

**Whitten Oil
Groundwater Monitoring
March 2021
Sampling Report**

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

Project Number: 213162.00

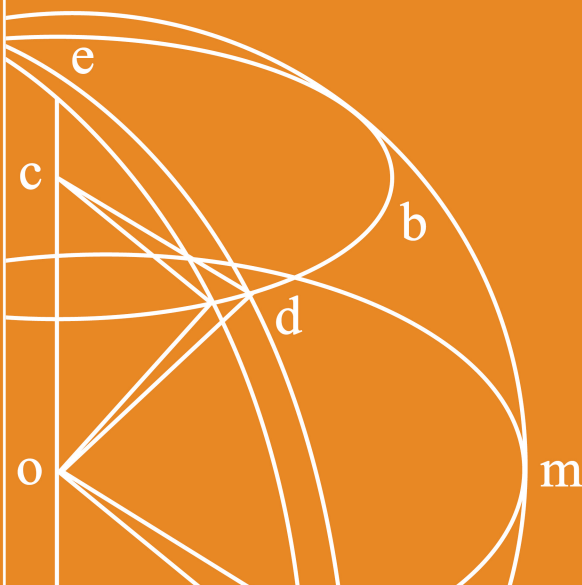
Date: May 24, 2021

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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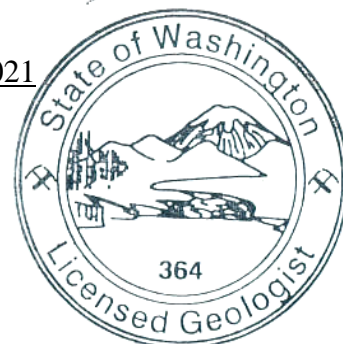
Prepared by: Fulcrum Environmental Consulting, Inc.
207 West Boone Avenue
Spokane, Washington 99201
509.459.9220

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

Authored by: Red Lunn Date: 5/24/2021
Redmond Groves,
Environmental Technician

Reviewed by: Scott Groat Date: 5/24/2021
Scott Groat, GIT
Environmental Geologist

Reviewed by: Travis Trent Date: 5/24/2021
Travis Trent, PG, CIH
Principal



Travis Lyle Trent



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 25, 2021, Fulcrum Environmental Consulting, Inc. (Fulcrum) conducted semi-annual groundwater monitoring for seven (7) onsite monitoring wells at Whitty's Chevron in Colville, Washington. Purpose of the monitoring was to evaluate petroleum hydrocarbon impacts to site groundwater associated with a historical gasoline release identified in September 1989.

Site services were completed by Scott Groat, a Washington State recognized Geologist-In-Training, and Redmond Groves, an Environmental Technician, 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.



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

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 seven (7) 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 2021 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 convenience store, while another gasoline/diesel refueling area with two



(2) dispenser islands was observed to be located north of the convenience store. A more recently constructed dispensing island is located southeast of the convenience store. Four (4) operational underground storage tanks (UST) were reported to be located west of the convenience store 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 convenience store.

The entire surface of the property was observed to be covered by building footprint, concrete, or asphalt with the exception of a small area immediately east of the office building which was finished with gravel. Historical reports and observations from Fulcrum's September 2021 ground water monitoring well installation event 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 0.036. During Fulcrum's investigation, recorded site groundwater levels ranged from 5.40 to 6.11 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 5-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 (1) 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 (1) 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.



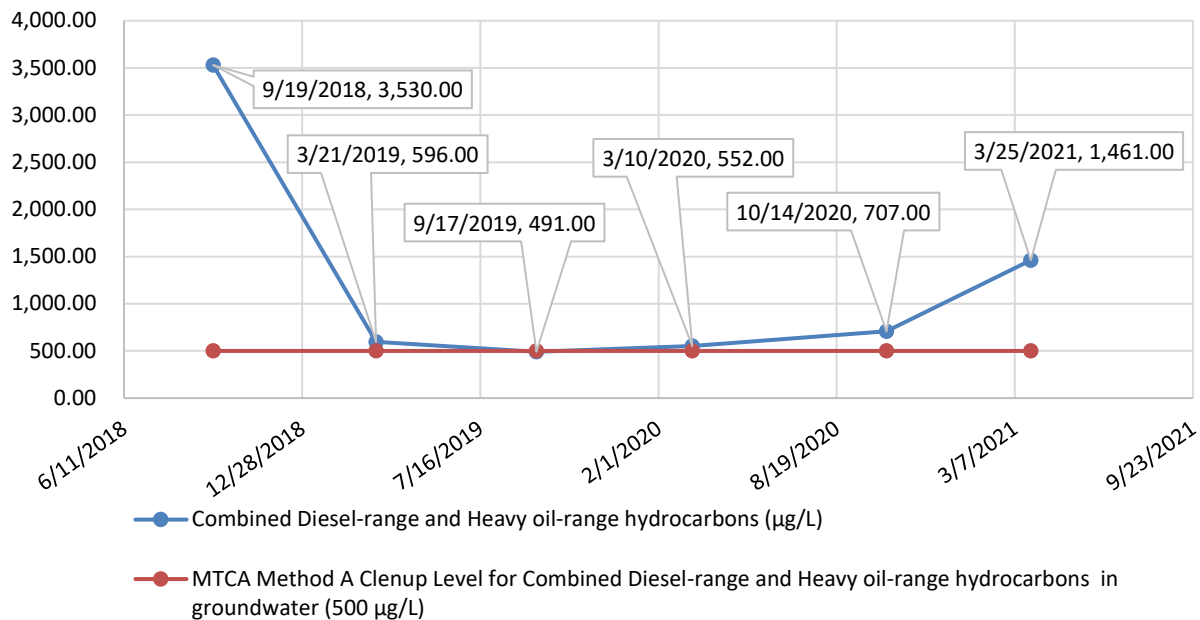
On September 30, 2020, Fulcrum coordinated the decommissioning of two (2) historical monitoring wells and installation of four (4) new wells at Whitty's Chevron located at 370 West 5th Avenue in Colville, Washington. Historic monitoring wells MW-04 and MW-06 were decommissioned due to failing surface seals and poor recharge rates. These two (2) wells were replaced with new monitoring wells and two (2) additional wells were added to the site. Monitoring well MW-02 was installed upgradient behind the gas station where the former Leaking Underground Storage Tanks (LUSTs) were removed and monitoring well MW-07 was installed downgradient at the northwest corner of the property to act as a downgradient sentinel well.



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

General trending for combined diesel- and heavy oil-range hydrocarbons concentrations from September of 2018 to March of 2021 in monitoring well MW-04, is presented in the following graph.

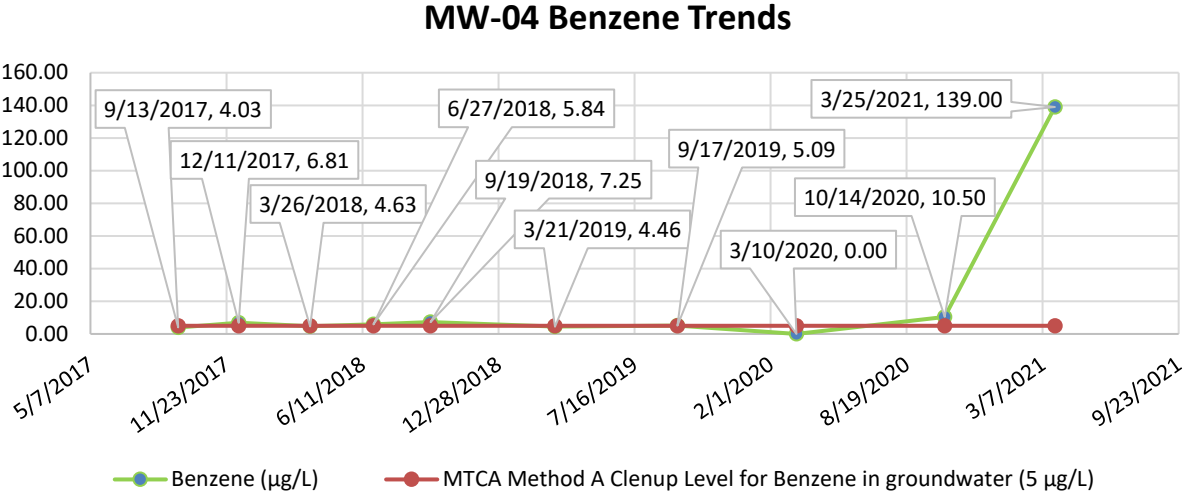
MW-04 Combined Diesel-range and Heavy Oil-range Hydrocarbon Trends





Results show relatively stable concentrations of combined diesel-range and heavy oil-range hydrocarbons in MW-04 at concentrations around the Method A cleanup level over the last four (4) semi-annual sampling events. Results of March 2021 testing show a significant increase in diesel-range and heavy oil-range petroleum hydrocarbons in MW-04.

General trending of benzene concentrations from September 2017 to March 2021 is presented in the graph below.

