocarbons in MW-04 and MW-06.

6.0 RECOMMENDATIONS

Based on the results of this investigation, Fulcrum recommends continuing semiannual monitoring of the onsite monitoring wells. Fulcrum also recommends that repair of the MW-06 be completed to better secure it against potential infiltration of run off from the proximal car wash bay.



FIGURES



Subject Site

LEGEND

Map Location

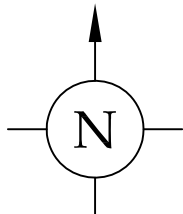


Figure 1: General Site Location Map

First Semi-annual Groundwater Sampling Event March 2020
 Whitty's Chevron
 370 West 5th Avenue
 Colville, Washington



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

MAP BY: S. Groat

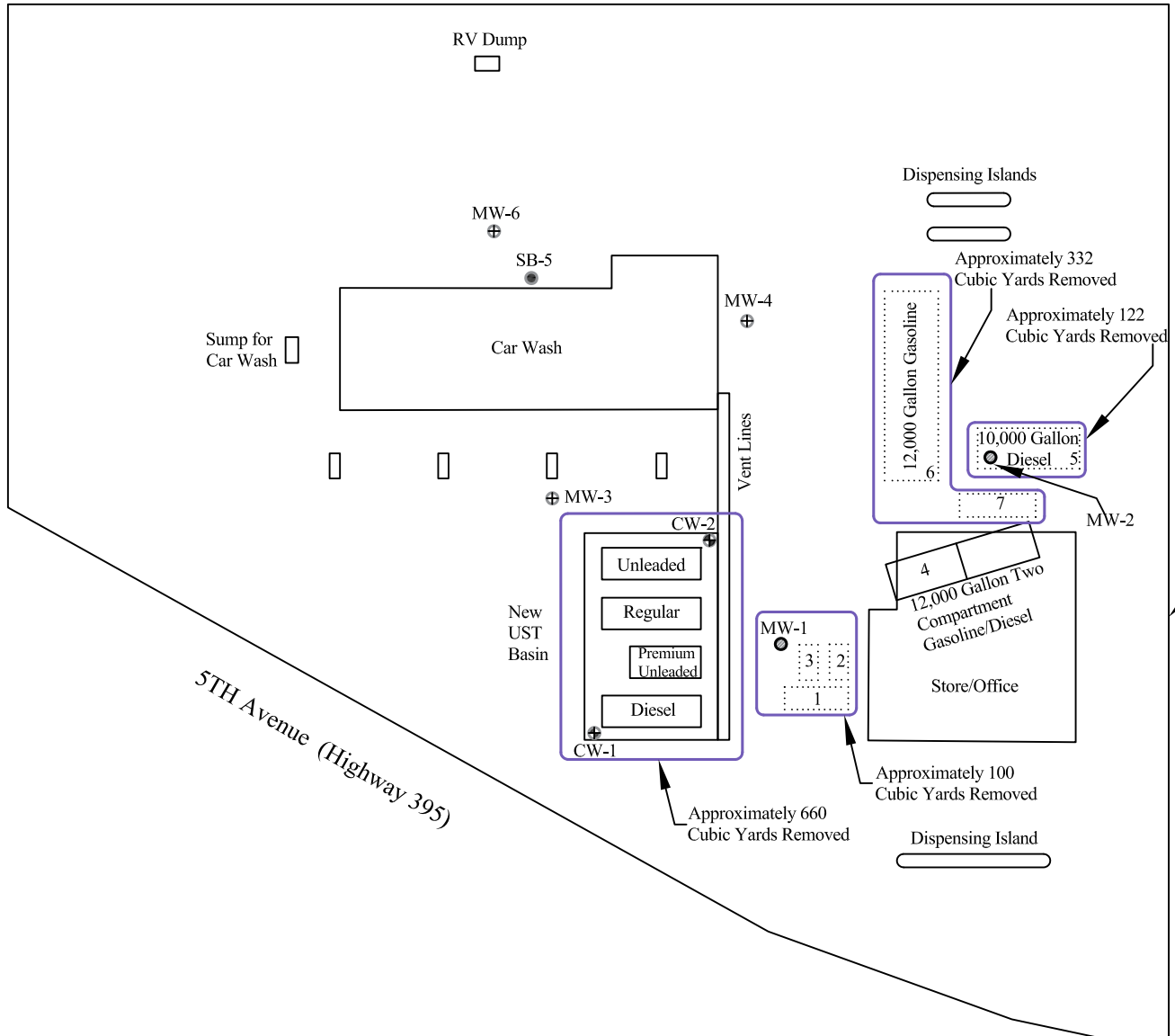
PROJECT NUMBER: 172206.00

DATE: March 31, 2020

REVIEWED BY: T. Trent

6TH Avenue








Lincoln Street

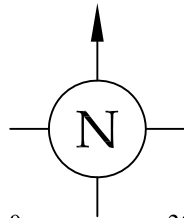


Approximate Property Boundary

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

Second Semi-annual Groundwater Sampling Event March 2020
 Whitty's Chevron
 370 West 5th Avenue
 Colville, Washington



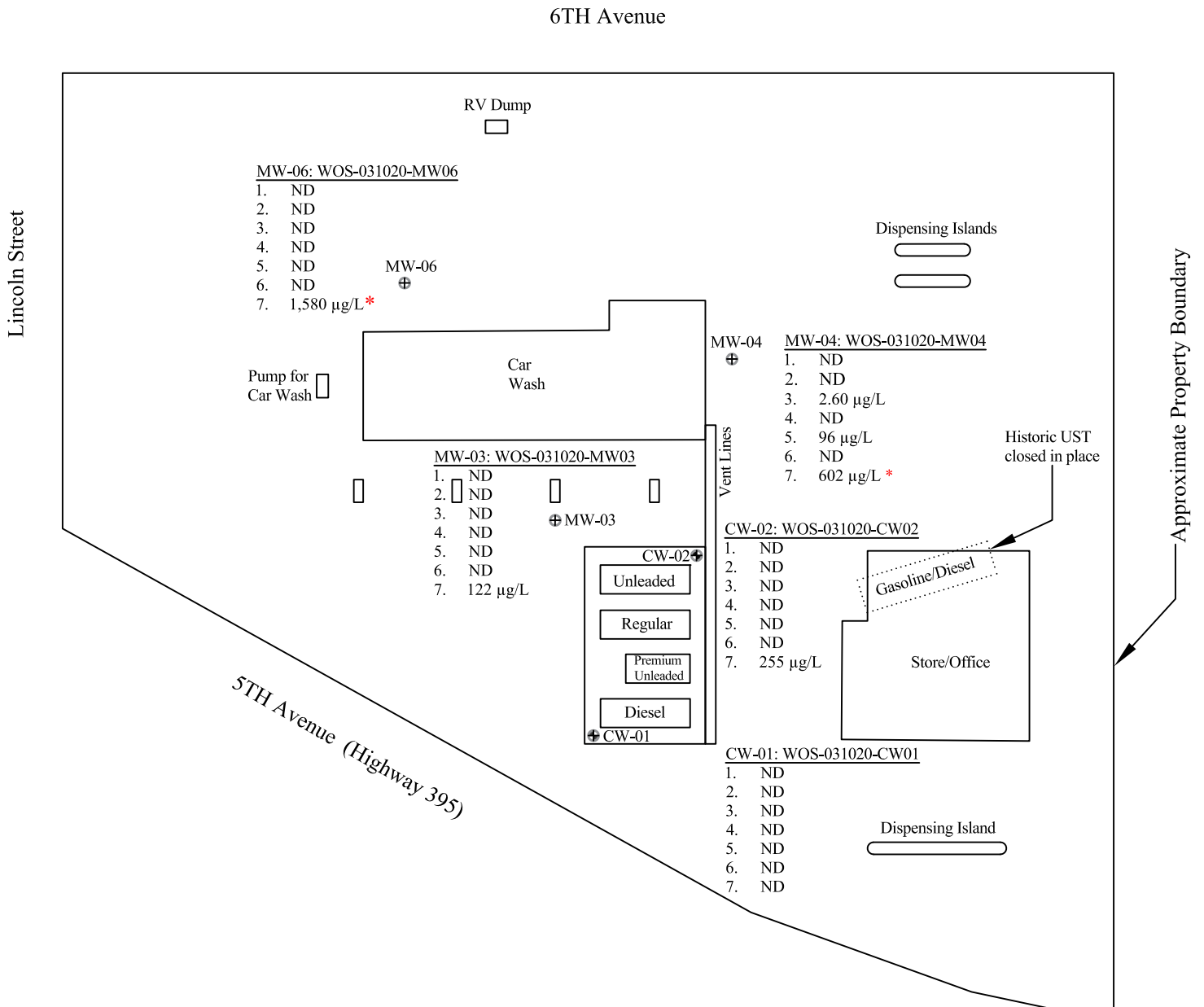
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MAP BY: S. Groat

