

**Whitten Oil
Groundwater Monitoring
September 2023
Sampling Report**

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

Project Number: 233710.00

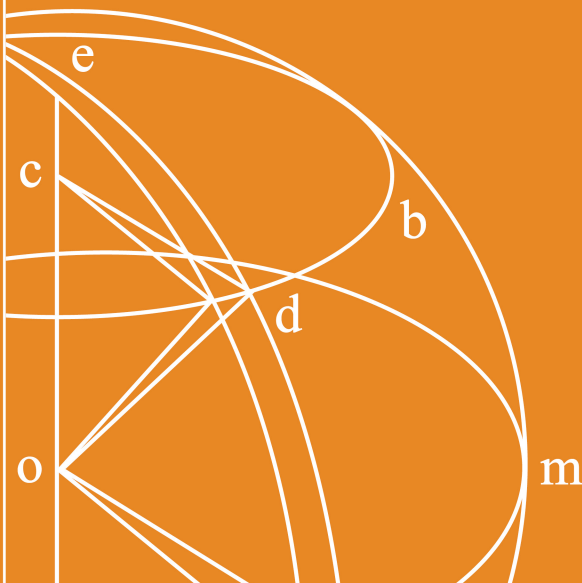
Date: November 1, 2023

Prepared for:

Whitten Oil
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Spokane, Washington 99201





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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.



TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
1.0 INTRODUCTION	1
1.1 Scope of Services.....	1
1.2 Site Description	1
1.3 Site Hydrogeology	2
1.4 Background.....	2
2.0 DISCUSSION OF PERTINENT REGULATIONS AND GUIDANCE	4
2.1 MTCA Regulations.....	4
2.2 MTCA Cleanup Standards.....	5
3.0 FIELD ACTIVITIES	5
3.1 Groundwater Sampling.....	5
4.0 RESULTS	6
4.1 Laboratory Analytical Results	6
5.0 DISCUSSION.....	7
6.0 Trending Evaluation	7
6.1 Concentration Trending	7
6.2 Area Extent Trending	10
6.3 Laboratory Evaluation	10
6.4 Trending Findings.....	10
7.0 Findings and Recommendations.....	11



TABLES

Table 1: Whitty's Chevron Groundwater Analytical Results for September 2023.....	6
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GRAPHS

Graph 1: September 2017-2023 Gasoline (NWTPH-Gx) Concentrations	8
Graph 2: September 2017-2023 Combined Diesel-Range and Heavy Oil-Range Concentrations.....	9
Graph 3: September 2017-2023 Benzene Concentrations	9

FIGURES

Figure 1	Site Location Map
Figure 2	Historical Site Diagram Map
Figure 3	Site Diagram Map
Figure 4	Groundwater Elevation Map
Figure 5	Gasoline Concentrations
Figure 6	Combined Diesel-Range and Heavy Oil-Range Hydrocarbons
Figure 7	Benzene Concentrations

APPENDICES

Appendix A	Professional Certifications
Appendix B	Summary of Historical Data
Appendix C	2005 Soil Sampling Results
Appendix D	Laboratory Analytical Results



1.0 INTRODUCTION

On September 19, 2023, Fulcrum Environmental Consulting, Inc. (Fulcrum) conducted a semi-annual groundwater monitoring for seven monitoring wells located at Whitty's Chevron in Colville, Washington. The purpose of the monitoring was to evaluate petroleum hydrocarbon impacts to site groundwater associated with a historical gasoline release identified in September 1989.



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

Site services were completed by Ethan Ducken, a Washington State recognized Geologist-In-Training (GIT), and Abby Whitmore, 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.

1.1 Scope of Services

Fulcrum has been retained by Whitten Oil (Whitten) since 2017 to complete semi-annual groundwater sampling services for 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 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, ethylbenzene, xylene (BTEX), gasoline-range organics, diesel-range organics, and heavy oil-range organics. Results of the investigation and testing from September 2023 are presented in this summary report.

1.2 Site Description

The site is located on the northeast corner of West Fifth Avenue (U.S. Highway 395) and North Lincoln Street in Colville, Washington. The subject facility functions as an active gasoline service station and car wash.



One refueling area containing one dispenser island was observed to be located south of the convenience store, while another gasoline/diesel refueling area with two 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 operational underground storage tanks (USTs) 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 footprints, concrete, or asphalt. Historical reports and observations from Fulcrum's September 2020 groundwater monitoring well installation event identified that beneath the paved surface are three to eight 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 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 four to six feet below ground surface.

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 the site's 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 retained by PES to observe the removal of the USTs and provide recommendations for corrective action. PES reportedly removed a total of six USTs from the site with one UST abandoned in place due to its location beneath the onsite office building. Three of the USTs were reported to have been suspect for leakage. Approximately 1,200 cubic yards of petroleum-contaminated soil was removed along with the USTs.



Following removal of the USTs and associated contaminated soils, additional site investigation was conducted to evaluate the potential for residual soil and/or groundwater impact. In January 1990, Delta Environmental Consultants (Delta) supervised drilling activities performed by Budinger & Associates. Six 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 the 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 the 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 the contamination from migrating offsite. 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 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 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). Laboratory analytical identified detectable concentrations of gasoline range petroleum hydrocarbons, ethyl benzene, toluene, xylene, and lead in soil boring 2-A and toluene and xylene were detected in soil borings 2-C and 2-D; all analytes were identified below MTCA Method A cleanup levels for soil. The 2005 historical soil boring results and locations are presented as Appendix C.



In 2017 Fulcrum was retained to conduct semi-annual groundwater sampling at the site. Monitoring wells MW-04 and MW-06 were identified to be in poor condition (poor surface seals and slow recharge). They were decommissioned and replaced by new wells under Fulcrum's oversight on September 30, 2020. Concurrent with the well replacement, Fulcrum directed the installation of two new monitoring wells to better characterize site conditions.



Monitoring well MW-02 was installed upgradient north of the gas station building where the former Leaking Underground Storage Tanks (LUSTs) were removed and monitoring well MW-07 was installed at the northwest corner of the property to act as a downgradient sentinel well. Fulcrum continues to conduct groundwater monitoring on a semi-annual basis.

In May of 2022, Ecology, observing the trend of increasing concentrations, requested additional investigation to be included in the September 2022 groundwater monitoring report. Fulcrum consulted with the project laboratory who indicated that current increasing concentrations were inconsistent with a 1980 era fuel loss and likely associated with a new release. Fulcrum spoke with the property owner about the increasing concentrations and laboratory findings. The property owner indicated that they were unaware of any spill, leak, or overfill events that would contribute to the change in conditions and proposed waiting until results of March 2023 sampling to determine a course of action.

The March 2023 sampling event showed a modest reduction in concentration and areal extent relative to the September 2022 testing event. Fulcrum discussed the results with the property owner who again confirmed that they had no indications of a leak or knowledge of any spill, overfill, or loss and recommended waiting for the results of the September 2023 event to determine a course of action.

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 25-30 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 September 19, 2023, Fulcrum collected groundwater samples from each of the seven onsite monitoring wells. One field duplicate sample (WOS-091923-MW08) was collected for a total of eight 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.