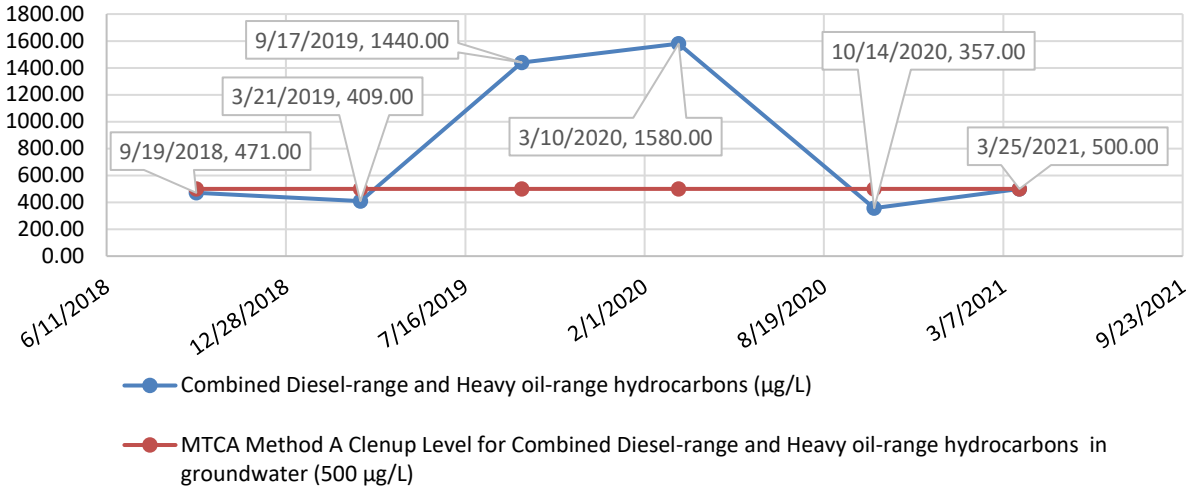


After monitoring of benzene began in September 2017, benzene concentrations have fluctuated between non-detect and 10.50 µg/L. A general downward trend in benzene concentrations was observed since September of 2018, until the most recent sampling conducted in March of 2021, which identified benzene concentrations at 139.00 µg/L.

General trending for combined diesel-range and heavy oil-range hydrocarbons concentrations from September of 2018 to March of 2021, in monitoring well MW-06, is presented in the following graph.



MW-06 Combined Diesel-range and Heavy Oil-range Hydrocarbon Trends



Analytical results show that diesel-range and heavy oil-range hydrocarbons concentrations were trending upwards since March of 2019 to March of 2020. The most recent sampling event conducted in March 2021, identified combined diesel-range and heavy-oil range concentrations to have increased slightly from 357.00 µg/L to 500.00 µg/L.

While onsite in October 2020, Fulcrum noted damage to the well cap of CW-02 (broken compression cap) that could put the monitoring well at risk for adverse impact associated with runoff from the proximal car wash bay. A new cap was placed on CW-02 during Fulcrum's October 2020 site visit.

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 (3) options for site-specific cleanup levels: Method A, B, and C. Method A defines cleanup levels for 25-30 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 25, 2021, Fulcrum completed groundwater sampling of the following seven (7) monitoring wells: CW-01, CW-02, MW-02, MW-03, MW-04, MW-06, and MW-07. Seven (7) groundwater samples (WOS-101420-CW01, -CW02, -MW02, -MW03, -MW04, -MW06, -MW07) and one (1) field duplicate sample (WOS-032521-MW08) were collected for a total of eight (8) 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 field water quality instruments. In each location the monitoring well was either pumped dry or for a minimum of three (3) well volumes following the stabilization of field parameters. Field parameters were measured 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. A site diagram map is presented as Figure 3.



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 groundwater sampling laboratory analytical results are presented in Appendix D.

Table 1: Whitty's Chevron Groundwater Analytical Results for March 25, 2021

Location	Sample Number	Groundwater Elevation	Results (µg/L)						
			NWTPH-Dx		NWTPH-Gx	Benzene	Toluene	Ethyl-benzene	Xylene
			Diesel-range hydrocarbons	Heavy oil-range hydrocarbons					
CW-01	WOS-032521-CW01	93.93	ND	ND	ND	ND	ND	ND	ND
	WOS-032521-MW08		ND	ND	ND	ND	ND	ND	ND
CW-02	WOS-032521-CW02	93.63	364.00	ND	180.00	ND	ND	0.49	0.94
MW-02	WOS-032521-MW02	93.52	3,300.00	534.00	725.00	8.04	ND	27.70	1.74
MW-03	WOS-032521-MW03	92.45	ND	135.00	ND	ND	ND	ND	ND
MW-04	WOS-032521-MW04	92.85	497.00	964.00	1,740.00	139.00	3.84	56.20	12.02
MW-06	WOS-032521-MW06	91.37	128.00	372.00	499.00	4.01	ND	1.70	1.33
MW-07	WOS-032521-MW07	89.31	ND	105.00	ND	ND	ND	ND	ND
MTCA Cleanup Levels ²			500 ⁺		800 [*]	5	1,000	700	1,000

Bold – MTCA Method A exceedance

ND – Nondetect

^{*}Established cleanup level when benzene is present in groundwater

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

¹Model Toxic Cleanup Act Method A Cleanup Levels for groundwater in µg/L, as established by the Washington State Department of Ecology.

⁺ 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 detectable concentrations for diesel-range hydrocarbons in monitoring well CW-02, below MTCA Method A Cleanup Levels. Laboratory analytical results report detectable concentrations for heavy oil-range hydrocarbons in monitoring wells MW-03 and MW-07, below MTCA Method A Cleanup Levels.

Laboratory analytical results identified diesel-range hydrocarbons at 3,300 $\mu\text{g/L}$ and heavy oil-range hydrocarbons at 534 $\mu\text{g/L}$ in monitoring well MW-02, which are both above the MTCA Method A Cleanup Level of 500 $\mu\text{g/L}$.

Laboratory analytical results identified diesel-range hydrocarbons at 497 $\mu\text{g/L}$ and heavy oil-range hydrocarbons at 964 $\mu\text{g/L}$ in monitoring well MW-04, which combined puts the concentrations above the MTCA Method A Cleanup Level of 500 $\mu\text{g/L}$.

Laboratory analytical results identified diesel-range hydrocarbons at 128 $\mu\text{g/L}$ and heavy oil-range hydrocarbons at 372 $\mu\text{g/L}$ in monitoring well MW-06, which combined puts the concentrations at the MTCA Method A Cleanup Level of 500 $\mu\text{g/L}$.

Laboratory analytical results report non-detect concentrations of diesel-range hydrocarbons in monitoring well CW-01, MW-03, and MW-07. Laboratory analytical results report non-detect concentrations of heavy oil-range hydrocarbons in monitoring well CW-01 and CW-02.

4.3 Gasoline-Range Extended Organics

Laboratory analytical results report detectable concentrations of gasoline-range hydrocarbons by NWTPH-Gx for monitoring wells CW-02, MW-02, and MW-06, below the MTCA Method A cleanup level of 800 $\mu\text{g/L}$.

Laboratory analytical results identified gasoline-range hydrocarbons by NWTPH-Gx for monitoring well MW-04 at 1,740 $\mu\text{g/L}$, which is above the MTCA Method A Cleanup Level of 800 $\mu\text{g/L}$.

Laboratory analytical results report non-detect concentrations of gasoline-range hydrocarbons by NWTPH-Gx for monitoring wells CW-01, MW-03, and MW-07.



4.4 Benzene, Toluene, Ethylbenzene and Xylenes

Laboratory analytical results identified benzene concentrations in monitoring well MW-06, below the MTCA Method A Cleanup Level of 5.00 µg/L.

Laboratory analytical results identified benzene concentrations in monitoring wells MW-02 at 8.04 µg/L and MW-04 at 139.00 µg/L, which are both above the MTCA Method A Cleanup Levels of 5.00 µg/L.

Laboratory analytical results identified detectable concentrations of toluene in monitoring well MW-04, below the MTCA Method A Cleanup Level of 1,000 µg/L.

Laboratory analytical results identified detectable concentrations of ethylbenzene in monitoring wells CW-02, MW-02, MW-04, and MW-06, all below the MTCA Method A Cleanup Level of 700 µg/L.

Laboratory analytical results identified detectable concentrations of xylene in monitoring wells CW-02, MW-02, MW-04, and MW-06, all below the MTCA Method A Cleanup Level of 1,000 µg/L.

Laboratory analytical results report non-detect concentrations for BTEX in monitoring wells CW-01, MW-03, and MW-07.

4.5 Hydraulic Results

The groundwater flow direction, as determined by this sampling and monitoring event, is northwest with a hydraulic gradient of 0.036 (1.18-ft change in groundwater depth over 33-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. Qualifiers were not present in the laboratory quality control (QC) sample results report, with the exception of a D qualifier associated with sample WOS-032521-MW04. This qualifier signifies dilution was required to analyze the sample leading the sample concentrations being biased low. Based on reported analytical results, identified cleanup standards, and the quantity of lab data qualifiers, it is Fulcrum's opinion that field and laboratory data quality results confirm acceptable accuracy of analytical data for all samples.



5.0 DISCUSSION

Fulcrum conducted a semi-annual groundwater monitoring event for seven (7) onsite groundwater monitoring wells. A brief discussion of the groundwater monitoring results is provided below:

- **CW-01:** Analytical results for groundwater samples collected from CW-01 report non-detectable concentrations for diesel-range hydrocarbons, heavy oil-range hydrocarbons, gasoline-range hydrocarbons, benzene, toluene, ethylbenzene, and xylene at the laboratory method detection limit.
- **CW-02:** Analytical results for groundwater samples collected from CW-02 reported detectable concentrations of diesel-range hydrocarbons and gasoline-range hydrocarbons below MTCA Method A Cleanup Levels. Laboratory analytical results for groundwater samples collected reported detectable concentrations of ethylbenzene and xylene below MTCA Method A Cleanup Levels. Analytical results for groundwater samples report non-detectable concentrations for heavy oil-range hydrocarbons, benzene, and toluene at the laboratory method detection limit.
- **MW-02: Analytical results for groundwater samples collected from MW-02 reported detectable concentrations of diesel-range hydrocarbons and heavy oil-range hydrocarbons above MTCA Method A Cleanup Levels.** Analytical results for groundwater samples report detectable concentrations of gasoline-range hydrocarbons below MTCA Method A Cleanup Levels. **Analytical results for groundwater samples report detectable concentrations of benzene above MTCA Method A Cleanup Levels.** Analytical results for groundwater samples collected reported detectable concentrations of ethylbenzene and xylene below MTCA Method A Cleanup Levels. Analytical results for groundwater samples report non-detectable concentrations for toluene at the laboratory method detection limit.
- **MW-03:** Analytical results for groundwater samples collected from MW-03 reported detectable concentrations of heavy oil-range hydrocarbons below MTCA Method A Cleanup Levels. Analytical results for groundwater samples collected report non-detectable concentrations for diesel-range hydrocarbons, gasoline-range hydrocarbons, benzene, toluene, ethylbenzene, and xylene at the laboratory method detection limit.
- **MW-04: Analytical results for groundwater samples collected from MW-04 reported detectable concentrations of combine diesel-range and heavy oil-range hydrocarbons above MTCA Method A Cleanup Levels. Analytical results for groundwater samples report detectable concentrations for gasoline-range hydrocarbons above MTCA Method A Cleanup Levels. Analytical results for groundwater samples report detectable concentrations for benzene above MTCA Method A Cleanup Levels.**



Laboratory analytical results for groundwater samples report detectable concentrations for toluene, ethylbenzene, and xylene below their respective MTCA Method A Cleanup Levels.