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Parameters (µg/L)

1. Benzene
2. Toluene
3. Ethyl-benzene
4. Xylenes
5. NWTPH-GX
6. Diesel Range Organics
7. Heavy Oil

⊕ Monitoring Well

⊕ Compliance Well

* Analyte Concentration Exceeds MTCA Method A Cleanup Level

LEGEND

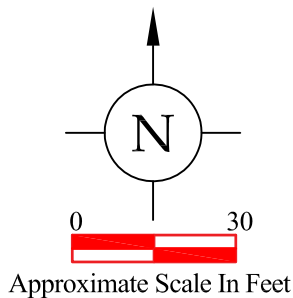


Figure 3: Site Diagram Map

Second Semi-annual Groundwater Sampling Event March 2020
Whitty's Chevron
370 West 5th Avenue
Colville, Washington



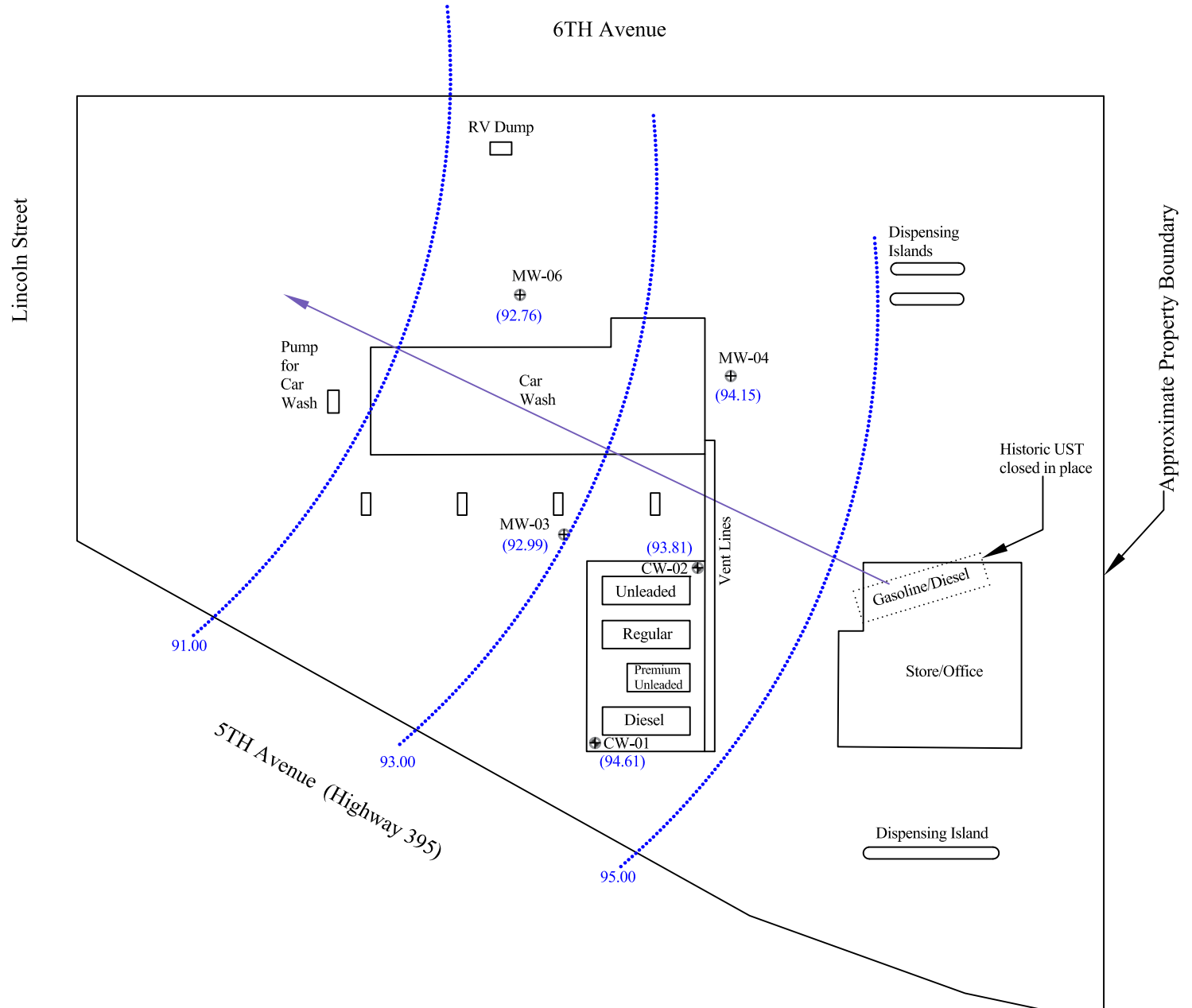
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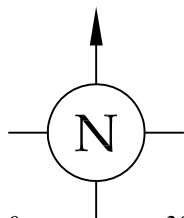
REVIEWED BY: T. Trent



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



Approximate Scale In Feet

Figure 4: Groundwater Elevation Map

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DATE: March 31, 2020

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

06/06/2020

Expiration Date

Teresa Berntsen

Teresa Berntsen, Director



APPENDIX B

Summary of Historical Data

HISTORICAL 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)	Diesel-range hydrocarbons (µg/L)	Heavy oil-range hydrocarbons (µg/L)	Combined Diesel-range and Heavy oil-range (µg/L)	NWTPH-Gx (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)
SB-1	1/8/1990	100.20	---	15.00	---	---	---	---	---	---	---	---	---
SB-2	1/8/1990	99.39	10.00	15.00	ND	---	---	---	ND	ND	ND	ND	ND
SB-3	1/9/1990	99.30	---	15.00	---	---	---	---	---	---	---	---	---
SB-4	1/9/1990	98.96	5.00	15.00	ND	---	---	---	ND	ND	ND	ND	ND
SB-5	1/9/1990	99.29	5.00	15.00	1,220	---	---	---	---	0.476	1.38	5.62	50.2
SB-6	1/9/1990	97.87	---	15.00	---	---	---	---	---	---	---	---	---

Well ID	Sampling Date	ERP (feet)	DTW (feet)	GWE (feet)	TPH (µg/L)	Diesel-range hydrocarbons (µg/L)	Heavy oil-range hydrocarbons (µg/L)	Combined Diesel-range and Heavy oil-range (µg/L)	NWTPH-Gx (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)
CW-01	1/10/1990	99.50	5.82	93.68	---	---	---	---	---	---	---	---	---
	9/13/2017	99.50	5.91	93.59	---	---	---	---	ND	ND	ND	ND	ND
	12/11/2017	99.50	4.96	94.54	---	---	---	---	ND	ND	ND	ND	ND
	3/26/2018	99.50	4.71	94.79	---	---	---	---	ND	ND	ND	ND	ND
	3/26/2018	99.50	4.71	94.79	---	---	---	---	ND	ND	ND	ND	ND
	6/27/2018	99.50	5.53	93.97	---	---	---	---	ND	ND	ND	ND	ND
	9/19/2018	99.50	5.86	93.64	---	214.00	ND	214.00	ND	ND	ND	ND	ND
	3/21/2019	99.50	4.84	94.66	---	ND	ND	ND	ND	ND	ND	ND	ND
	9/17/2019	99.50	5.85	93.65	---	63.30	ND	63.30	ND	ND	ND	ND	ND
	3/10/2020	99.50	4.89	94.61	---	ND	ND	ND	ND	ND	ND	ND	ND
CW-02	1/10/1990	99.01	5.33	93.68	---	---	---	---	---	---	---	---	---
	9/13/2017	99.01	5.64	93.36	---	---	---	---	ND	ND	ND	ND	ND
	12/11/2017	99.01	4.65	94.36	---	---	---	---	ND	ND	ND	ND	ND
	3/26/2018	99.01	4.39	94.62	---	---	---	---	ND	ND	ND	ND	ND
	6/27/2018	99.01	5.24	93.77	---	---	---	---	ND	ND	ND	ND	ND
	9/19/2018	99.01	5.56	93.45	---	ND	ND	ND	50.60	10.60	16.60	ND	ND
	9/19/2018	99.01	5.56	93.45	---	ND	188.00	188.00	56.80	9.94	15.90	ND	ND
	3/21/2019	99.01	4.53	94.48	---	ND	261.00	261.00	ND	ND	ND	ND	ND
	9/17/2019	99.01	5.54	93.46	---	ND	ND	ND	ND	ND	ND	ND	ND
	3/10/2020	99.01	5.20	93.81	---	ND	255.00	255.00	ND	ND	ND	ND	ND