The groundwater flow direction, as determined by this sampling and monitoring event, is northwest with a hydraulic gradient of 0.014 (2.75-ft change in groundwater elevation over 190-feet), which is consistent with site geomorphology. A groundwater elevation map is presented as Figure 4. Sampling activities were completed using a peristaltic pump, submersible pump, and field water quality instruments. In each location the monitoring well was purged for a minimum of three 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 a representative sample 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 28, 2023

Location	Sample Number	Ground-water Elevation	Results ($\mu\text{g/L}$)						
			NWTPH-Dx		Gasoline	Benzene	Toluene	Ethyl-benzene	Xylene
			Diesel	Oil					
CW-01	WOS-091923-CW01	94.11	292	ND	ND	3.98	ND	ND	ND
CW-02	WOS-091923-CW02	93.94	719	ND	162	75.1	5.58	0.49	2.09
MW-02	WOS-091923-MW02	93.56	1,070	ND	420	0.481	ND	ND	ND
MW-03	WOS-091923-MW03	93.33	521	ND	53.0	15.3	ND	ND	ND
	MW-08 Duplicate		480	ND	37.1	10.1	ND	ND	ND
MW-04	WOS-091923-MW04	94.05	1,710	ND	1,190	177	2.50	15.0	3.25
MW-06	WOS-091923-MW06	91.25	356	ND	221	ND	ND	ND	ND
MW-07	WOS-091923-MW07	90.83	34,100	ND	ND	ND	ND	ND	ND
Applicable Cleanup Levels ($\mu\text{g/L}$)			500		800*	5	1,000	700	1,000

Bold – MTCA Method A exceedance ND – Nondetect $\mu\text{g/L}$ – Micrograms per liter ($\mu\text{g/L}$), equivalent to parts per billion (ppb)



Analytical results document concentrations of select analytes in excess of regulatory thresholds in all monitoring wells except CW-01 and MW-06. Diesel was identified at concentrations above regulatory thresholds in five of the seven wells. Gasoline was identified at concentrations above the regulatory threshold in one of the seven wells, and benzene was identified at concentrations above the regulatory threshold in three of the seven monitoring wells.

Samples were shown as received by the laboratory at an acceptable temperature. Based on laboratory reports, 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's September 2023 semi-annual groundwater monitoring event for seven onsite groundwater monitoring wells documented presence of petroleum hydrocarbon concentrations in excess of regulatory thresholds in five of the seven monitoring wells. In addition, benzene was identified in concentrations above regulatory thresholds in three of the seven monitoring wells.

6.0 TRENDING EVALUATION

Review of monitoring data shows a trend of increased contaminant concentrations and areal extent that is inconsistent with ongoing degradation of a 1989 spill. Fulcrum specifically notes the significant increase in diesel concentrations in MW-07 for the current monitoring event. Review of data generated during Fulcrum's monitoring from December of 2017 to current shows an increasing trend in both concentration and areal extent. Results of this monitoring event and trending data indicate that a new release(s) of petroleum product has or is occurring.

6.1 Concentration Trending

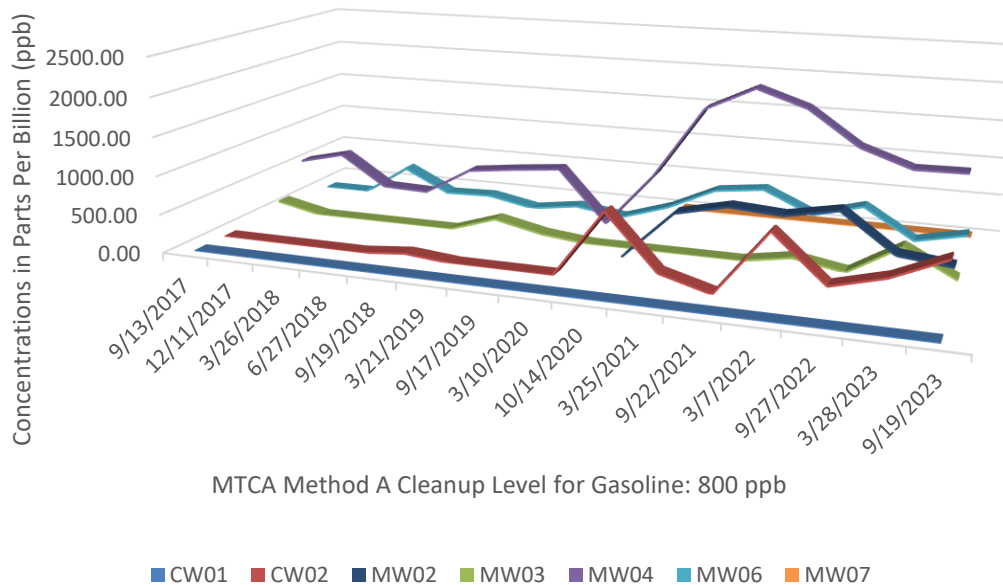
In review of concentration trending Fulcrum reviewed gasoline-range hydrocarbons, benzene, and diesel-range hydrocarbons. Fulcrum notes a variety of site conditions with potential to result in short term influence on contaminant concentrations including periodically dry wells, replacement of select monitoring wells, and placement of new monitoring wells. It is Fulcrum's opinion that review of contaminant concentrations over a longer period provides a strong understanding of site conditions.

Graph 1 as follows presents gasoline-range hydrocarbons concentrations in seven site monitoring wells over 15 consecutive events of monitoring.



Results show a relatively stable range of concentrations in MW-04 until the October 2020 sampling event where concentrations increased significantly. During the same sampling event elevated concentrations were also identified in CW-02, a location that had been previously clean. A second notable increase in concentrations is noted in MW-02 and MW-04 in September 2021, and a third notable increase in concentrations is noted in CW-02 in March of 2022. In March 2023 gasoline concentrations in CW-02 and MW-03 are shown to increase. In September 2023 gasoline concentrations in CW-02, MW-04 and MW-06 are shown to increase, while all other wells are shown to decrease or remain non-detect.

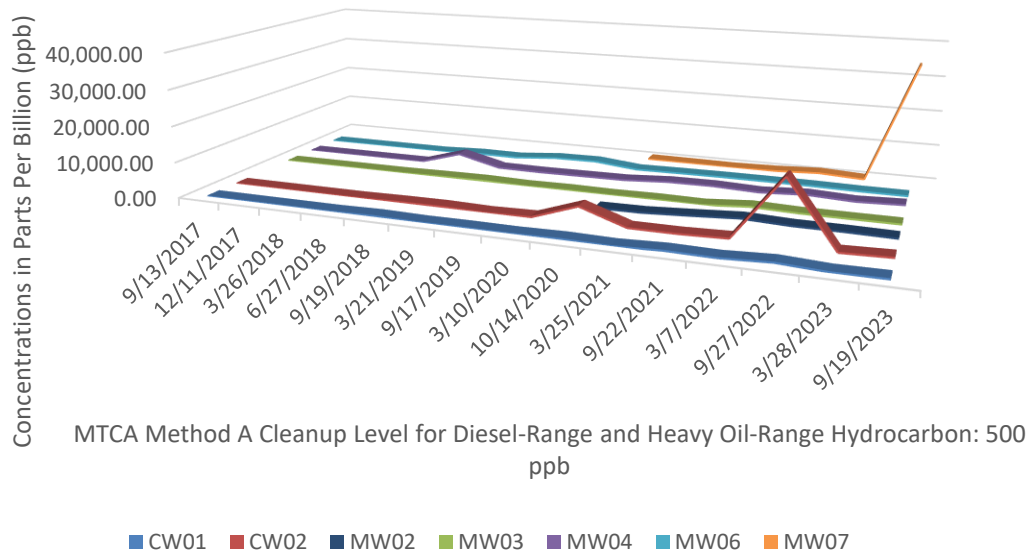
Graph 1: September 2017-2023 Gasoline (NWTPH-Gx) Concentrations



Graph 2 below presents combined diesel-range and heavy oil-range hydrocarbon concentrations in the seven monitored wells. All wells were reported as non-detect for combined diesel-range and heavy oil-range hydrocarbon concentrations until September 2018 where a notable increase is observed in MW-04. A second notable increase in concentrations is observed in CW-02 in March 2020 and again in September 2022. In September 2023 concentrations are shown to increase drastically in MW-07 while all other wells are shown to decrease.