- **MW-06: Analytical results for groundwater samples collected from MW-06 reported detectable concentrations of combined diesel-range and heavy oil-range hydrocarbons at the MTCA Method A Cleanup Level.** Analytical results for groundwater samples reported detectable concentrations of gasoline-range hydrocarbons, benzene, ethylbenzene, and xylene, all below MTCA Method A Cleanup Levels. Analytical results for groundwater samples report non-detectable concentrations for toluene at the laboratory method detection limit.
- **MW-07:** Analytical results for groundwater samples collected from MW-07 reported detectable concentrations of heavy oil-range hydrocarbons below MTCA Method A Cleanup Levels. Analytical results for groundwater samples collected reported non-detect concentrations of diesel-range hydrocarbons, benzene, toluene, ethylbenzene, and xylene at the laboratory method detection limit.

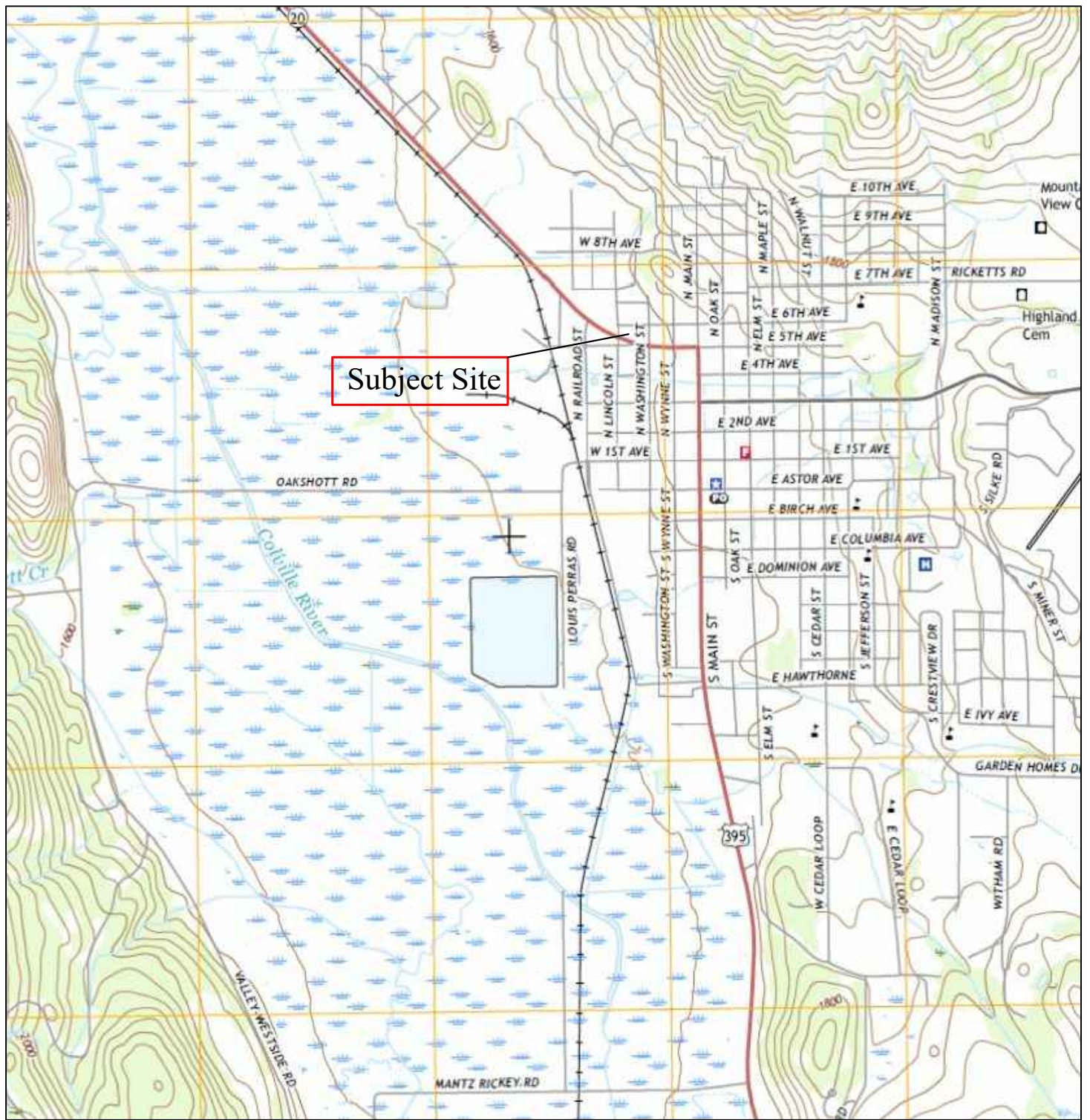
The March 2021 groundwater analytical data indicates contaminant concentrations in wells CW-01, CW-02, MW-03, and MW-07 to be below MTCA Method A Cleanup Levels. Groundwater analytical data indicates diesel-range and heavy oil-range hydrocarbon concentrations in wells MW-02, MW-04, and MW-06, to be above MTCA Method A Cleanup Levels. Analytical data indicates gasoline-range hydrocarbon concentrations in well MW-04 to be above MTCA Method A Cleanup Levels. Analytical data indicates benzene concentrations in wells MW-02 and MW-04 to be above MTCA Method A Cleanup Levels.

6.0 RECOMMENDATIONS

Based on the results of this investigation, Fulcrum recommends continuing semi-annual monitoring of the onsite monitoring wells.



FIGURES



Subject Site

LEGEND

Map Location

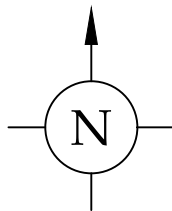


Figure 1: General Site Location Map

First Semi-annual Groundwater Sampling Event March 2021
 Whitty's Chevron
 370 West 5th Avenue
 Colville, Washington



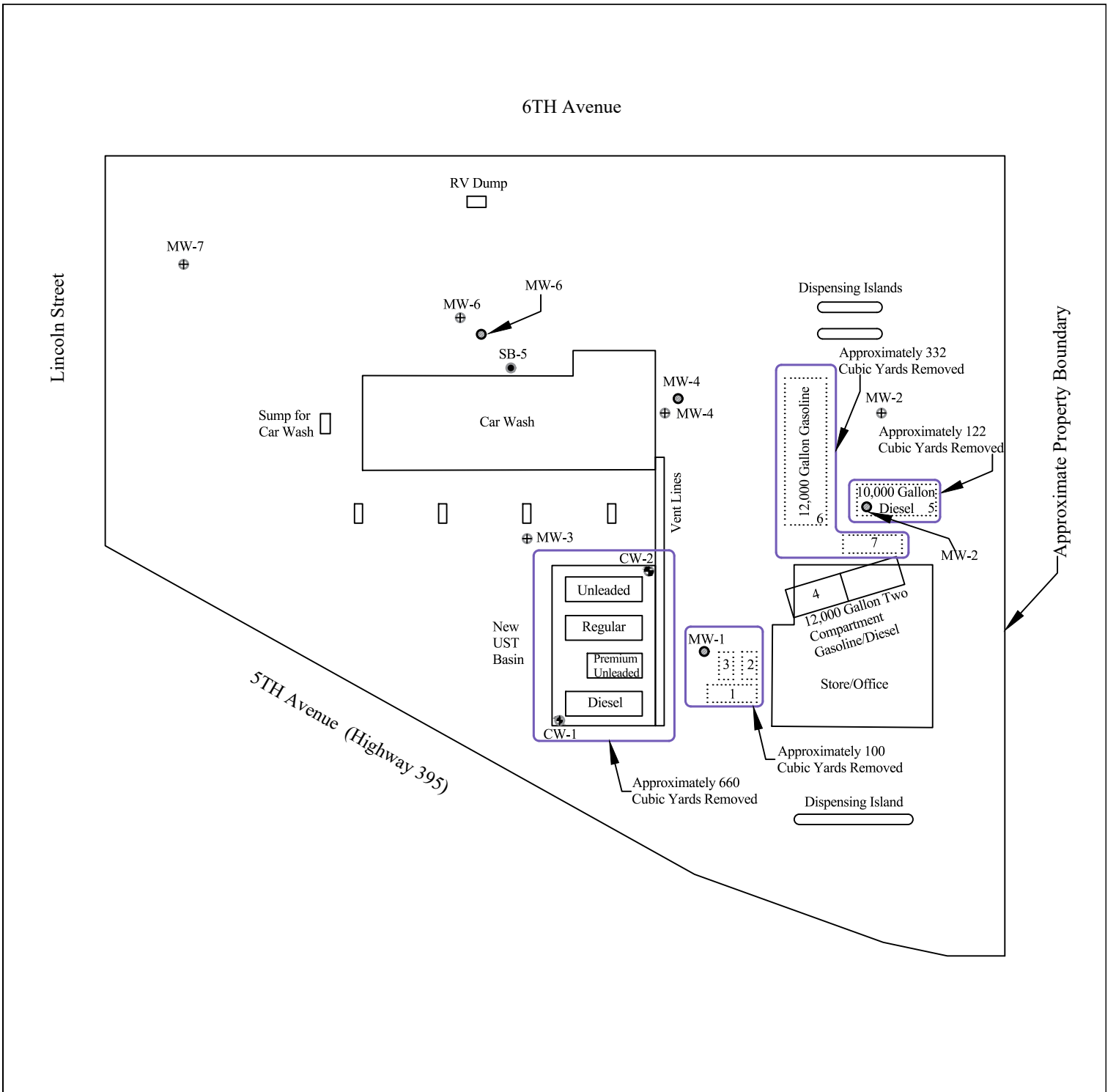
FULCRUM ENVIRONMENTAL CONSULTING, INC.
 207 W. BOONE AVENUE
 SPOKANE, WASHINGTON 99201
 (509) 459-9220 www.efulcrum.net