2001 MTCA Method A Cleanup Levels for Groundwater	NE	500	800	5	1000	700	1000
--	-----------	------------	------------	----------	-------------	------------	-------------

Well ID	Sampling Date	ERP (feet)	DTW (feet)	GWE (feet)	TPH (µg/L)	Diesel-range hydrocarbons (µg/L)	Heavy oil-range hydrocarbons (µg/L)	Combined Diesel-range and Heavy oil-range (µg/L)	NWTPH-Gx (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)
MW-1 <i>Decommissioned</i>	1/10/1990	100.00	5.59	94.41	ND	---	---	---	---	ND	ND	ND	ND
MW-2 <i>Decommissioned</i>	1/10/1990	98.92	4.51	94.41	2,460	---	---	---	---	1,643.0	409.00	ND	2955.00
MW-03	1/10/1990	98.56	5.77	92.79	ND	---	---	---	---	ND	ND	ND	ND
	9/13/2017	98.56	5.55	93.02	---	---	---	---	131.00	ND	ND	ND	ND
	12/11/2017	98.56	5.05	93.51	---	---	---	---	ND	1.65	ND	ND	ND
	12/11/2017	98.56	5.05	93.51	---	---	---	---	ND	1.60	ND	ND	ND
	3/26/2018	98.56	4.44	94.12	---	---	---	---	ND	ND	ND	ND	ND
	6/27/2018	98.56	5.26	93.30	---	---	---	---	ND	ND	ND	ND	ND
	9/19/2018	98.56	5.56	93.01	---	ND	172.00	172.00	ND	ND	ND	ND	ND
	3/21/2019	98.56	4.80	93.76	---	273	ND	273	202.00	24.40	32.00	1.10	16.54
	9/17/2019	98.56	5.55	93.01	---	ND	ND	ND	67.30	ND	ND	ND	ND
	3/10/2020	98.56	5.57	92.99	---	ND	122.00	122.00	ND	ND	ND	ND	ND
MW-04	1/10/1990	98.27	4.06	94.21	3,050	---	---	---	---	118	23.00	ND	284.00
	9/13/2017	98.27	5.32	92.96	---	---	---	---	558.00	4.03	ND	1.51	1.46
	9/13/2017	98.27	5.32	92.96	---	---	---	---	547.00	ND	ND	ND	ND
	12/11/2017	98.27	4.13	94.17	---	---	---	---	702.00	6.81	1.07	9.07	ND
	3/26/2018	98.27	3.75	94.52	---	---	---	---	302.00	4.63	1.34	15.70	ND
	6/27/2018	98.27	4.80	93.47	---	---	---	---	284.00	5.84	1.32	16.60	ND
	9/19/2018	98.27	4.83	93.44	---	1,450.00	2,080.00	3,530.00	644.00	7.25	2.61	25.80	2.72
	3/21/2019	98.27	3.60	94.67	---	220.00	376.00	596.00	718.00	4.46	1.78	18.10	2.70
	9/17/2019	98.27	4.92	93.35	---	181.00	310.00	491.00	780.00	5.09	ND	3.08	1.16
	3/10/2020	98.27	4.12	94.15	---	ND	552.00	552.00	96.00	ND	ND	2.60	ND
Lab Filtered	3/10/2020	98.27	4.12	94.15	---	ND	602.00	602.00	80.10	ND	ND	2.61	ND
MW-06	1/10/1990	97.27	9.01	88.26	ND	---	---	---	---	9.00	5.00	15.00	80.00
	9/13/2017	97.27	---	---	---	---	---	---	ND	ND	ND	ND	ND
	12/11/2017	97.27	---	---	---	---	---	---	---	---	---	---	---
	3/26/2018	97.27	5.24	92.03	---	---	---	---	404.00	ND	ND	ND	ND
	6/27/2018	97.27	5.31	91.96	---	---	---	---	101.00	ND	ND	ND	ND
	9/19/2018	97.27	6.36	90.92	---	102.00	369.00	471.00	119.00	ND	ND	ND	ND
	3/21/2019	97.27	5.08	92.19	---	ND	409.00	409.00	ND	ND	ND	ND	ND
	9/17/2019	97.27	4.95	92.32	---	ND	1440.00	1440.00	90.20	ND	ND	ND	ND
	3/10/2020	97.27	4.51	92.76	---	ND	1580.00	1580.00	ND	ND	ND	ND	ND
	Lab Filtered	3/10/2020	97.27	4.51	92.76	---	ND	1350.00	1350.00	ND	ND	ND	ND
2001 MTCA Method A Cleanup Levels for Groundwater					NE	500			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 and are referenced as the appropriate regulatory values above

TPH Total Petroleum Hydrocarbons

TD Total Boring Depth

Notes :