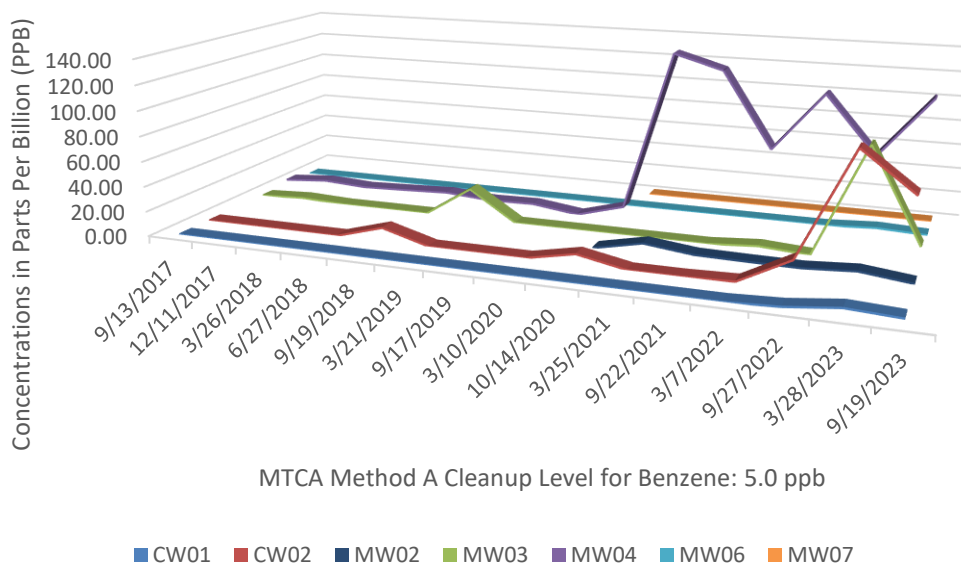


Graph 2: September 2017-2023 Combined Diesel and Oil-Range Concentrations



Graph 3 below presents identified benzene concentrations in the seven monitored wells. All wells were reported as non-detect or below cleanup for benzene concentrations with the exception of MW-04 through September 2018. Notable concentration increases occur in CW-02 in September 2018, October 2020, and again in September 2022. A notable increase in concentrations is noted in MW-03 in March 2019. Notable increases in concentrations in MW-04 are observed in March 2021, September 2022, and September 2023. Notable increases in CW-02 and CW-03 are observed in March 2023.

Graph 3: September 2023 Benzene Concentrations





6.2 Area Extent Trending

Review of historical monitoring data shows an initial zone of contaminant concentration in the 1990 sampling data noting that the results are likely a generalization and that well placement was likely insufficient to fully characterize the exact extent of contaminant presence. In September of 2020 Fulcrum replaced two historical monitoring wells and added two additional monitoring wells to assist in better characterizing the groundwater contaminant plume at the site. Monitoring results from 2017 to 2023 show a trend of expanding contaminant presence for gasoline-range hydrocarbons, diesel-range hydrocarbons, and benzene. See Figures 5, 6, and 7 for a presentation of contaminant plume changes over time.

6.3 Laboratory Evaluation

Following the September 2022 sampling event, to further assist in evaluation of the trending data, Fulcrum contacted Fremont Analytical of Seattle, Washington to request review of the data. Fremont Analytical is a Washington State accredited laboratory (79636). Fremont has been providing analytical services for the project since the initial monitoring event in December 2017. Fremont provided a general review of chromatographic data noting that results would only be generalized in nature and not a substitute for site specific forensic chemistry. Review of chromatographic data was limited to historical data collected from monitoring well CW-02.

Following review of the historical chromatographic data, Fremont's laboratory director reported that from 2018-2019 CW-02 reported low to non-detect concentrations of gasoline. From 2020-2021 an apparent increase in gasoline-range materials with a chemical footprint indicative of old, weathered gasoline was reported. In September of 2022, an apparent new material with a unique chemical footprint likely related to diesel was identified. Fremont reported that the weathered nature of the new material indicates that a new release likely occurred after the March 2022 sampling event.

6.4 Trending Findings

Trending data shows increases in both concentrations and areal extent of contaminant presence at the site up to the September 2023 sampling event. Results indicate that a new source(s) of contaminant has likely been introduced at the site some time prior to the September 2022 sampling event. Potential sources include but are not limited to spill/overflow events associated with the current USTs, leaks from the USTs or associated piping or dispensers, spills associated with normal fuel station operations, and/or run off from carwash activities.



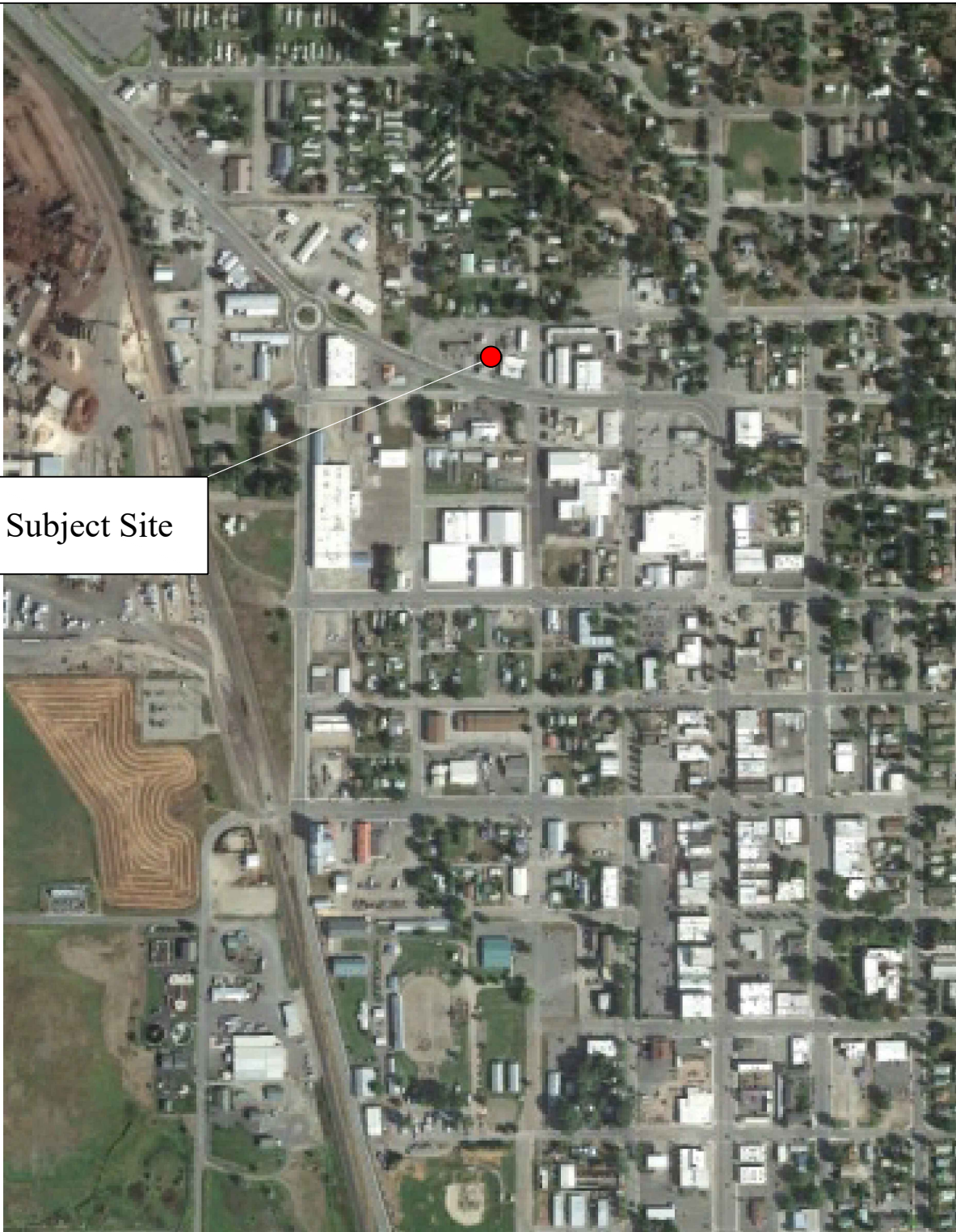
7.0 FINDINGS AND RECOMMENDATIONS

Current monitoring data shows that concentrations and areal extent have increased in September 2023. Review of trending data indicates the likely introduction of a new source(s) of contaminant presence in CW-02 and MW-07. Fulcrum recommends additional investigation to identify the source(s) of increasing contaminant presence.