MAP BY: R. Groves

PROJECT NUMBER: 213162.00

DATE: May 21, 2021

REVIEWED BY: T. Trent



LEGEND

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

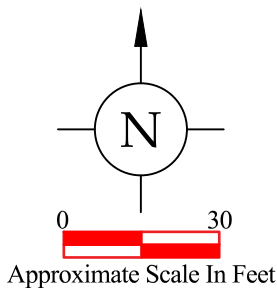


Figure 2: Historical USTs, Soil Borings, and Monitoring Wells Site Diagram Map

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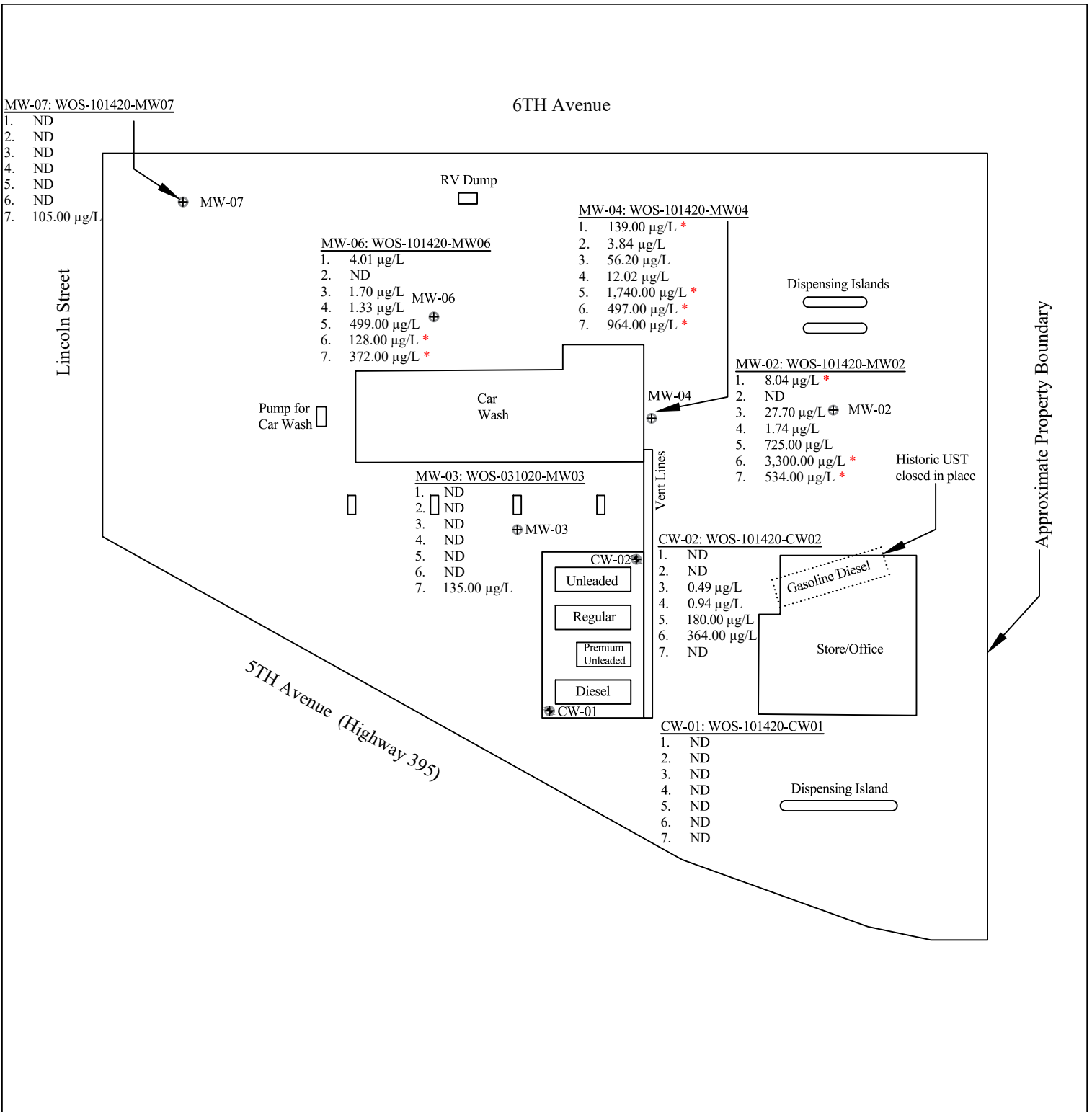
FULCRUM ENVIRONMENTAL CONSULTING, INC.
 207 W. BOONE AVENUE
 SPOKANE, WASHINGTON 99201
 (509) 459-9220 www.efulcrum.net

MAP BY: R. Groves

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DATE: May 21, 2021

REVIEWED BY: T. Trent



LEGEND

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

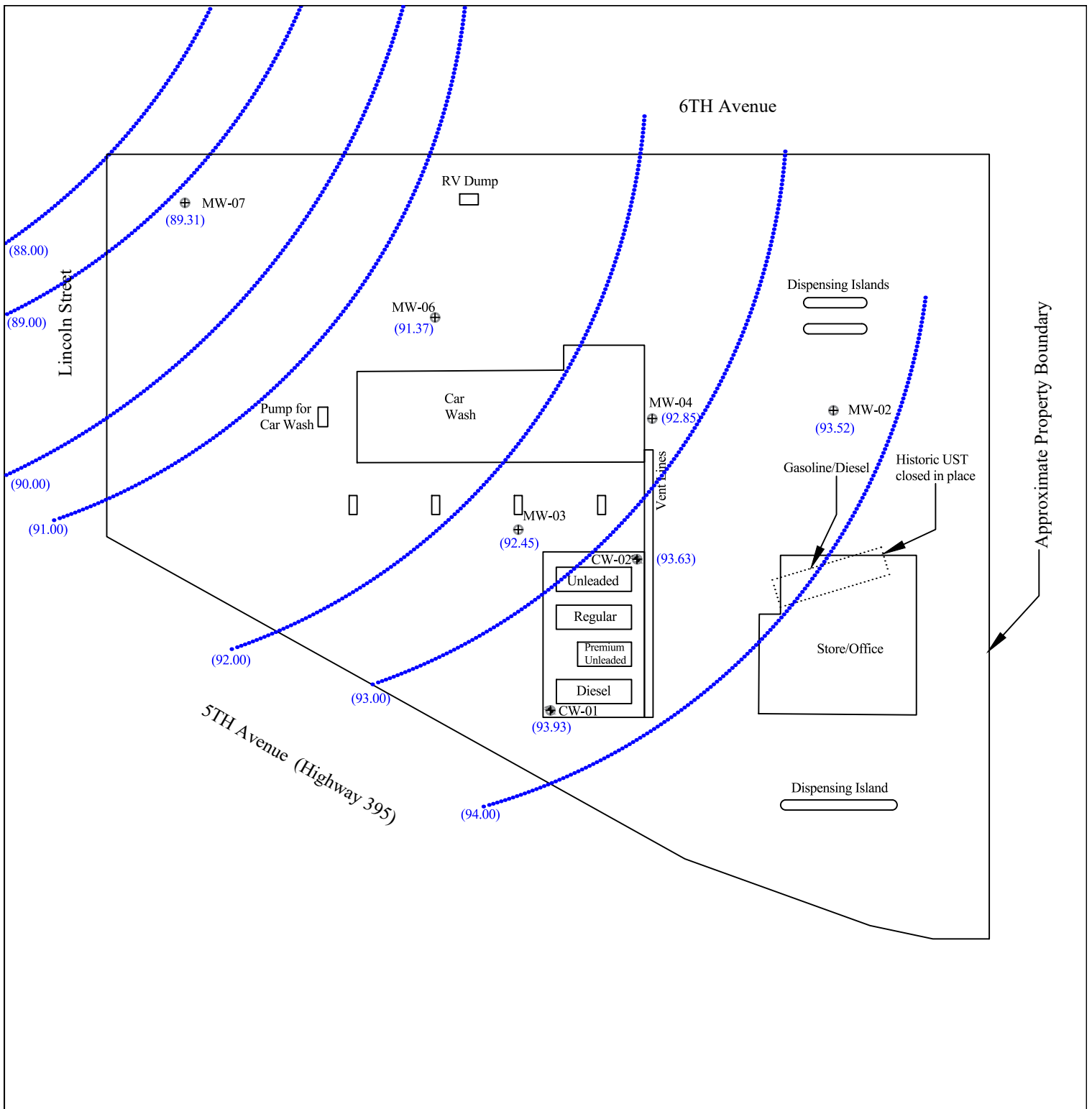
Approximate Scale In Feet

Figure 3: Site Diagram Map






First Semi-annual Groundwater Sampling Event March 2021
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207 W. BOONE AVENUE
SPOKANE, WASHINGTON 99201
(509) 459-9220 www.efulcrum.net