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

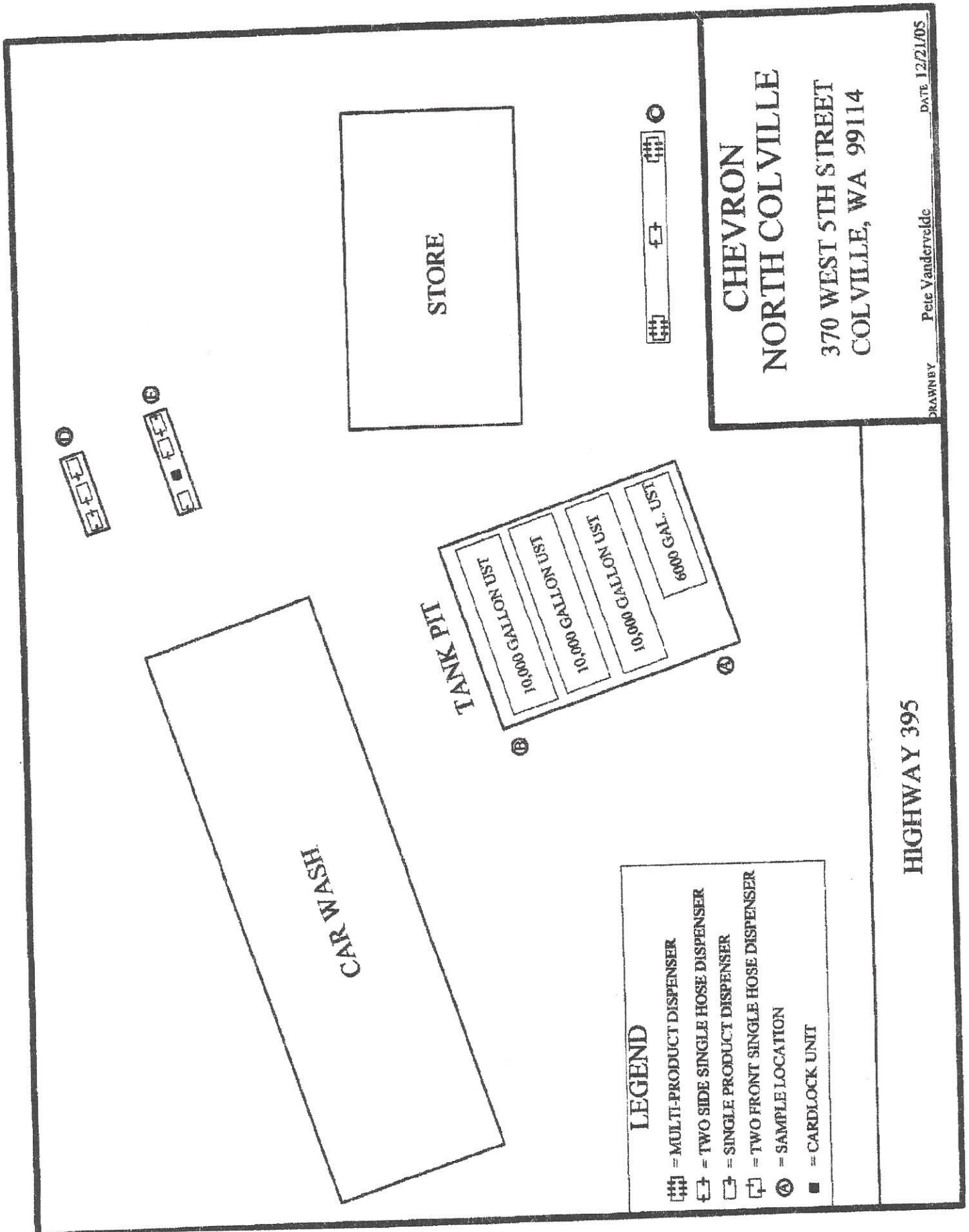


TABLE 1
SOIL SAMPLE RESULTS
CHEVRON
NORTH COLVILLE

DEPTH OF SAMPLE	15'	14'	5'	5'	5'	2-E
ANALYSES	2-A	2-B	2-C	2-D	2-E	2-E
NWTPH-OIL	<100	<100	<100	<100	<100	<100
NWTPH-DIESEL	<10	<10	<10	<10	<10	<10
NWTPH-GAS	R	<5.0	<5.0	<5.0	<5.0	<5.0
BENZENE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
ETHYLBENZENE	0.12	<0.025	<0.025	<0.025	<0.025	<0.025
MTBE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
TOLUENE	0.229	<0.05	0.111	0.066	<0.05	<0.05
XYLENE	0.69	<0.05	0.099	0.081	<0.05	<0.05
TOTAL LEAD	13	N/A	N/A	N/A	N/A	N/A

CLEANUP STANDARD
 2000 mg/Kg
 2000 mg/Kg
 100 mg/Kg OR 30mg/Kg
 0.03 mg/Kg
 6.0 mg/Kg
 0.1 mg/Kg
 7.0 mg/Kg
 9.0 mg/Kg
 250 mg/Kg

N/A = NOT ANALYZED (verifies analytic 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-Methyl-2-butanol	118	NWIPH-U
n-Propylal	10	NWIPH-G

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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>
Toluene-d8	111	NWTPH-G
4-Bromofluorobenzene	119	NWTPH-G
p-Terphenyl	62	NWTPH-D

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Steve Hibbs, Laboratory Manager



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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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Steve Hibbs, Laboratory Manager

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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

SPECTRA LABORATORIES


Steve Hibbs, Laboratory Manager



APPENDIX D

Laboratory Analytical Results



Fulcrum Environmental

Scott Groat

207 W Boone Ave.

Spokane, WA 99201

RE: Whitten Groundwater

Work Order Number: 2003195

March 25, 2020

Attention Scott Groat:

Fremont Analytical, Inc. received 7 sample(s) on 3/12/2020 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Gasoline by NWTPH-Gx

Volatile Organic Compounds by EPA Method 8260D

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,

Brianna Barnes
Project Manager

CLIENT: Fulcrum Environmental
Project: Whitten Groundwater
Work Order: 2003195

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2003195-001	WOS-31020-CW01	03/10/2020 11:37 AM	03/12/2020 9:03 AM
2003195-002	WOS-31020-CW02	03/10/2020 2:04 PM	03/12/2020 9:03 AM
2003195-003	WOS-31020-MW03	03/10/2020 2:03 PM	03/12/2020 9:03 AM
2003195-004	WOS-31020-MW04	03/10/2020 11:04 AM	03/12/2020 9:03 AM
2003195-005	WOS-31020-MW06	03/10/2020 2:59 PM	03/12/2020 9:03 AM
2003195-006	WOS-31020-MW07	03/10/2020 12:01 PM	03/12/2020 9:03 AM
2003195-007	Trip Blank	03/05/2020 11:34 AM	03/12/2020 9:03 AM

CLIENT: Fulcrum Environmental
Project: Whitten Groundwater

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.

3/25/2020: Revision 1 includes filtration of samples with re-analysis.

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: 3/10/2020 11:37:00 AM

Project: Whitten Groundwater

Lab ID: 2003195-001

Matrix: Groundwater

Client Sample ID: WOS-31020-CW01

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
----------	--------	----	------	-------	----	---------------

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 27767

Analyst: DW

Diesel (Fuel Oil)	ND	49.9		µg/L	1	3/17/2020 7:30:48 PM
Heavy Oil	ND	99.8		µg/L	1	3/17/2020 7:30:48 PM
Surr: 2-Fluorobiphenyl	102	50 - 150		%Rec	1	3/17/2020 7:30:48 PM
Surr: o-Terphenyl	105	50 - 150		%Rec	1	3/17/2020 7:30:48 PM

Gasoline by NWTPH-Gx

Batch ID: 27785

Analyst: CR

Gasoline	ND	50.0		µg/L	1	3/17/2020 3:54:09 AM
Surr: Toluene-d8	100	65 - 135		%Rec	1	3/17/2020 3:54:09 AM
Surr: 4-Bromofluorobenzene	97.4	65 - 135		%Rec	1	3/17/2020 3:54:09 AM

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 27785

Analyst: CR

Benzene	ND	1.00		µg/L	1	3/17/2020 3:54:09 AM
Toluene	ND	1.00		µg/L	1	3/17/2020 3:54:09 AM
Ethylbenzene	ND	1.00		µg/L	1	3/17/2020 3:54:09 AM
m,p-Xylene	ND	1.00		µg/L	1	3/17/2020 3:54:09 AM
o-Xylene	ND	1.00		µg/L	1	3/17/2020 3:54:09 AM
Surr: Dibromofluoromethane	97.7	81.1 - 118		%Rec	1	3/17/2020 3:54:09 AM
Surr: Toluene-d8	98.3	85.7 - 113		%Rec	1	3/17/2020 3:54:09 AM
Surr: 1-Bromo-4-fluorobenzene	97.8	84.2 - 111		%Rec	1	3/17/2020 3:54:09 AM



Analytical Report

Work Order: 2003195
Date Reported: 3/25/2020

Client: Fulcrum Environmental

Collection Date: 3/10/2020 2:04:00 PM

Project: Whitten Groundwater

Lab ID: 2003195-002

Matrix: Groundwater

Client Sample ID: WOS-31020-CW02

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
----------	--------	----	------	-------	----	---------------

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 27767

Analyst: DW

Diesel (Fuel Oil)	ND	49.3		µg/L	1	3/17/2020 9:00:34 PM
Heavy Oil	ND	98.7		µg/L	1	3/17/2020 9:00:34 PM
Heavy Fuel Oil	255	98.7		µg/L	1	3/17/2020 9:00:34 PM
Surr: 2-Fluorobiphenyl	101	50 - 150		%Rec	1	3/17/2020 9:00:34 PM
Surr: o-Terphenyl	103	50 - 150		%Rec	1	3/17/2020 9:00:34 PM

NOTES:

Heavy Fuel Oil - Indicates the presence of unresolved compounds in both the Diesel and Lube+ Oil ranges.

Gasoline by NWTPH-Gx

Batch ID: 27785

Analyst: CR

Gasoline	ND	50.0		µg/L	1	3/17/2020 4:24:29 AM
Surr: Toluene-d8	101	65 - 135		%Rec	1	3/17/2020 4:24:29 AM
Surr: 4-Bromofluorobenzene	96.4	65 - 135		%Rec	1	3/17/2020 4:24:29 AM

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 27785

Analyst: CR

Benzene	ND	1.00		µg/L	1	3/17/2020 4:24:29 AM
Toluene	ND	1.00		µg/L	1	3/17/2020 4:24:29 AM
Ethylbenzene	ND	1.00		µg/L	1	3/17/2020 4:24:29 AM
m,p-Xylene	ND	1.00		µg/L	1	3/17/2020 4:24:29 AM
o-Xylene	ND	1.00		µg/L	1	3/17/2020 4:24:29 AM
Surr: Dibromofluoromethane	98.7	81.1 - 118		%Rec	1	3/17/2020 4:24:29 AM
Surr: Toluene-d8	98.0	85.7 - 113		%Rec	1	3/17/2020 4:24:29 AM
Surr: 1-Bromo-4-fluorobenzene	96.7	84.2 - 111		%Rec	1	3/17/2020 4:24:29 AM



Client: Fulcrum Environmental

Collection Date: 3/10/2020 2:03:00 PM

Project: Whitten Groundwater

Lab ID: 2003195-003

Matrix: Groundwater

Client Sample ID: WOS-31020-MW03

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 27767

Analyst: DW

Diesel (Fuel Oil)	ND	49.7		µg/L	1	3/17/2020 9:30:40 PM
Heavy Oil	ND	99.4		µg/L	1	3/17/2020 9:30:40 PM
Heavy Fuel Oil	122	99.4		µg/L	1	3/17/2020 9:30:40 PM
Surr: 2-Fluorobiphenyl	111	50 - 150		%Rec	1	3/17/2020 9:30:40 PM
Surr: o-Terphenyl	115	50 - 150		%Rec	1	3/17/2020 9:30:40 PM

NOTES:

Heavy Fuel Oil - Indicates the presence of unresolved compounds in both the Diesel and Lube+ Oil ranges.