Following identification and correction of the source/cause of increasing trends, Fulcrum recommends re-evaluation of the site monitoring plan to ensure that it is positioned and designed to effectively characterize environmental conditions of site groundwater. Remedial action may be required to protect off-site resources.



FIGURES

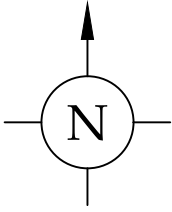


Subject Site

Figure 1: General Site Location Map

LEGEND

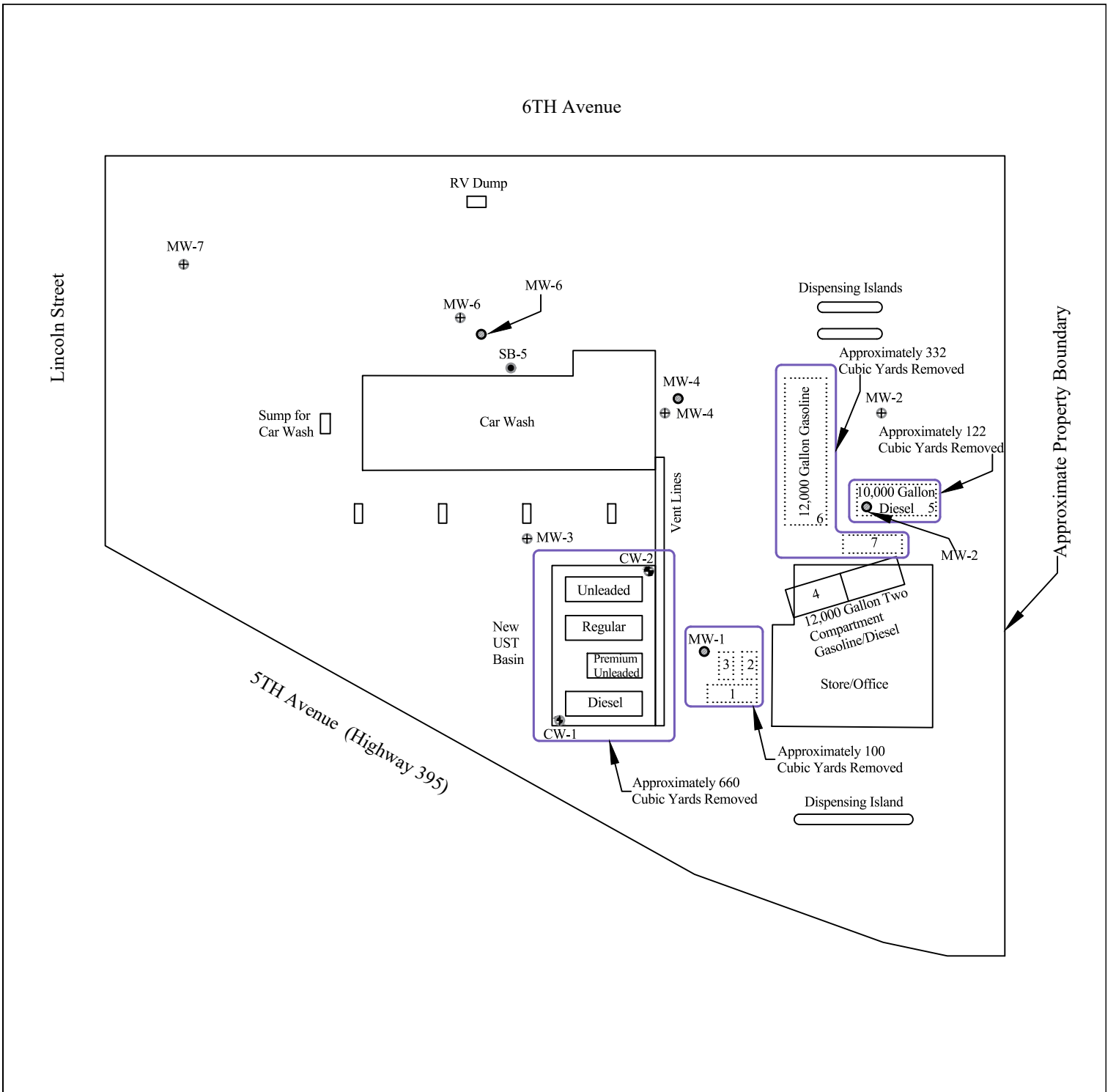
Map Location



Second Semi-annual Groundwater Sampling Event March 2023
 Whitty's Chevron
 370 West 5th Avenue
 Colville, Washington

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MAP BY: Abby Whitmore	PROJECT NUMBER: 233710.00
DATE: October 09, 2023	REVIEWED BY: T. Trent



LEGEND

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

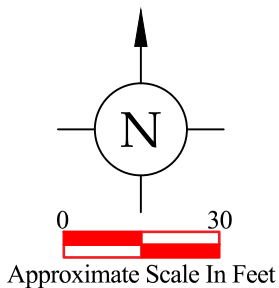


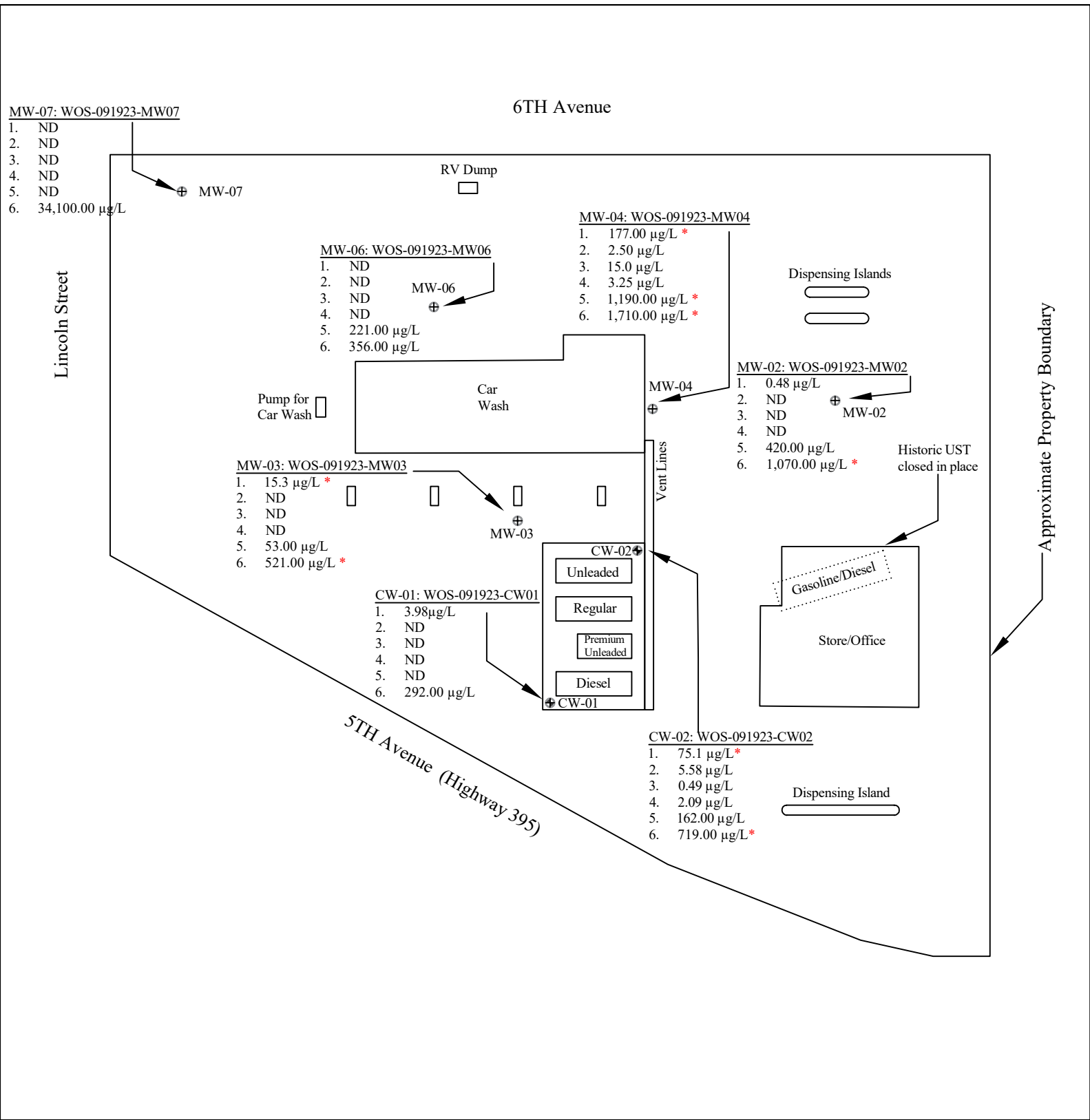
Figure 2: Historical USTs, Soil Borings, and Monitoring Wells Site Diagram Map