MAP BY: R. Groves	PROJECT NUMBER: 213162.00
DATE: May 21, 2021	REVIEWED BY: T. Trent



LEGEND

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

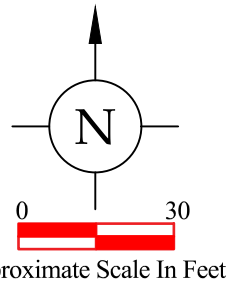
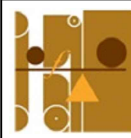


Figure 4: Groundwater Elevation Map

First Semi-annual Groundwater Sampling Event March 2021
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 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: R. Groves	PROJECT NUMBER: 213162.00
DATE: May 21, 2021	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 L Trent
1127 W 8th Ave
Spokane WA 99204-3107

364
License Number

2002-01-08
Issue Date

2021-06-06
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
	10/14/2020	99.50	5.81	93.69	---	212.00	ND	212.00	ND	ND	ND	ND	ND
	3/25/2021	99.50	5.57	93.93	---	ND	ND	ND	ND	ND	ND	ND	ND
	3/25/2021	99.50	5.57	93.93	---	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

2001 MTCA Method A Cleanup Levels for Groundwater	NE	500	800	5	1000	700	1000
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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-02	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	
	10/14/2020	99.01	5.54	93.47	---	ND	777.00	777.00	864.00	7.58	1.89	8.41	43.10	
	10/14/2020	99.01	5.54	93.47	---	4,570.00	ND	4570.00	818.00	7.45	1.89	8.26	42.20	
	3/25/2021	99.01	5.4	93.61	---	364.00	ND	364.00	180.00	ND	ND	0.49	0.94	
MW-1 <i>Decommissioned</i>	1/10/1990	100.00	5.59	94.41	ND	---	---	---	---	ND	ND	ND	ND	
MW-02 <i>Decommissioned</i>	1/10/1990	98.92	4.51	94.41	2,460	---	---	---	---	1,643.0	409.00	ND	2955.00	
New Well Installed	10/14/2020	98.92	5.83	93.09	---	249.00	ND	249.00	106.00	ND	ND	ND	ND	
	3/25/2021	98.92	5.83	93.09	---	3,300.00	534.00	3,834.00	725.00	8.04	ND	27.70	1.74	
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	---	---	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	
	10/14/2020	98.56	5.86	92.70	---	ND	ND	ND	ND	ND	ND	ND	ND	
	3/25/2021	98.56	6.11	92.45	---	ND	135.00	135.00	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
New Well Installed		10/14/2020	98.27	4.80	93.47	---	707.00	ND	707.00	818.00	10.50	1.19	9.92	1.91
3/25/2021		98.27	5.42	92.85	---	497.00	964.00	1,461.00	1,740.00	139.00	3.84	56.20	12.02	
MW-06	1/10/1990	97.27	9.01	88.26	ND	---	---	---	---	9.00	5.00	15.00	80.00	
2001 MTCA Method A Cleanup Levels for Groundwater					NE	500			800	5	1,000	700	1,000	



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-06	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	
	<i>Lab Filtered</i>	3/10/2020	97.27	4.51	92.76	---	ND	1350.00	1350.00	ND	ND	ND	ND	ND
	<i>New well installed</i>	10/14/2020	97.27	9.65	87.62	---	357.00	ND	357.00	202	ND	ND	ND	ND
	3/25/2021	97.27	5.90	91.37	---	128.00	372.00	500.00	499	4.01	ND	1.70	1.33	
MW-07	<i>New well installed</i>	10/14/2020	95.27	8.72	86.55	---	179.00	ND	179.00	ND	ND	ND	ND	
		3/25/2021	95.27	5.96	89.31	---	ND	105.00	105.00	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

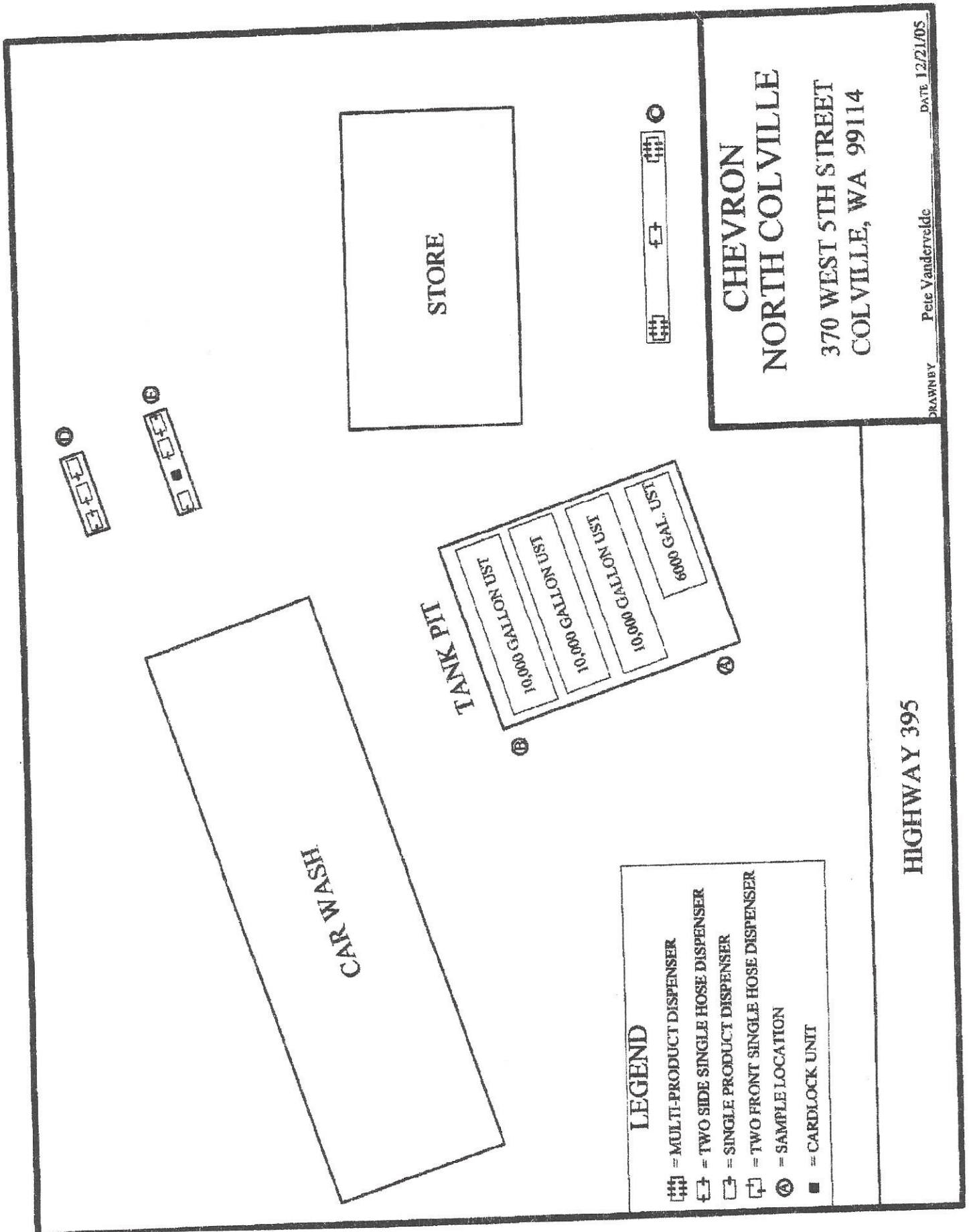


TABLE 1
SOIL SAMPLE RESULTS
CHEVRON
NORTH COLVILLE

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-D
n-Propylal	100	NWIPH-D

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 (253) 272-4850

MSDR 1010



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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: 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

SPECTRA LABORATORIES



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

Groundwater Sampling Laboratory Analytical Results



Fulcrum Environmental

Scott Groat

207 W Boone Ave.

Spokane, WA 99201

RE: Whitten Groundwater Monitoring

Work Order Number: 2103509

April 06, 2021

Attention Scott Groat:

Fremont Analytical, Inc. received 8 sample(s) on 3/30/2021 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



Date: 04/06/2021

CLIENT: Fulcrum Environmental
Project: Whitten Groundwater Monitoring
Work Order: 2103509

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2103509-001	WOS-032521-CW01	03/25/2021 9:11 AM	03/30/2021 9:30 AM
2103509-002	WOS-032521-CW02	03/25/2021 11:13 AM	03/30/2021 9:30 AM
2103509-003	WOS-032521-MW02	03/25/2021 12:14 PM	03/30/2021 9:30 AM
2103509-004	WOS-032521-MW03	03/25/2021 9:45 AM	03/30/2021 9:30 AM
2103509-005	WOS-032521-MW04	03/25/2021 12:14 PM	03/30/2021 9:30 AM
2103509-006	WOS-032521-MW06	03/25/2021 2:33 PM	03/30/2021 9:30 AM
2103509-007	WOS-032521-MW07	03/25/2021 4:12 PM	03/30/2021 9:30 AM
2103509-008	WOS-032521-MW08	03/25/2021 4:30 PM	03/30/2021 9:30 AM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

CLIENT: Fulcrum Environmental
Project: Whitten Groundwater Monitoring

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
- 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
- DUP - Sample Duplicate
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MCL - Maximum Contaminant Level
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- REP - Sample Replicate
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



Client: Fulcrum Environmental
Project: Whitten Groundwater Monitoring
Lab ID: 2103509-001
Client Sample ID: WOS-032521-CW01

Collection Date: 3/25/2021 9:11:00 AM
Matrix: Groundwater

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

Batch ID: 31849 Analyst: MM

Diesel (Fuel Oil)	ND	99.5		µg/L	1	4/2/2021 4:39:48 PM
Diesel Range Organics (C12-C24)	364	99.5		µg/L	1	4/2/2021 4:39:48 PM
Heavy Oil	ND	99.5		µg/L	1	4/2/2021 4:39:48 PM
Surr: 2-Fluorobiphenyl	86.4	50 - 150		%Rec	1	4/2/2021 4:39:48 PM
Surr: o-Terphenyl	95.3	50 - 150		%Rec	1	4/2/2021 4:39:48 PM

NOTES:

DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetracosane (~C12-C24). Chromatographic pattern demonstrates a continuation of Gasoline.