Gasoline by NWTPH-Gx

Batch ID: 27785

Analyst: CR

Gasoline	ND	50.0		µg/L	1	3/17/2020 4:54:51 AM
Surr: Toluene-d8	99.5	65 - 135		%Rec	1	3/17/2020 4:54:51 AM
Surr: 4-Bromofluorobenzene	96.4	65 - 135		%Rec	1	3/17/2020 4:54:51 AM

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 27785

Analyst: CR

Benzene	ND	1.00		µg/L	1	3/17/2020 4:54:51 AM
Toluene	ND	1.00		µg/L	1	3/17/2020 4:54:51 AM
Ethylbenzene	ND	1.00		µg/L	1	3/17/2020 4:54:51 AM
m,p-Xylene	ND	1.00		µg/L	1	3/17/2020 4:54:51 AM
o-Xylene	ND	1.00		µg/L	1	3/17/2020 4:54:51 AM
Surr: Dibromofluoromethane	97.4	81.1 - 118		%Rec	1	3/17/2020 4:54:51 AM
Surr: Toluene-d8	97.6	85.7 - 113		%Rec	1	3/17/2020 4:54:51 AM
Surr: 1-Bromo-4-fluorobenzene	96.7	84.2 - 111		%Rec	1	3/17/2020 4:54:51 AM



Analytical Report

Work Order: 2003195
Date Reported: 3/25/2020

Client: Fulcrum Environmental

Collection Date: 3/10/2020 11:04:00 AM

Project: Whitten Groundwater

Lab ID: 2003195-004

Matrix: Groundwater

Client Sample ID: WOS-31020-MW04

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 27767

Analyst: DW

Diesel (Fuel Oil)	ND	49.4		µg/L	1	3/17/2020 10:30:13 PM
Heavy Oil	ND	98.8		µg/L	1	3/17/2020 10:30:13 PM
Heavy Fuel Oil	552	98.8		µg/L	1	3/17/2020 10:30:13 PM
Surr: 2-Fluorobiphenyl	104	50 - 150		%Rec	1	3/17/2020 10:30:13 PM
Surr: o-Terphenyl	108	50 - 150		%Rec	1	3/17/2020 10:30:13 PM

NOTES:

Heavy Fuel Oil - Indicates the presence of unresolved compounds in both the Diesel and Lube+ Oil ranges.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 27866

Analyst: DW

Diesel (Fuel Oil)	ND	49.6		µg/L	1	3/24/2020 6:42:39 PM
Heavy Oil	ND	99.2		µg/L	1	3/24/2020 6:42:39 PM
Heavy Fuel Oil	602	99.2		µg/L	1	3/24/2020 6:42:39 PM
Surr: 2-Fluorobiphenyl	90.6	50 - 150		%Rec	1	3/24/2020 6:42:39 PM
Surr: o-Terphenyl	91.7	50 - 150		%Rec	1	3/24/2020 6:42:39 PM

NOTES:

Sample filtered prior to analysis.

Heavy Fuel Oil - Indicates the presence of unresolved compounds in both the Diesel and Lube+ Oil ranges.

Gasoline by NWTPH-Gx

Batch ID: 27785

Analyst: CR

Gasoline	96.0	50.0		µg/L	1	3/17/2020 5:25:12 AM
Surr: Toluene-d8	99.9	65 - 135		%Rec	1	3/17/2020 5:25:12 AM
Surr: 4-Bromofluorobenzene	98.4	65 - 135		%Rec	1	3/17/2020 5:25:12 AM

Gasoline by NWTPH-Gx

Batch ID: 27858

Analyst: CR

Gasoline	80.1	50.0		µg/L	1	3/23/2020 5:15:14 PM
Surr: Toluene-d8	97.9	65 - 135		%Rec	1	3/23/2020 5:15:14 PM
Surr: 4-Bromofluorobenzene	103	65 - 135		%Rec	1	3/23/2020 5:15:14 PM

NOTES:

Sample filtered prior to analysis.

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 27785

Analyst: CR

Benzene	ND	1.00		µg/L	1	3/17/2020 5:25:12 AM
Toluene	ND	1.00		µg/L	1	3/17/2020 5:25:12 AM
Ethylbenzene	2.60	1.00		µg/L	1	3/17/2020 5:25:12 AM
m,p-Xylene	ND	1.00		µg/L	1	3/17/2020 5:25:12 AM



Client: Fulcrum Environmental

Collection Date: 3/10/2020 11:04:00 AM

Project: Whitten Groundwater

Lab ID: 2003195-004

Matrix: Groundwater

Client Sample ID: WOS-31020-MW04

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260D

Batch ID: 27785

Analyst: CR

o-Xylene	ND	1.00		µg/L	1	3/17/2020 5:25:12 AM
Surr: Dibromofluoromethane	100	81.1 - 118		%Rec	1	3/17/2020 5:25:12 AM
Surr: Toluene-d8	100	85.7 - 113		%Rec	1	3/17/2020 5:25:12 AM
Surr: 1-Bromo-4-fluorobenzene	98.7	84.2 - 111		%Rec	1	3/17/2020 5:25:12 AM

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 27858

Analyst: CR

Benzene	ND	1.00		µg/L	1	3/23/2020 5:15:14 PM
Toluene	ND	1.00		µg/L	1	3/23/2020 5:15:14 PM
Ethylbenzene	2.61	1.00		µg/L	1	3/23/2020 5:15:14 PM
m,p-Xylene	ND	1.00		µg/L	1	3/23/2020 5:15:14 PM
o-Xylene	ND	1.00		µg/L	1	3/23/2020 5:15:14 PM
Surr: Dibromofluoromethane	99.0	81.1 - 118		%Rec	1	3/23/2020 5:15:14 PM
Surr: Toluene-d8	97.2	85.7 - 113		%Rec	1	3/23/2020 5:15:14 PM
Surr: 1-Bromo-4-fluorobenzene	103	84.2 - 111		%Rec	1	3/23/2020 5:15:14 PM

NOTES:

Sample filtered prior to analysis.



Analytical Report

Work Order: 2003195
Date Reported: 3/25/2020

Client: Fulcrum Environmental

Collection Date: 3/10/2020 2:59:00 PM

Project: Whitten Groundwater

Lab ID: 2003195-005

Matrix: Groundwater

Client Sample ID: WOS-31020-MW06

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 27767 Analyst: DW

Diesel (Fuel Oil)	ND	49.8		µg/L	1	3/17/2020 10:59:56 PM
Heavy Oil	ND	99.7		µg/L	1	3/17/2020 10:59:56 PM
Heavy Fuel Oil	1,580	99.7		µg/L	1	3/17/2020 10:59:56 PM
Surr: 2-Fluorobiphenyl	111	50 - 150		%Rec	1	3/17/2020 10:59:56 PM
Surr: o-Terphenyl	101	50 - 150		%Rec	1	3/17/2020 10:59:56 PM

NOTES:

Heavy Fuel Oil - Indicates the presence of unresolved compounds in both the Diesel and Lube+ Oil ranges.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 27866 Analyst: DW

Diesel (Fuel Oil)	ND	49.7		µg/L	1	3/24/2020 7:12:39 PM
Heavy Oil	ND	99.3		µg/L	1	3/24/2020 7:12:39 PM
Heavy Fuel Oil	1,350	99.3		µg/L	1	3/24/2020 7:12:39 PM
Surr: 2-Fluorobiphenyl	69.9	50 - 150		%Rec	1	3/24/2020 7:12:39 PM
Surr: o-Terphenyl	70.8	50 - 150		%Rec	1	3/24/2020 7:12:39 PM

NOTES:

Sample filtered prior to analysis.