Second Semi-annual Groundwater Sampling Event March 2023
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LEGEND

Parameters (µg/L)

1. Benzene
2. Toluene
3. Ethyl-benzene
4. Xylenes
5. NWT PH-GX
6. Combined Diesel-range and Heavy Oil-range Hydrocarbons

⊕ Monitoring Well

⊕ Compliance Well

* Analyte Concentration Exceeds MTC Method A Cleanup Level

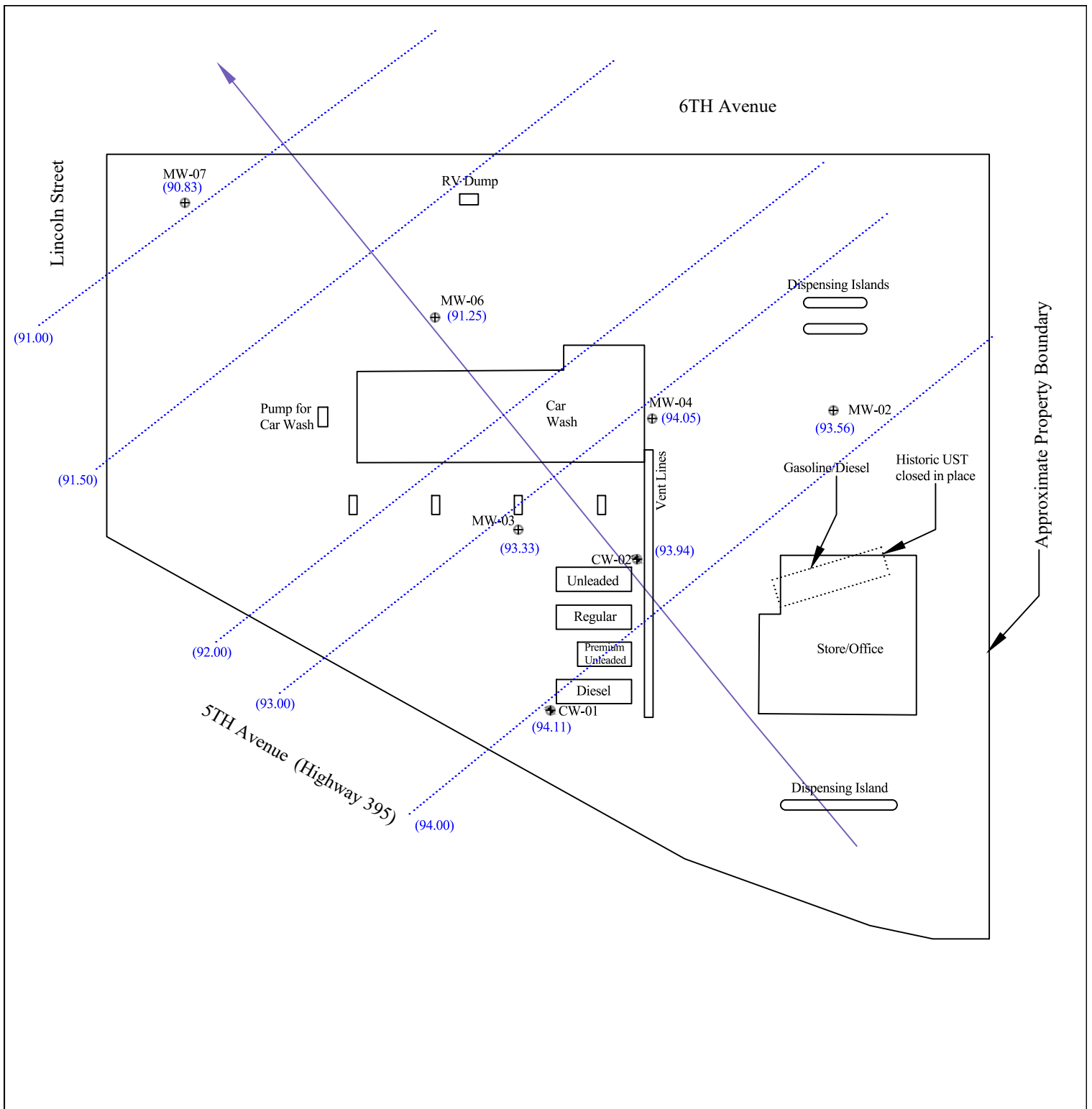
Approximate Scale In Feet

Figure 3: Site Diagram Map






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MAP BY: Abby Whitmore	PROJECT NUMBER: 233710.00
DATE: 04/10/2023	REVIEWED BY: T. T. T.