Gasoline by NWTPH-Gx

Batch ID: 31860 Analyst: CR

Gasoline	ND	50.0		µg/L	1	4/1/2021 6:57:15 PM
Gasoline Range Organics (C6-C12)	180	50.0		µg/L	1	4/1/2021 6:57:15 PM
Surr: Toluene-d8	96.3	65 - 135		%Rec	1	4/1/2021 6:57:15 PM
Surr: 4-Bromofluorobenzene	104	65 - 135		%Rec	1	4/1/2021 6:57:15 PM

NOTES:

GRO - Indicates the presence of unresolved compounds eluting from hexane to dodecane (~C6-C12). Pattern does not resemble known petroleum distillate.

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 31860 Analyst: CR

Benzene	ND	0.440		µg/L	1	4/1/2021 6:57:15 PM
Toluene	ND	0.750		µg/L	1	4/1/2021 6:57:15 PM
Ethylbenzene	0.487	0.400		µg/L	1	4/1/2021 6:57:15 PM
m,p-Xylene	ND	1.00		µg/L	1	4/1/2021 6:57:15 PM
o-Xylene	0.943	0.500		µg/L	1	4/1/2021 6:57:15 PM
Surr: Dibromofluoromethane	103	89.4 - 113		%Rec	1	4/1/2021 6:57:15 PM
Surr: Toluene-d8	98.3	87.8 - 114		%Rec	1	4/1/2021 6:57:15 PM
Surr: 1-Bromo-4-fluorobenzene	100	86.8 - 109		%Rec	1	4/1/2021 6:57:15 PM



Client: Fulcrum Environmental
Project: Whitten Groundwater Monitoring
Lab ID: 2103509-002
Client Sample ID: WOS-032521-CW02

Collection Date: 3/25/2021 11:13:00 AM
Matrix: Groundwater

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

Batch ID: 31849 Analyst: MM

Diesel (Fuel Oil)	ND	99.0		µg/L	1	4/5/2021 9:42:55 AM
Heavy Oil	ND	99.0		µg/L	1	4/5/2021 9:42:55 AM
Surr: 2-Fluorobiphenyl	84.9	50 - 150		%Rec	1	4/5/2021 9:42:55 AM
Surr: o-Terphenyl	96.6	50 - 150		%Rec	1	4/5/2021 9:42:55 AM

Gasoline by NWTPH-Gx

Batch ID: 31860 Analyst: CR

Gasoline	ND	50.0		µg/L	1	4/1/2021 7:27:24 PM
Surr: Toluene-d8	96.8	65 - 135		%Rec	1	4/1/2021 7:27:24 PM
Surr: 4-Bromofluorobenzene	96.3	65 - 135		%Rec	1	4/1/2021 7:27:24 PM

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 31860 Analyst: CR

Benzene	ND	0.440		µg/L	1	4/1/2021 7:27:24 PM
Toluene	ND	0.750		µg/L	1	4/1/2021 7:27:24 PM
Ethylbenzene	ND	0.400		µg/L	1	4/1/2021 7:27:24 PM
m,p-Xylene	ND	1.00		µg/L	1	4/1/2021 7:27:24 PM
o-Xylene	ND	0.500		µg/L	1	4/1/2021 7:27:24 PM
Surr: Dibromofluoromethane	98.7	89.4 - 113		%Rec	1	4/1/2021 7:27:24 PM
Surr: Toluene-d8	97.7	87.8 - 114		%Rec	1	4/1/2021 7:27:24 PM
Surr: 1-Bromo-4-fluorobenzene	98.8	86.8 - 109		%Rec	1	4/1/2021 7:27:24 PM



Client: Fulcrum Environmental
Project: Whitten Groundwater Monitoring
Lab ID: 2103509-003
Client Sample ID: WOS-032521-MW02

Collection Date: 3/25/2021 12:14:00 PM
Matrix: Groundwater

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

Batch ID: 31849 Analyst: MM

Diesel (Fuel Oil)	ND	98.9		µg/L	1	4/2/2021 5:17:48 PM
Diesel Range Organics (C12-C24)	534	98.9		µg/L	1	4/2/2021 5:17:48 PM
Heavy Oil	3,300	98.9		µg/L	1	4/2/2021 5:17:48 PM
Surr: 2-Fluorobiphenyl	81.6	50 - 150		%Rec	1	4/2/2021 5:17:48 PM
Surr: o-Terphenyl	92.8	50 - 150		%Rec	1	4/2/2021 5:17:48 PM

NOTES:

DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetracosane (~C12-C24). Chromatographic pattern demonstrates a continuation of Gasoline.

Gasoline by NWTPH-Gx

Batch ID: 31860 Analyst: CR

Gasoline	725	50.0		µg/L	1	4/1/2021 7:57:30 PM
Surr: Toluene-d8	101	65 - 135		%Rec	1	4/1/2021 7:57:30 PM
Surr: 4-Bromofluorobenzene	101	65 - 135		%Rec	1	4/1/2021 7:57:30 PM

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 31860 Analyst: CR

Benzene	8.04	0.440		µg/L	1	4/1/2021 7:57:30 PM
Toluene	ND	0.750		µg/L	1	4/1/2021 7:57:30 PM
Ethylbenzene	27.7	0.400		µg/L	1	4/1/2021 7:57:30 PM
m,p-Xylene	1.74	1.00		µg/L	1	4/1/2021 7:57:30 PM
o-Xylene	ND	0.500		µg/L	1	4/1/2021 7:57:30 PM
Surr: Dibromofluoromethane	94.3	89.4 - 113		%Rec	1	4/1/2021 7:57:30 PM
Surr: Toluene-d8	97.7	87.8 - 114		%Rec	1	4/1/2021 7:57:30 PM
Surr: 1-Bromo-4-fluorobenzene	97.0	86.8 - 109		%Rec	1	4/1/2021 7:57:30 PM



Client: Fulcrum Environmental
Project: Whitten Groundwater Monitoring
Lab ID: 2103509-004
Client Sample ID: WOS-032521-MW03

Collection Date: 3/25/2021 9:45:00 AM

Matrix: Groundwater

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

Batch ID: 31849 Analyst: MM

Diesel (Fuel Oil)	ND	99.6		µg/L	1	4/2/2021 5:30:28 PM
Heavy Oil	135	99.6		µg/L	1	4/2/2021 5:30:28 PM
Surr: 2-Fluorobiphenyl	83.3	50 - 150		%Rec	1	4/2/2021 5:30:28 PM
Surr: o-Terphenyl	90.2	50 - 150		%Rec	1	4/2/2021 5:30:28 PM

Gasoline by NWTPH-Gx

Batch ID: 31860 Analyst: CR

Gasoline	ND	50.0		µg/L	1	4/1/2021 8:57:44 PM
Surr: Toluene-d8	98.3	65 - 135		%Rec	1	4/1/2021 8:57:44 PM
Surr: 4-Bromofluorobenzene	96.3	65 - 135		%Rec	1	4/1/2021 8:57:44 PM

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 31860 Analyst: CR

Benzene	ND	0.440		µg/L	1	4/1/2021 8:57:44 PM
Toluene	ND	0.750		µg/L	1	4/1/2021 8:57:44 PM
Ethylbenzene	ND	0.400		µg/L	1	4/1/2021 8:57:44 PM
m,p-Xylene	ND	1.00		µg/L	1	4/1/2021 8:57:44 PM
o-Xylene	ND	0.500		µg/L	1	4/1/2021 8:57:44 PM
Surr: Dibromofluoromethane	99.4	89.4 - 113		%Rec	1	4/1/2021 8:57:44 PM
Surr: Toluene-d8	99.5	87.8 - 114		%Rec	1	4/1/2021 8:57:44 PM
Surr: 1-Bromo-4-fluorobenzene	98.7	86.8 - 109		%Rec	1	4/1/2021 8:57:44 PM



Client: Fulcrum Environmental
Project: Whitten Groundwater Monitoring
Lab ID: 2103509-005
Client Sample ID: WOS-032521-MW04

Collection Date: 3/25/2021 12:14:00 PM
Matrix: Groundwater

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

Batch ID: 31849 Analyst: MM

Diesel (Fuel Oil)	ND	98.5		µg/L	1	4/2/2021 5:56:22 PM
Diesel Range Organics (C12-C24)	497	98.5		µg/L	1	4/2/2021 5:56:22 PM
Heavy Oil	964	98.5		µg/L	1	4/2/2021 5:56:22 PM
Surr: 2-Fluorobiphenyl	84.3	50 - 150		%Rec	1	4/2/2021 5:56:22 PM
Surr: o-Terphenyl	97.0	50 - 150		%Rec	1	4/2/2021 5:56:22 PM

NOTES:

DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetracosane (~C12-C24). Chromatographic pattern demonstrates a continuation of Gasoline.