Heavy Fuel Oil - Indicates the presence of unresolved compounds in both the Diesel and Lube+ Oil ranges.

Gasoline by NWTPH-Gx

Batch ID: 27785 Analyst: CR

Gasoline	ND	50.0		µg/L	1	3/17/2020 5:55:29 AM
Surr: Toluene-d8	100	65 - 135		%Rec	1	3/17/2020 5:55:29 AM
Surr: 4-Bromofluorobenzene	99.7	65 - 135		%Rec	1	3/17/2020 5:55:29 AM

Gasoline by NWTPH-Gx

Batch ID: 27858 Analyst: CR

Gasoline	ND	50.0		µg/L	1	3/23/2020 5:46:01 PM
Surr: Toluene-d8	97.7	65 - 135		%Rec	1	3/23/2020 5:46:01 PM
Surr: 4-Bromofluorobenzene	100	65 - 135		%Rec	1	3/23/2020 5:46:01 PM

NOTES:

Sample filtered prior to analysis.

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 27785 Analyst: CR

Benzene	ND	1.00		µg/L	1	3/17/2020 5:55:29 AM
Toluene	ND	1.00		µg/L	1	3/17/2020 5:55:29 AM
Ethylbenzene	ND	1.00		µg/L	1	3/17/2020 5:55:29 AM
m,p-Xylene	ND	1.00		µg/L	1	3/17/2020 5:55:29 AM



Analytical Report

Work Order: 2003195
Date Reported: 3/25/2020

Client: Fulcrum Environmental

Collection Date: 3/10/2020 2:59:00 PM

Project: Whitten Groundwater

Lab ID: 2003195-005

Matrix: Groundwater

Client Sample ID: WOS-31020-MW06

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260D

Batch ID: 27785 Analyst: CR

o-Xylene	ND	1.00		µg/L	1	3/17/2020 5:55:29 AM
Surr: Dibromofluoromethane	100	81.1 - 118		%Rec	1	3/17/2020 5:55:29 AM
Surr: Toluene-d8	99.0	85.7 - 113		%Rec	1	3/17/2020 5:55:29 AM
Surr: 1-Bromo-4-fluorobenzene	100	84.2 - 111		%Rec	1	3/17/2020 5:55:29 AM

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 27858 Analyst: CR

Benzene	ND	1.00		µg/L	1	3/23/2020 5:46:01 PM
Toluene	ND	1.00		µg/L	1	3/23/2020 5:46:01 PM
Ethylbenzene	ND	1.00		µg/L	1	3/23/2020 5:46:01 PM
m,p-Xylene	ND	1.00		µg/L	1	3/23/2020 5:46:01 PM
o-Xylene	ND	1.00		µg/L	1	3/23/2020 5:46:01 PM
Surr: Dibromofluoromethane	99.8	81.1 - 118		%Rec	1	3/23/2020 5:46:01 PM
Surr: Toluene-d8	96.8	85.7 - 113		%Rec	1	3/23/2020 5:46:01 PM
Surr: 1-Bromo-4-fluorobenzene	101	84.2 - 111		%Rec	1	3/23/2020 5:46:01 PM

NOTES:

Sample filtered prior to analysis.



Client: Fulcrum Environmental

Collection Date: 3/10/2020 12:01:00 PM

Project: Whitten Groundwater

Lab ID: 2003195-006

Matrix: Groundwater

Client Sample ID: WOS-31020-MW07

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 27767

Analyst: DW

Diesel (Fuel Oil)	ND	49.6		µg/L	1	3/17/2020 11:29:40 PM
Heavy Oil	ND	99.1		µg/L	1	3/17/2020 11:29:40 PM
Heavy Fuel Oil	233	99.1		µg/L	1	3/17/2020 11:29:40 PM
Surr: 2-Fluorobiphenyl	100	50 - 150		%Rec	1	3/17/2020 11:29:40 PM
Surr: o-Terphenyl	103	50 - 150		%Rec	1	3/17/2020 11:29:40 PM

NOTES:

Heavy Fuel Oil - Indicates the presence of unresolved compounds in both the Diesel and Lube+ Oil ranges.

Gasoline by NWTPH-Gx

Batch ID: 27785

Analyst: CR

Gasoline	ND	50.0		µg/L	1	3/17/2020 6:25:50 AM
Surr: Toluene-d8	100	65 - 135		%Rec	1	3/17/2020 6:25:50 AM
Surr: 4-Bromofluorobenzene	97.7	65 - 135		%Rec	1	3/17/2020 6:25:50 AM

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 27785

Analyst: CR

Benzene	ND	1.00		µg/L	1	3/17/2020 6:25:50 AM
Toluene	ND	1.00		µg/L	1	3/17/2020 6:25:50 AM
Ethylbenzene	ND	1.00		µg/L	1	3/17/2020 6:25:50 AM
m,p-Xylene	ND	1.00		µg/L	1	3/17/2020 6:25:50 AM
o-Xylene	ND	1.00		µg/L	1	3/17/2020 6:25:50 AM
Surr: Dibromofluoromethane	99.3	81.1 - 118		%Rec	1	3/17/2020 6:25:50 AM
Surr: Toluene-d8	99.0	85.7 - 113		%Rec	1	3/17/2020 6:25:50 AM
Surr: 1-Bromo-4-fluorobenzene	98.1	84.2 - 111		%Rec	1	3/17/2020 6:25:50 AM

Work Order: 2003195
CLIENT: Fulcrum Environmental
Project: Whitten Groundwater

QC SUMMARY REPORT
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: MB-27866	SampType: MBLK	Units: µg/L				Prep Date: 3/23/2020	RunNo: 58243				
Client ID: MBLKW	Batch ID: 27866					Analysis Date: 3/24/2020	SeqNo: 1163566				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	49.4									
Heavy Oil	ND	98.8									
Surr: 2-Fluorobiphenyl	59.0		79.07		74.7	50	150				
Surr: o-Terphenyl	69.9		79.07		88.4	50	150				

Sample ID: LCS-27866	SampType: LCS	Units: µg/L				Prep Date: 3/23/2020	RunNo: 58243				
Client ID: LCSW	Batch ID: 27866					Analysis Date: 3/24/2020	SeqNo: 1163567				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	669	49.2	984.5	0	67.9	65	135				
Surr: 2-Fluorobiphenyl	62.4		78.76		79.2	50	150				
Surr: o-Terphenyl	62.0		78.76		78.8	50	150				

Sample ID: LCS-27866	SampType: LCS	Units: µg/L				Prep Date: 3/23/2020	RunNo: 58243				
Client ID: LCSW02	Batch ID: 27866					Analysis Date: 3/24/2020	SeqNo: 1163686				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	651	49.9	997.1	0	65.2	65	135	668.6	2.75	30	
Surr: 2-Fluorobiphenyl	60.5		79.77		75.8	50	150		0		
Surr: o-Terphenyl	65.4		79.77		82.0	50	150		0		

Work Order: 2003195
CLIENT: Fulcrum Environmental
Project: Whitten Groundwater

QC SUMMARY REPORT
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: MB-27767	SampType: MBLK	Units: µg/L			Prep Date: 3/13/2020	RunNo: 58093					
Client ID: MBLKW	Batch ID: 27767				Analysis Date: 3/17/2020	SeqNo: 1160107					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	49.4									
Heavy Oil	ND	98.7									
Surr: 2-Fluorobiphenyl	75.1		78.98		95.1	50	150				
Surr: o-Terphenyl	79.7		78.98		101	50	150				

Sample ID: LCS-27767	SampType: LCS	Units: µg/L			Prep Date: 3/13/2020	RunNo: 58093					
Client ID: LCSW	Batch ID: 27767				Analysis Date: 3/17/2020	SeqNo: 1160108					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	833	49.8	996.4	0	83.6	65	135				
Surr: 2-Fluorobiphenyl	88.7		79.71		111	50	150				
Surr: o-Terphenyl	92.6		79.71		116	50	150				