LEGEND

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

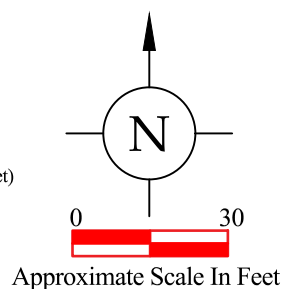


Figure 4: Groundwater Elevation Map

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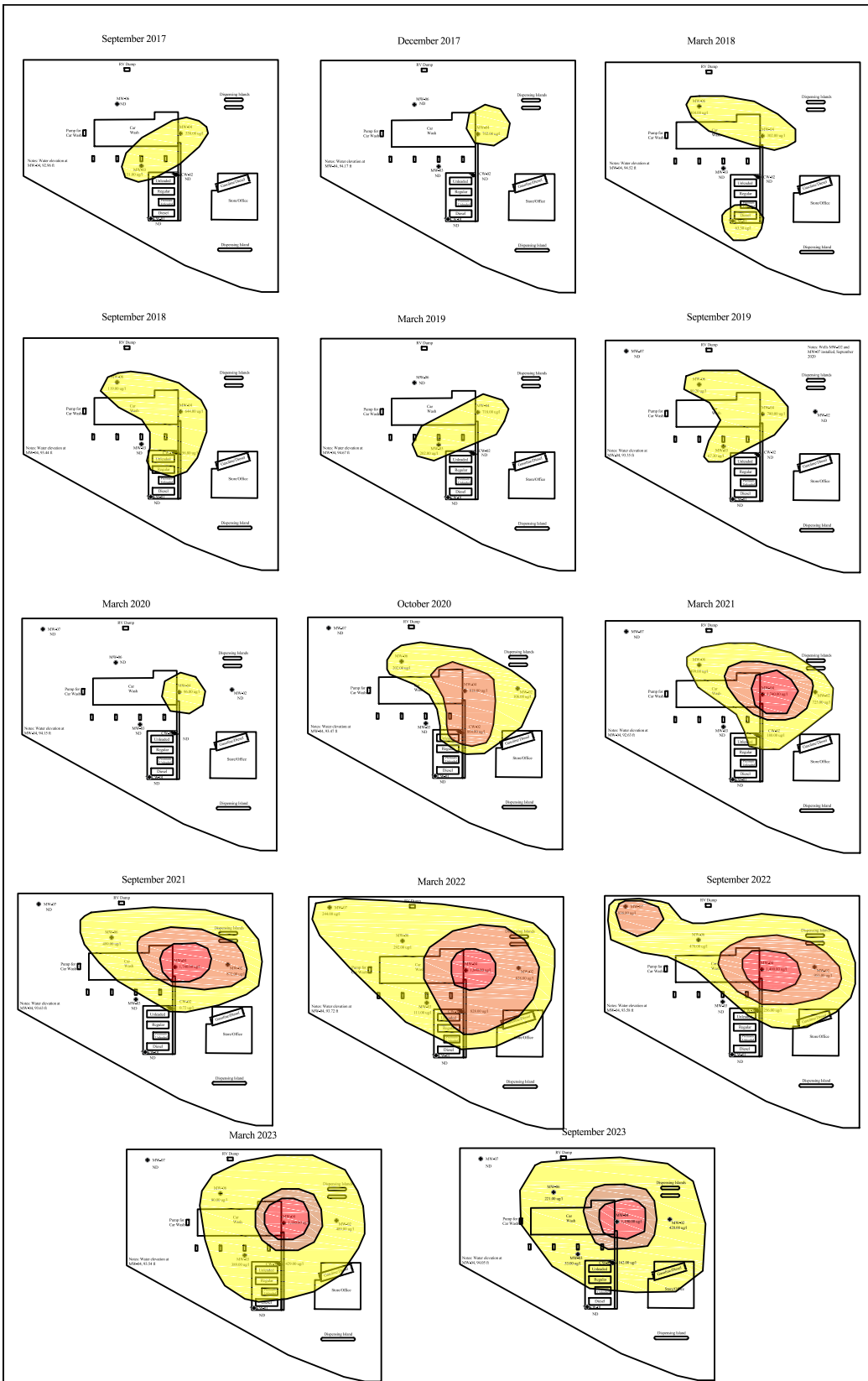
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MAP BY: Abby Whitmore




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REVIEWED BY: T. Trent



LEGEND

-  Concentrations above 1000.00 ppb
-  Concentrations 800.00 - 1000.00 ppb
-  Detectable concentrations below the regulatory threshold of 800 ppb

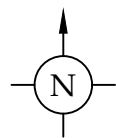
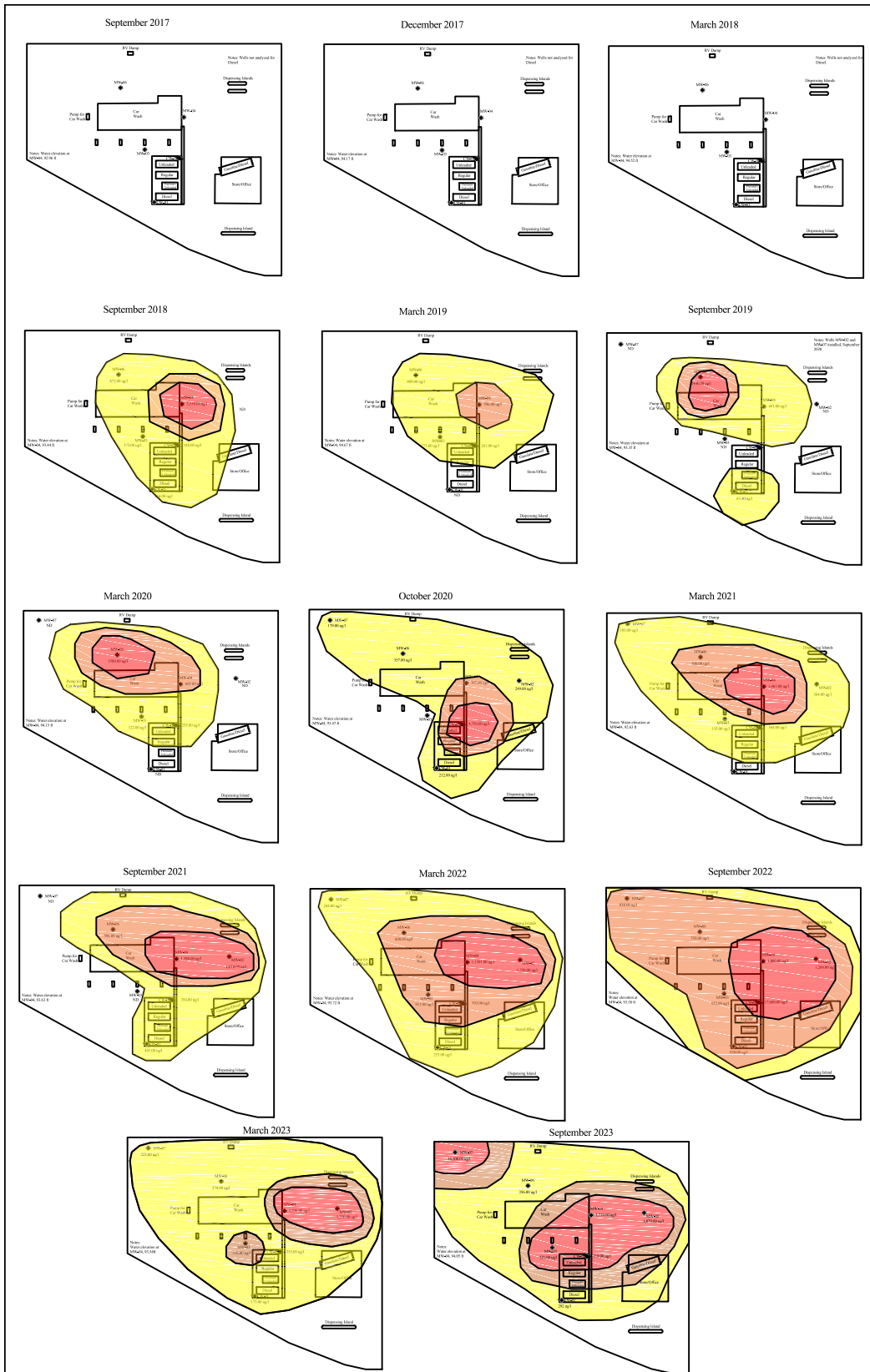


Figure 5: Gasoline Concentrations - Areal Extent Over Time

Whitty's Chevron
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- Concentrations above 1000.00 ppb
- Concentrations 500.00 - 1000.00 ppb
- Detectable concentrations below the regulatory threshold of 500 ppb