Gasoline by NWTPH-Gx

Batch ID: 31860 Analyst: CR

Gasoline	1,740	500	D	µg/L	10	4/2/2021 8:58:02 PM
Surr: Toluene-d8	97.8	65 - 135	D	%Rec	10	4/2/2021 8:58:02 PM
Surr: 4-Bromofluorobenzene	98.1	65 - 135	D	%Rec	10	4/2/2021 8:58:02 PM

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 31860 Analyst: CR

Benzene	139	4.40	D	µg/L	10	4/6/2021 9:56:34 AM
Toluene	3.84	0.750		µg/L	1	4/1/2021 9:27:53 PM
Ethylbenzene	56.2	4.00	D	µg/L	10	4/6/2021 9:56:34 AM
m,p-Xylene	10.9	1.00		µg/L	1	4/1/2021 9:27:53 PM
o-Xylene	1.12	0.500		µg/L	1	4/1/2021 9:27:53 PM
Surr: Dibromofluoromethane	93.1	89.4 - 113		%Rec	1	4/1/2021 9:27:53 PM
Surr: Toluene-d8	97.1	87.8 - 114		%Rec	1	4/1/2021 9:27:53 PM
Surr: 1-Bromo-4-fluorobenzene	94.9	86.8 - 109		%Rec	1	4/1/2021 9:27:53 PM



Client: Fulcrum Environmental
Project: Whitten Groundwater Monitoring
Lab ID: 2103509-006
Client Sample ID: WOS-032521-MW06

Collection Date: 3/25/2021 2:33:00 PM

Matrix: Groundwater

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

Batch ID: 31849 Analyst: MM

Diesel (Fuel Oil)	ND	99.0		µg/L	1	4/2/2021 6:09:13 PM
Diesel Range Organics (C12-C24)	128	99.0		µg/L	1	4/2/2021 6:09:13 PM
Heavy Oil	372	99.0		µg/L	1	4/2/2021 6:09:13 PM
Surr: 2-Fluorobiphenyl	93.7	50 - 150		%Rec	1	4/2/2021 6:09:13 PM
Surr: o-Terphenyl	103	50 - 150		%Rec	1	4/2/2021 6:09:13 PM

NOTES:

DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetracosane (~C12-C24). Chromatographic pattern demonstrates a continuation of Gasoline.

Gasoline by NWTPH-Gx

Batch ID: 31860 Analyst: CR

Gasoline	499	50.0		µg/L	1	4/1/2021 9:58:00 PM
Surr: Toluene-d8	102	65 - 135		%Rec	1	4/1/2021 9:58:00 PM
Surr: 4-Bromofluorobenzene	109	65 - 135		%Rec	1	4/1/2021 9:58:00 PM

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 31860 Analyst: CR

Benzene	4.01	0.440		µg/L	1	4/1/2021 9:58:00 PM
Toluene	ND	0.750		µg/L	1	4/1/2021 9:58:00 PM
Ethylbenzene	1.70	0.400		µg/L	1	4/1/2021 9:58:00 PM
m,p-Xylene	1.33	1.00		µg/L	1	4/1/2021 9:58:00 PM
o-Xylene	ND	0.500		µg/L	1	4/1/2021 9:58:00 PM
Surr: Dibromofluoromethane	94.9	89.4 - 113		%Rec	1	4/1/2021 9:58:00 PM
Surr: Toluene-d8	95.0	87.8 - 114		%Rec	1	4/1/2021 9:58:00 PM
Surr: 1-Bromo-4-fluorobenzene	101	86.8 - 109		%Rec	1	4/1/2021 9:58:00 PM



Client: Fulcrum Environmental
Project: Whitten Groundwater Monitoring
Lab ID: 2103509-007
Client Sample ID: WOS-032521-MW07

Collection Date: 3/25/2021 4:12:00 PM
Matrix: Groundwater

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

Batch ID: 31849 Analyst: MM

Diesel (Fuel Oil)	ND	98.1		µg/L	1	4/2/2021 6:22:05 PM
Heavy Oil	105	98.1		µg/L	1	4/2/2021 6:22:05 PM
Surr: 2-Fluorobiphenyl	72.5	50 - 150		%Rec	1	4/2/2021 6:22:05 PM
Surr: o-Terphenyl	84.3	50 - 150		%Rec	1	4/2/2021 6:22:05 PM

Gasoline by NWTPH-Gx

Batch ID: 31860 Analyst: CR

Gasoline	ND	50.0		µg/L	1	4/1/2021 10:28:11 PM
Surr: Toluene-d8	96.2	65 - 135		%Rec	1	4/1/2021 10:28:11 PM
Surr: 4-Bromofluorobenzene	96.9	65 - 135		%Rec	1	4/1/2021 10:28:11 PM

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 31860 Analyst: CR

Benzene	ND	0.440		µg/L	1	4/1/2021 10:28:11 PM
Toluene	ND	0.750		µg/L	1	4/1/2021 10:28:11 PM
Ethylbenzene	ND	0.400		µg/L	1	4/1/2021 10:28:11 PM
m,p-Xylene	ND	1.00		µg/L	1	4/1/2021 10:28:11 PM
o-Xylene	ND	0.500		µg/L	1	4/1/2021 10:28:11 PM
Surr: Dibromofluoromethane	100	89.4 - 113		%Rec	1	4/1/2021 10:28:11 PM
Surr: Toluene-d8	97.5	87.8 - 114		%Rec	1	4/1/2021 10:28:11 PM
Surr: 1-Bromo-4-fluorobenzene	99.2	86.8 - 109		%Rec	1	4/1/2021 10:28:11 PM



Client: Fulcrum Environmental
Project: Whitten Groundwater Monitoring
Lab ID: 2103509-008
Client Sample ID: WOS-032521-MW08

Collection Date: 3/25/2021 4:30:00 PM
Matrix: Groundwater

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

Batch ID: 31849 Analyst: MM

Diesel (Fuel Oil)	ND	98.8		µg/L	1	4/2/2021 6:34:58 PM
Heavy Oil	ND	98.8		µg/L	1	4/2/2021 6:34:58 PM
Surr: 2-Fluorobiphenyl	82.8	50 - 150		%Rec	1	4/2/2021 6:34:58 PM
Surr: o-Terphenyl	91.0	50 - 150		%Rec	1	4/2/2021 6:34:58 PM

Gasoline by NWTPH-Gx

Batch ID: 31860 Analyst: CR

Gasoline	ND	50.0		µg/L	1	4/1/2021 10:58:19 PM
Surr: Toluene-d8	96.3	65 - 135		%Rec	1	4/1/2021 10:58:19 PM
Surr: 4-Bromofluorobenzene	98.7	65 - 135		%Rec	1	4/1/2021 10:58:19 PM

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 31860 Analyst: CR

Benzene	ND	0.440		µg/L	1	4/1/2021 10:58:19 PM
Toluene	ND	0.750		µg/L	1	4/1/2021 10:58:19 PM
Ethylbenzene	ND	0.400		µg/L	1	4/1/2021 10:58:19 PM
m,p-Xylene	ND	1.00		µg/L	1	4/1/2021 10:58:19 PM
o-Xylene	ND	0.500		µg/L	1	4/1/2021 10:58:19 PM
Surr: Dibromofluoromethane	102	89.4 - 113		%Rec	1	4/1/2021 10:58:19 PM
Surr: Toluene-d8	99.6	87.8 - 114		%Rec	1	4/1/2021 10:58:19 PM
Surr: 1-Bromo-4-fluorobenzene	101	86.8 - 109		%Rec	1	4/1/2021 10:58:19 PM

Work Order: 2103509
CLIENT: Fulcrum Environmental
Project: Whitten Groundwater Monitoring

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

Sample ID: MB-31849	SampType: MBLK	Units: µg/L			Prep Date: 4/1/2021	RunNo: 66320					
Client ID: MBLKW	Batch ID: 31849				Analysis Date: 4/2/2021	SeqNo: 1333976					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	98.9									
Heavy Oil	ND	98.9									
Surr: 2-Fluorobiphenyl	16.3		19.79		82.2	50	150				
Surr: o-Terphenyl	18.5		19.79		93.3	50	150				

Sample ID: 2103534-002BDUP	SampType: DUP	Units: µg/L			Prep Date: 4/1/2021	RunNo: 66321					
Client ID: BATCH	Batch ID: 31849				Analysis Date: 4/2/2021	SeqNo: 1333982					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	99.6						0		30	
Heavy Oil	ND	99.6						0		30	
Surr: 2-Fluorobiphenyl	15.7		19.91		78.7	50	150		0		
Surr: o-Terphenyl	18.5		19.91		92.9	50	150		0		

Sample ID: LCS-31849	SampType: LCS	Units: µg/L			Prep Date: 4/1/2021	RunNo: 66320					
Client ID: LCSW	Batch ID: 31849				Analysis Date: 4/2/2021	SeqNo: 1333977					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	811	98.8	987.5	0	82.1	32.2	104				
Surr: 2-Fluorobiphenyl	15.3		19.75		77.6	50	150				
Surr: o-Terphenyl	19.7		19.75		99.6	50	150				

Sample ID: 2103509-002BMS	SampType: MS	Units: µg/L			Prep Date: 4/1/2021	RunNo: 66321					
Client ID: WOS-032521-CW02	Batch ID: 31849				Analysis Date: 4/2/2021	SeqNo: 1334170					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	911	97.9	979.1	0	93.0	22.5	114				
Surr: 2-Fluorobiphenyl	16.6		19.58		84.7	50	150				
Surr: o-Terphenyl	19.1		19.58		97.5	50	150				

Work Order: 2103509
CLIENT: Fulcrum Environmental
Project: Whitten Groundwater Monitoring

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

Sample ID: 2103509-002BMS	SampType: MS	Units: µg/L	Prep Date: 4/1/2021	RunNo: 66321							
Client ID: WOS-032521-CW02	Batch ID: 31849		Analysis Date: 4/2/2021	SeqNo: 1334170							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: 2103509-004BDUP	SampType: DUP	Units: µg/L	Prep Date: 4/1/2021	RunNo: 66321							
Client ID: WOS-032521-MW03	Batch ID: 31849		Analysis Date: 4/2/2021	SeqNo: 1334156							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	ND	99.8						0		30	
Heavy Oil	105	99.8						135.1	25.3	30	
Surr: 2-Fluorobiphenyl	17.5		19.96		87.9	50	150		0		
Surr: o-Terphenyl	19.4		19.96		97.3	50	150		0		