Sample ID: 2003195-001BMS	SampType: MS	Units: µg/L			Prep Date: 3/13/2020	RunNo: 58093					
Client ID: WOS-31020-CW01	Batch ID: 27767				Analysis Date: 3/17/2020	SeqNo: 1160111					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	827	49.8	996.5	64.37	76.6	65	135				
Surr: 2-Fluorobiphenyl	87.8		79.72		110	50	150				
Surr: o-Terphenyl	90.4		79.72		113	50	150				

Sample ID: 2003195-001BMSD	SampType: MSD	Units: µg/L			Prep Date: 3/13/2020	RunNo: 58093					
Client ID: WOS-31020-CW01	Batch ID: 27767				Analysis Date: 3/17/2020	SeqNo: 1160112					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	804	49.6	992.7	64.37	74.5	65	135	827.2	2.84	30	
Surr: 2-Fluorobiphenyl	85.0		79.42		107	50	150		0		
Surr: o-Terphenyl	85.0		79.42		107	50	150		0		

Work Order: 2003195
CLIENT: Fulcrum Environmental
Project: Whitten Groundwater

QC SUMMARY REPORT
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: 2003195-003BDUP		SampType: DUP		Units: µg/L		Prep Date: 3/13/2020		RunNo: 58093			
Client ID: WOS-31020-MW03		Batch ID: 27767				Analysis Date: 3/17/2020		SeqNo: 1160115			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	50.0						121.8	2.12	30	
Heavy Oil	ND	100						0		30	
Heavy Fuel Oil	124	100						121.8	2.12	30	
Surr: 2-Fluorobiphenyl	84.5		79.96		106	50	150		0		
Surr: o-Terphenyl	80.1		79.96		100	50	150		0		

NOTES:

Heavy Fuel Oil - Indicates the presence of unresolved compounds in both the Diesel and Lube+ Oil ranges.

Sample ID: 2003220-001ADUP		SampType: DUP		Units: µg/L		Prep Date: 3/13/2020		RunNo: 58093			
Client ID: BATCH		Batch ID: 27767				Analysis Date: 3/18/2020		SeqNo: 1160125			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	49.6						160.9	2.69	30	
Diesel Range Organics (C12-C24)	157	49.6						160.9	2.69	30	
Heavy Oil	ND	99.2						1,066	1.20	30	
Heavy Oil Range Organics	1,050	99.2						1,066	1.20	30	
Surr: 2-Fluorobiphenyl	85.0		79.32		107	50	150		0		
Surr: o-Terphenyl	73.9		79.32		93.1	50	150		0		

NOTES:

Diesel Range Organics - Indicates unresolved compounds in the Diesel range inconsistent with a known petroleum standard.

Heavy Oil Range Organics - Indicates unresolved compounds in the Oil range inconsistent with a known petroleum standard.

Work Order: 2003195
CLIENT: Fulcrum Environmental
Project: Whitten Groundwater

QC SUMMARY REPORT
Gasoline by NWTPH-Gx

Sample ID: LCS-27858	SampType: LCS	Units: µg/L	Prep Date: 3/23/2020	RunNo: 58223							
Client ID: LCSW	Batch ID: 27858		Analysis Date: 3/23/2020	SeqNo: 1163333							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	484	50.0	500.0	0	96.8	65	135				
Surr: Toluene-d8	24.6		25.00		98.5	65	135				
Surr: 4-Bromofluorobenzene	25.8		25.00		103	65	135				

Sample ID: LCSD-27858	SampType: LCSD	Units: µg/L	Prep Date: 3/23/2020	RunNo: 58223							
Client ID: LCSW02	Batch ID: 27858		Analysis Date: 3/23/2020	SeqNo: 1163334							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	441	50.0	500.0	0	88.2	65	135	484.1	9.30	20	
Surr: Toluene-d8	24.4		25.00		97.5	65	135		0		
Surr: 4-Bromofluorobenzene	26.0		25.00		104	65	135		0		

Sample ID: MB-27858	SampType: MBLK	Units: µg/L	Prep Date: 3/23/2020	RunNo: 58223							
Client ID: MBLKW	Batch ID: 27858		Analysis Date: 3/23/2020	SeqNo: 1163335							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	ND	50.0									
Surr: Toluene-d8	24.1		25.00		96.5	65	135				
Surr: 4-Bromofluorobenzene	25.3		25.00		101	65	135				

Sample ID: 2003304-001ADUP	SampType: DUP	Units: µg/L	Prep Date: 3/23/2020	RunNo: 58223							
Client ID: BATCH	Batch ID: 27858		Analysis Date: 3/23/2020	SeqNo: 1163325							
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	24.3		25.00		97.3	65	135		0		
Surr: 4-Bromofluorobenzene	25.0		25.00		100	65	135		0		

Work Order: 2003195
CLIENT: Fulcrum Environmental
Project: Whitten Groundwater

QC SUMMARY REPORT
Gasoline by NWTPH-Gx

Sample ID: LCS-27785	SampType: LCS	Units: µg/L	Prep Date: 3/16/2020	RunNo: 58071							
Client ID: LCSW	Batch ID: 27785		Analysis Date: 3/16/2020	SeqNo: 1160242							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	500	50.0	500.0	0	99.9	65	135				
Surr: Toluene-d8	25.2		25.00		101	65	135				
Surr: 4-Bromofluorobenzene	25.4		25.00		102	65	135				

Sample ID: LCS-27785	SampType: LCS	Units: µg/L	Prep Date: 3/16/2020	RunNo: 58071							
Client ID: LCSW02	Batch ID: 27785		Analysis Date: 3/16/2020	SeqNo: 1160243							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	486	50.0	500.0	0	97.1	65	135	499.6	2.82	20	
Surr: Toluene-d8	25.0		25.00		100	65	135		0		
Surr: 4-Bromofluorobenzene	25.0		25.00		100	65	135		0		

Sample ID: MB-27785	SampType: MBLK	Units: µg/L	Prep Date: 3/16/2020	RunNo: 58071							
Client ID: MBLKW	Batch ID: 27785		Analysis Date: 3/16/2020	SeqNo: 1160244							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	ND	50.0									
Surr: Toluene-d8	25.1		25.00		100	65	135				
Surr: 4-Bromofluorobenzene	24.3		25.00		97.0	65	135				

Sample ID: 2003191-001BDUP	SampType: DUP	Units: µg/L	Prep Date: 3/16/2020	RunNo: 58071							
Client ID: BATCH	Batch ID: 27785		Analysis Date: 3/17/2020	SeqNo: 1160233							
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	24.8		25.00		99.1	65	135		0		
Surr: 4-Bromofluorobenzene	24.3		25.00		97.2	65	135		0		

Work Order: 2003195
 CLIENT: Fulcrum Environmental
 Project: Whitten Groundwater

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260D

Sample ID: LCS-27858	SampType: LCS	Units: µg/L				Prep Date: 3/23/2020	RunNo: 58222				
Client ID: LCSW	Batch ID: 27858					Analysis Date: 3/23/2020	SeqNo: 1163360				
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	81.6	117				
Toluene	21.9	1.00	20.00	0	109	82.7	117				
Ethylbenzene	20.2	1.00	20.00	0	101	83.5	115				
m,p-Xylene	41.0	1.00	40.00	0	102	85.8	114				
o-Xylene	20.3	1.00	20.00	0	102	84.4	114				
Surr: Dibromofluoromethane	27.0		25.00		108	81.1	118				
Surr: Toluene-d8	26.7		25.00		107	85.7	113				
Surr: 1-Bromo-4-fluorobenzene	25.3		25.00		101	84.2	111				

Sample ID: LCS-27858	SampType: LCS	Units: µg/L				Prep Date: 3/23/2020	RunNo: 58222				
Client ID: LCSW02	Batch ID: 27858					Analysis Date: 3/23/2020	SeqNo: 1163361				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20.1	1.00	20.00	0	101	81.6	117	21.56	6.93	20	
Toluene	20.3	1.00	20.00	0	101	82.7	117	21.85	7.37	20	
Ethylbenzene	19.6	1.00	20.00	0	97.8	83.5	115	20.18	3.09	20	
m,p-Xylene	39.9	1.00	40.00	0	99.7	85.8	114	40.99	2.77	20	
o-Xylene	19.7	1.00	20.00	0	98.5	84.4	114	20.30	3.03	20	
Surr: Dibromofluoromethane	26.4		25.00		106	81.1	118		0		
Surr: Toluene-d8	25.9		25.00		104	85.7	113		0		
Surr: 1-Bromo-4-fluorobenzene	25.6		25.00		102	84.2	111		0		