LEGEND

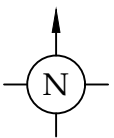
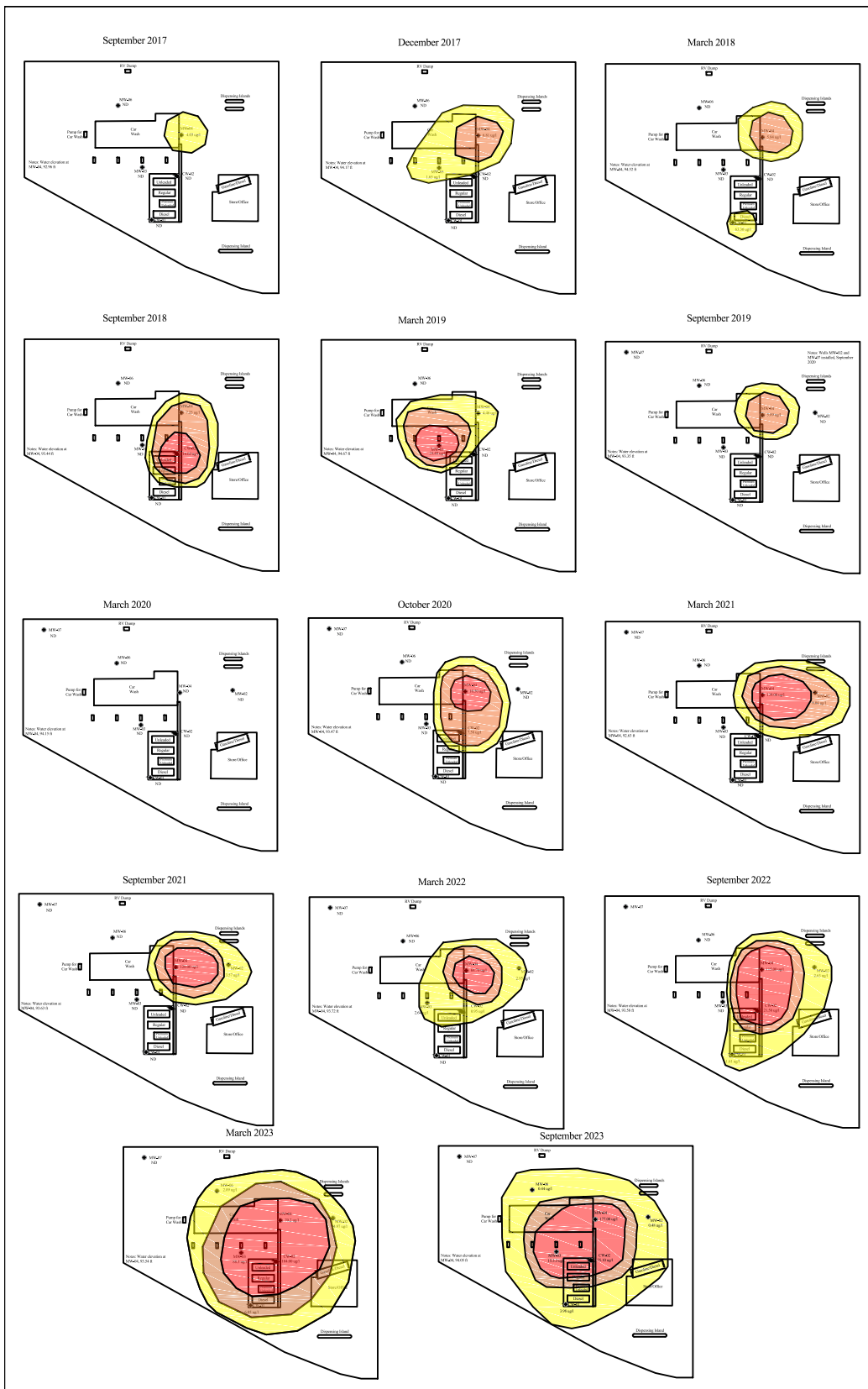


Figure 6: Combined Diesel-Range and Heavy Oil-Range Hydrocarbons - Areal Extent Over Time

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SPOKANE, WASHINGTON 99201
(509) 459-9220 www.efulcrum.net

MAP BY: Abby Whitmore	PROJECT NUMBER: 233710.00
DATE: October 09, 2023	REVIEWED BY: T. Trent



LEGEND

- Concentrations above 10.00 ppb
- Concentrations 5.00 - 10.00 ppb
- Detectable concentrations below the regulatory threshold of 5.0 ppb

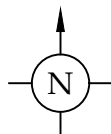


Figure 7: Benzene Concentrations - Areal Extent Over Time

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: Abby Whitmore

PROJECT NUMBER: 233710.00

DATE: October 09, 2023

REVIEWED BY: T. Trent



APPENDIX A

Professional Certifications




State of Washington
 DEPARTMENT OF LICENSING
 BUSINESS AND PROFESSIONS DIVISION
 GEOLOGIST PROGRAM
 PO Box 9012
 Olympia, WA 98507-9012

TRAVIS L TRENT
 1127 W 8TH AVE
 SPOKANE WA 99204-3107

Handwritten mark


Handwritten mark



STATE OF WASHINGTON

DEPARTMENT OF LICENSING - BUSINESS AND PROFESSIONS DIVISION

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




**GEOLOGIST
 HYDROGEOLOGIST**

TRAVIS L TRENT

364
License Number

01/08/2002
Issue Date

06/06/2024
Expiration Date



 Marcus J Glasper, Director



STATE OF WASHINGTON

DEPARTMENT OF LICENSING – BUSINESS AND PROFESSIONS DIVISION

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



GEOLOGIST IN TRAINING

ETHAN JEFFREY DUCKEN

510 E 33rd Ave

Spokane WA 99203-2611

22010959

License Number

05/04/2022

Issue Date

//

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 hydrocarbons (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 hydrocarbons (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	5.81	93.69	---	ND	ND	ND	ND	ND	ND	ND	ND
	9/22/2021	99.50	6.03	93.47	---	441.00	ND	441.00	ND	ND	ND	ND	ND
	3/7/2022	99.50	4.65	94.85	---	253.00	ND	253.00	ND	ND	ND	ND	ND
	9/27/2022	99.50	5.97	93.53	---	830.00	ND	830.00	ND	1.61	ND	ND	ND
	3/28/2023	99.50	4.85	94.65	---	173.00	ND	173.00	ND	6.05	ND	ND	ND
	9/19/2023	99.50	5.39	94.11	---	292.00	ND	292.00	ND	3.98	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
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	4,570.00	818.00	7.45	1.89	8.26	42.20
3/25/2021		99.01	5.41	93.60	---	364.00	ND	364.00	180.00	ND	ND	0.49	0.94
9/22/2021		99.01	5.72	93.29	---	354.00	ND	354.00	0.72	ND	ND	ND	ND
3/7/2022		99.01	4.91	94.10	---	703.00	ND	703.00	828.00	0.95	ND	ND	ND
9/27/2022		99.01	5.68	93.33	---	17,600	ND	17,600	256.00	21.50	5.81	ND	ND
3/28/2023		99.01	4.53	94.48	---	355.00	ND	355.00	429.00	104.00	20.50	0.46	10.32
9/19/2023		99.01	5.08	93.94	---	719.00	ND	719.00	162.00	75.10	5.58	0.49	0.91