Work Order: 2103509
CLIENT: Fulcrum Environmental
Project: Whitten Groundwater Monitoring

QC SUMMARY REPORT
Gasoline by NWTPH-Gx

Sample ID: LCS-31860	SampType: LCS	Units: µg/L			Prep Date: 4/1/2021	RunNo: 66310					
Client ID: LCSW	Batch ID: 31860				Analysis Date: 4/1/2021	SeqNo: 1333775					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	489	50.0	500.0	0	97.8	65	135				
Surr: Toluene-d8	25.1		25.00		100	65	135				
Surr: 4-Bromofluorobenzene	25.6		25.00		102	65	135				

Sample ID: MB-31860	SampType: MBLK	Units: µg/L			Prep Date: 4/1/2021	RunNo: 66310					
Client ID: MBLKW	Batch ID: 31860				Analysis Date: 4/1/2021	SeqNo: 1333774					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	ND	50.0									
Surr: Toluene-d8	24.0		25.00		96.1	65	135				
Surr: 4-Bromofluorobenzene	24.4		25.00		97.6	65	135				

Sample ID: 2103509-003ADUP	SampType: DUP	Units: µg/L			Prep Date: 4/1/2021	RunNo: 66310					
Client ID: WOS-032521-MW02	Batch ID: 31860				Analysis Date: 4/1/2021	SeqNo: 1333762					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	727	50.0						724.8	0.359	30	
Surr: Toluene-d8	25.0		25.00		100	65	135		0		
Surr: 4-Bromofluorobenzene	25.7		25.00		103	65	135		0		

Sample ID: 2103542-001ADUP	SampType: DUP	Units: µg/L			Prep Date: 4/1/2021	RunNo: 66310					
Client ID: BATCH	Batch ID: 31860				Analysis Date: 4/2/2021	SeqNo: 1333771					
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	23.9		25.00		95.8	65	135		0		
Surr: 4-Bromofluorobenzene	24.7		25.00		98.9	65	135		0		

Work Order: 2103509
CLIENT: Fulcrum Environmental
Project: Whitten Groundwater Monitoring

QC SUMMARY REPORT
Gasoline by NWTPH-Gx

Sample ID: 2103509-006AMS	SampType: MS	Units: µg/L		Prep Date: 4/1/2021	RunNo: 66310						
Client ID: WOS-032521-MW06	Batch ID: 31860			Analysis Date: 4/2/2021	SeqNo: 1333766						
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	930	50.0	500.0	499.3	86.1	65	135				
Surr: Toluene-d8	25.8		25.00		103	65	135				
Surr: 4-Bromofluorobenzene	27.4		25.00		110	65	135				

Work Order: 2103509
CLIENT: Fulcrum Environmental
Project: Whitten Groundwater Monitoring

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260D

Sample ID: LCS-31860	SampType: LCS	Units: µg/L				Prep Date: 4/1/2021	RunNo: 66309				
Client ID: LCSW	Batch ID: 31860					Analysis Date: 4/1/2021	SeqNo: 1333744				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	19.6	0.440	20.00	0	97.8	80	120				
Toluene	19.7	0.750	20.00	0	98.4	80	120				
Ethylbenzene	20.3	0.400	20.00	0	101	80	120				
m,p-Xylene	40.1	1.00	40.00	0	100	80	120				
o-Xylene	19.9	0.500	20.00	0	99.3	80	120				
Surr: Dibromofluoromethane	24.3		25.00		97.2	80	120				
Surr: Toluene-d8	25.1		25.00		100	80	120				
Surr: 1-Bromo-4-fluorobenzene	24.3		25.00		97.0	80	120				

Sample ID: MB-31860	SampType: MBLK	Units: µg/L				Prep Date: 4/1/2021	RunNo: 66309				
Client ID: MBLKW	Batch ID: 31860					Analysis Date: 4/1/2021	SeqNo: 1333743				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.440									
Toluene	ND	0.750									
Ethylbenzene	ND	0.400									
m,p-Xylene	ND	1.00									
o-Xylene	ND	0.500									
Surr: Dibromofluoromethane	24.7		25.00		99.0	89.4	113				
Surr: Toluene-d8	24.5		25.00		98.2	87.8	114				
Surr: 1-Bromo-4-fluorobenzene	25.1		25.00		100	86.8	109				

Sample ID: 2103509-003ADUP	SampType: DUP	Units: µg/L				Prep Date: 4/1/2021	RunNo: 66309				
Client ID: WOS-032521-MW02	Batch ID: 31860					Analysis Date: 4/1/2021	SeqNo: 1333730				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	8.45	0.440						8.035	5.01	30	
Toluene	ND	0.750						0		30	
Ethylbenzene	28.6	0.400						27.68	3.33	30	

Work Order: 2103509
CLIENT: Fulcrum Environmental
Project: Whitten Groundwater Monitoring

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260D

Sample ID: 2103509-003ADUP	SampType: DUP	Units: µg/L	Prep Date: 4/1/2021	RunNo: 66309							
Client ID: WOS-032521-MW02	Batch ID: 31860		Analysis Date: 4/1/2021	SeqNo: 1333730							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
m,p-Xylene	1.90	1.00						1.744	8.42	30	
o-Xylene	ND	0.500						0		30	
Surr: Dibromofluoromethane	24.7		25.00		98.9	89.4	113		0		
Surr: Toluene-d8	24.8		25.00		99.3	87.8	114		0		
Surr: 1-Bromo-4-fluorobenzene	24.7		25.00		98.7	86.8	109		0		

Sample ID: 2103542-001ADUP	SampType: DUP	Units: µg/L	Prep Date: 4/1/2021	RunNo: 66309							
Client ID: BATCH	Batch ID: 31860		Analysis Date: 4/2/2021	SeqNo: 1333738							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.440						0		30	
Toluene	ND	0.750						0		30	
Ethylbenzene	ND	0.400						0		30	
m,p-Xylene	ND	1.00						0		30	
o-Xylene	ND	0.500						0		30	
Surr: Dibromofluoromethane	25.5		25.00		102	89.4	113		0		
Surr: Toluene-d8	24.8		25.00		99.1	87.8	114		0		
Surr: 1-Bromo-4-fluorobenzene	25.5		25.00		102	86.8	109		0		

Sample ID: 2104005-001AMS	SampType: MS	Units: µg/L	Prep Date: 4/1/2021	RunNo: 66309							
Client ID: BATCH	Batch ID: 31860		Analysis Date: 4/2/2021	SeqNo: 1333740							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	19.9	0.440	20.00	0	99.7	86.9	130				
Toluene	20.1	0.750	20.00	0	100	85	134				
Ethylbenzene	20.1	0.400	20.00	0	100	89.5	129				
m,p-Xylene	39.5	1.00	40.00	0	98.8	88.2	127				
o-Xylene	19.2	0.500	20.00	0	96.1	89.6	120				
Surr: Dibromofluoromethane	25.4		25.00		102	89.4	113				

Work Order: 2103509
CLIENT: Fulcrum Environmental
Project: Whitten Groundwater Monitoring

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260D

Sample ID: 2104005-001AMS	SampType: MS	Units: µg/L	Prep Date: 4/1/2021	RunNo: 66309							
Client ID: BATCH	Batch ID: 31860		Analysis Date: 4/2/2021	SeqNo: 1333740							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Toluene-d8	25.5		25.00		102	87.8	114				
Surr: 1-Bromo-4-fluorobenzene	24.7		25.00		98.8	86.8	109				

Client Name: FES	Work Order Number: 2103509
Logged by: Gabrielle Coeulle	Date Received: 3/30/2021 9:30:00 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 Present
6. Was an attempt made to cool the samples? Yes No NA
7. Were all items received at a temperature of >2°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
Sample 1	3.4

* 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 & Laboratory Services Agreement

Date: 3/29/21 Page: 1 of: 1
Project Name: Wh. Her Groundwater Monitoring
Project No: 21316700
Collected by: S. Hernandez
Laboratory Project No (Internal): 2103509

Client: Fulcrum Environmental
Address: 207 W. Boat Ave
City, State, zip: Spokane, WA 99201
Telephone: 509-459-9220
Location: _____
Report to (PM): Scott Gray
PM Email: sgre@fulcrum.com
Sample Disposal: Return to client Disposal by lab (after 30 days)

Special Remarks: _____

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	# of Cont.	VOCs (EPA 8260 / 624)	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCS (EPA 8270 / 825)	PAHs (EPA 8082 - SIM)	Metals** (EPA 6020 / 200.8)	Total (T) Dissolved (D)	Anions (IC)**	EDB (8011)	Comments
105-032521-CW01	3/25/21	0811	EW		X	X	X	X	X	X	X	X	X	X	X	
2 - CW02		1113			X	X	X	X	X	X	X	X	X	X	X	
3 - MW02		1214			X	X	X	X	X	X	X	X	X	X	X	
4 - MW03		0945			X	X	X	X	X	X	X	X	X	X	X	
5 - MW04		1214			X	X	X	X	X	X	X	X	X	X	X	
6 - MW06		1433			X	X	X	X	X	X	X	X	X	X	X	
7 - MW07		1612			X	X	X	X	X	X	X	X	X	X	X	
8 - MW08		1630			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): MICA-5 RCA-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 Ti V Zn
 ***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide Nitrate+Nitrite O-Phosphate Fluoride
 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 (Signature) _____ Print Name _____ Date/Time _____
 Received (Signature) _____ Print Name _____ Date/Time _____

Relinquished (Signature) Scott Gray Print Name Scott Gray Date/Time 3/29/21
 Received (Signature) Carlos Hernandez Print Name Carlos Hernandez Date/Time 3/30/21 9:30