Sample ID: MB-27858	SampType: MBLK	Units: µg/L				Prep Date: 3/23/2020	RunNo: 58222				
Client ID: MBLKW	Batch ID: 27858					Analysis Date: 3/23/2020	SeqNo: 1163362				
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									

Work Order: 2003195
 CLIENT: Fulcrum Environmental
 Project: Whitten Groundwater

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260D

Sample ID: MB-27858	SampType: MBLK	Units: µg/L			Prep Date: 3/23/2020	RunNo: 58222					
Client ID: MBLKW	Batch ID: 27858				Analysis Date: 3/23/2020	SeqNo: 1163362					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
o-Xylene	ND	1.00									
Surr: Dibromofluoromethane	24.2		25.00		96.9	81.1	118				
Surr: Toluene-d8	24.1		25.00		96.2	85.7	113				
Surr: 1-Bromo-4-fluorobenzene	25.4		25.00		101	84.2	111				

Sample ID: 2003304-001ADUP	SampType: DUP	Units: µg/L			Prep Date: 3/23/2020	RunNo: 58222					
Client ID: BATCH	Batch ID: 27858				Analysis Date: 3/23/2020	SeqNo: 1163349					
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	24.7		25.00		98.9	81.1	118		0		
Surr: Toluene-d8	24.3		25.00		97.2	85.7	113		0		
Surr: 1-Bromo-4-fluorobenzene	25.1		25.00		100	84.2	111		0		

Work Order: 2003195
CLIENT: Fulcrum Environmental
Project: Whitten Groundwater

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260D

Sample ID: LCS-27785		SampType: LCS		Units: µg/L		Prep Date: 3/16/2020		RunNo: 58070			
Client ID: LCSW		Batch ID: 27785				Analysis Date: 3/16/2020		SeqNo: 1160198			
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	81.6	117				
Toluene	21.2	1.00	20.00	0	106	82.7	117				
Ethylbenzene	21.0	1.00	20.00	0	105	83.5	115				
m,p-Xylene	42.4	1.00	40.00	0	106	85.8	114				
o-Xylene	21.3	1.00	20.00	0	106	84.4	114				
Surr: Dibromofluoromethane	25.1		25.00		101	81.1	118				
Surr: Toluene-d8	25.2		25.00		101	85.7	113				
Surr: 1-Bromo-4-fluorobenzene	25.7		25.00		103	84.2	111				

Sample ID: LCS-27785		SampType: LCS		Units: µg/L		Prep Date: 3/16/2020		RunNo: 58070			
Client ID: LCSW02		Batch ID: 27785				Analysis Date: 3/16/2020		SeqNo: 1160199			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20.5	1.00	20.00	0	103	81.6	117	20.69	0.741	20	
Toluene	20.8	1.00	20.00	0	104	82.7	117	21.16	1.63	20	
Ethylbenzene	21.1	1.00	20.00	0	105	83.5	115	21.00	0.274	20	
m,p-Xylene	42.7	1.00	40.00	0	107	85.8	114	42.40	0.609	20	
o-Xylene	21.1	1.00	20.00	0	105	84.4	114	21.27	0.874	20	
Surr: Dibromofluoromethane	25.1		25.00		100	81.1	118		0		
Surr: Toluene-d8	25.1		25.00		100	85.7	113		0		
Surr: 1-Bromo-4-fluorobenzene	25.9		25.00		104	84.2	111		0		

Sample ID: MB-27785		SampType: MBLK		Units: µg/L		Prep Date: 3/16/2020		RunNo: 58070			
Client ID: MBLKW		Batch ID: 27785				Analysis Date: 3/16/2020		SeqNo: 1160200			
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									

Work Order: 2003195
 CLIENT: Fulcrum Environmental
 Project: Whitten Groundwater

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260D

Sample ID: MB-27785	SampType: MBLK	Units: µg/L	Prep Date: 3/16/2020	RunNo: 58070							
Client ID: MBLKW	Batch ID: 27785		Analysis Date: 3/16/2020	SeqNo: 1160200							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

o-Xylene	ND	1.00									
Surr: Dibromofluoromethane	24.4		25.00		97.5	81.1	118				
Surr: Toluene-d8	24.7		25.00		98.8	85.7	113				
Surr: 1-Bromo-4-fluorobenzene	24.3		25.00		97.4	84.2	111				

Sample ID: 2003191-001BDUP	SampType: DUP	Units: µg/L	Prep Date: 3/16/2020	RunNo: 58070							
Client ID: BATCH	Batch ID: 27785		Analysis Date: 3/17/2020	SeqNo: 1160189							
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	24.6		25.00		98.6	81.1	118		0		
Surr: Toluene-d8	24.6		25.00		98.2	85.7	113		0		
Surr: 1-Bromo-4-fluorobenzene	24.4		25.00		97.5	84.2	111		0		

Client Name: **FES**

 Work Order Number: **2003195**

 Logged by: **Clare Griggs**

 Date Received: **3/12/2020 9:03:00 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 $>2^{\circ}\text{C}$ to 6°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:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

19. Additional remarks:

Item Information

Item #	Temp °C
Cooler	3.5
Sample	0.6
Temp Blank	2.6

* Note: DoD/ELAP and TNI require items to be received at $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$



3600 Fremont Ave. N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record & Laboratory Services Agreement

Date: 3/11/20 Page: 1 of 1

Project Name: Whittaker Crowder

Project No: 172206.00

Collected by: S. Shrestha

Location: Spokane, WA 99201

Report To (PM): Scott Groat

PM Email: sgroat@fulcrum.net

Laboratory Project No (Internal): 700395

Special Remarks:

Sample Disposal: Return to client Disposal by lab (after 30 days)

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) / Dissolved (D)	Anions (IC)***	EDB (801)	NWTPH - DX	Comments
1 W05-31020-CW01	3/10/20	1137	GW	X	X	X	X	X	X	X	X	X	X	X	X	X	X	May have sample filtered depending on physical results
2 W05-31020-CW02		1404		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
3 W05-31020-MW03		1403		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
4 W05-31020-MW04		1104		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
5 W05-31020-MW06		1459		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
6 W05-31020-MW07		1201		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
7																		
8																		
9																		
10																		

Matrix: 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
 Metals (Circle): MTCA-5 RCRA-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 Sb Se Sr Sn Tl U V Zn
 Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide Fluoride Nitrate+Nitrite O-Phosphate

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

Refrinquished: Scott Groat 3/11/20 @ 1700 Received Date/Time: 3/12/20 @ 0903
 Reinquished: Scott Groat 3/11/20 @ 1700 Received Date/Time: 3/12/20 @ 0903



3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record & Laboratory Services Agreement

Date: 3/11/20 Page: 1 of 1
Project Name: Whi Kor Groundwater
Project No: 172206.00
Collected by: S. Groot

Laboratory Project No (Internal): 200295
Special Remarks:

Address: 209 W. Boise Ave.
City, State, zip: Spokane, WA 99201
Location: Scott Groot

Report To (PM): Scott Groot
PM Email: Sgroot@fulcrum.net
Sample Disposal: Return to client Disposal by lab (after 30 days)

Edits by cat 3/19 per S.G.

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HClD)	Diesel/Heavy Oil Range Organics (DHI)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) / Dissolved (D)	Anions (IC)***	EDB (801)	NWTPH-DX	Comments
W05-31020-CW01	3/10/20	1137	GW	X	X	X	X	X	X	X	X	X	X	X	X	X	X	May have sample filtered depending on analytical results
W05-31020-CW02		1403	GW	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3/19: RECON w/ filtration
W05-31020-MW03		1104	GW	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3/19: RECON w/ filtration
W05-31020-MW04		1459	GW	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3/19: RECON w/ filtration
W05-31020-MW06		1201	GW	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
W05-31020-MW07			GW	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

*Matrix: 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
 **Metals (Circle): MTCA-5 RCRA-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 Sb Se Sr Sn Tl U V Zn
 ***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-phosphate Fluoride Nitrate-Nitrite

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

Relinquished: Scott Groot 3/11/20 @ 1700 Received: [Signature] 3/12/20 @ 0903
 Relinquished: Scott Groot 3/11/20 @ 1700 Received: [Signature] 3/12/20 @ 0903