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 hydrocarbons (µg/L)	NWTPH-Gx (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)
MW-1	1/10/1990	100.00	5.59	94.41	ND	---	---	---	---	ND	ND	ND	ND
<i>Decommissioned</i>													
MW-2	1/10/1990	98.92	4.51	94.41	2,460	---	---	---	---	1,643.0	409.00	ND	2955.00
<i>Decommissioned</i>													
<i>New Well Installed</i>	10/14/2020	98.92	5.83	93.09	---	249.00	ND	249.00	106.00	ND	ND	ND	ND
MW-02	3/25/2021	98.92			---	534.00	3,300.00	3,834.00	725.00	8.04	ND	27.70	1.74
	9/22/2021	98.92			---	1,010.00	ND	1,010.00	872.00	3.57	ND	4.73	ND
	3/25/2022	98.92			---	1,750.00	ND	1,750.00	828.00	2.95	ND	4.10	ND
	9/27/2022	98.92			---	1,260.00	ND	1,260.00	953.00	2.63	ND	1.49	ND
	3/28/2023	98.92	4.59	94.33	---	1,250.00	ND	1,250.00	489.00	4.97	ND	1.58	ND
	9/19/2023	98.92	5.36	93.56	---	1,070.00	ND	1,070.00	420.00	0.48	ND	ND	ND
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
	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
	9/22/2021	98.56	5.58	92.28	---	159.00	ND	ND	ND	ND	ND	ND	ND
	3/7/2022	98.56	4.41	94.15	---	913.00	ND	913.00	111.00	2.64	ND	0.94	ND
	9/27/2022	98.56	5.56	92.91	---	552.00	ND	552.00	ND	ND	ND	ND	ND
	3/28/2023	98.56	5.32	93.24	---	518.00	ND	518.00	389.00	88.30	20.30	0.54	3.00
	9/19/2023	98.56	5.23	93.33	---	521.00	ND	521.00	53.00	15.30	0.52	ND	ND
MW-04	1/10/1990	98.27	4.06	94.21	---	---	---	---	---	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
<i>Lab Filtered New Well Installed</i>	3/10/2020	98.27	4.12	94.15	---	ND	602.00	602.00	80.10	ND	ND	2.61	ND
	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	5.64	92.63	---	497.00	964.00	1,461.00	1,740.00	139.00	3.84	56.20	12.02
	9/22/2021	98.27	4.64	93.63	---	1,580.00	ND	1,580.00	2,050.00	128.00	3.10	36.50	6.07
	3/7/2022	98.27	4.55	93.72	---	1,130.00	ND	1,130.00	1,840.00	68.70	2.48	33.00	5.93
	9/27/2022	98.27	4.69	93.58	---	1,800.00	ND	1,800.00	1,400.00	115.00	2.47	35.60	4.30
	3/28/2023	98.27	4.73	93.54	---	1,250.00	ND	1,250.00	1,180.00	70.20	ND	15.50	3.94
	9/19/2023	98.27	4.22	94.05	---	1,710.00	ND	1,710.00	1,190.00	117.00	2.50	15.00	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
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 hydrocarbons (µg/L)	NWTPH-Gx (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	
MW-06	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	1,440.00	1,440.00	90.20	ND	ND	ND	ND	
	3/10/2020	97.27	4.51	92.76	---	ND	1,580.00	1,580.00	ND	ND	ND	ND	ND	
	<i>Lab Filtered</i>	3/10/2020	97.27	4.51	92.76	---	ND	1,350.00	1,350.00	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	5.91	91.36	---	128.00	372.00	500.00	499	4.01	ND	1.70	1.33
	9/22/2021	97.27	6.10	91.17	---	597.00	ND	597.00	575	2.32	ND	0.75	ND	
	3/7/2022	97.27	5.48	91.79	---	600.00	ND	600.00	292	1.34	ND	ND	ND	
	9/27/2022	97.27	6.12	91.15	---	550.00	ND	550.00	470	2.69	ND	ND	ND	
	3/28/2023	97.27	5.65	91.62	---	374.00	ND	374.00	80	2.09	ND	ND	ND	
	9/19/2023	97.27	6.02	91.25	---	356.00	ND	356.00	221	0.44	ND	0.21	ND	
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	ND	
	3/25/2021	95.27	5.95	89.32	---	ND	105.00	105.00	ND	ND	ND	ND	ND	
	9/22/2021	95.27	5.47	89.80	---	ND	112.00	ND	ND	ND	ND	ND	ND	
	3/7/2022	95.27	4.45	93.86	---	244.00	ND	244.00	ND	ND	ND	ND	ND	
	9/27/2022	95.27	5.81	89.46	---	838.00	ND	838.00	ND	ND	ND	ND	ND	
	3/28/2023	95.27	5.34	89.93	---	225.00	ND	225.00	ND	ND	ND	ND	ND	
	9/19/2023	95.27	4.44	90.83	---	34,100.00	ND	34,100.00	ND	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

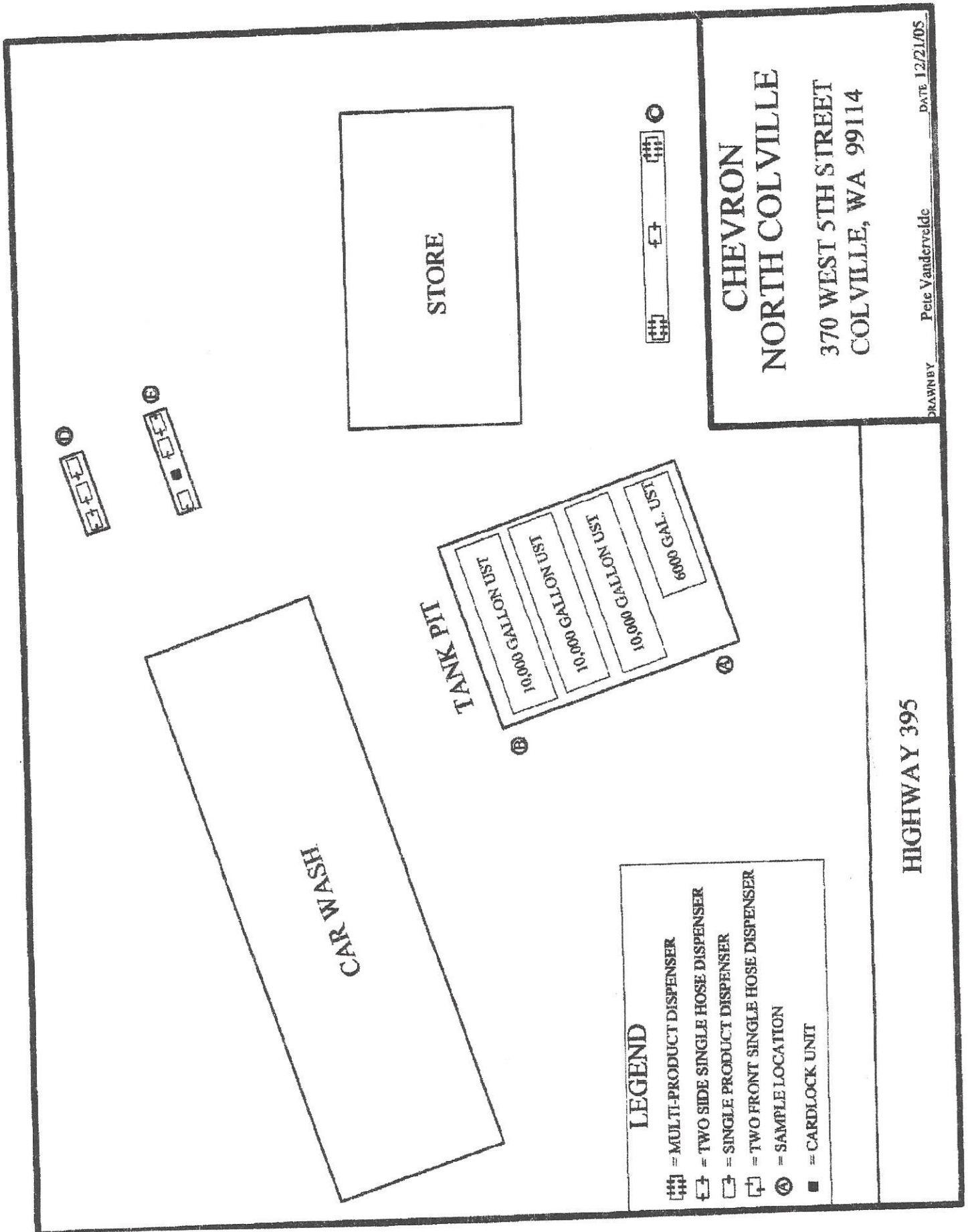


TABLE 1
SOIL SAMPLE RESULTS
CHEVRON
NORTH COLVILLE

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

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

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



SPECTRA Laboratories

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12/16/2005

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

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

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

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

SPECTRA LABORATORIES

2221 ROSS WAY, TACOMA, WA 98421
 (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



SPECTRA Laboratories

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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

SPECTRA LABORATORIES



Steve Hibbs, Laboratory Manager



SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

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

SPECTRA LABORATORIES



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



3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Fulcrum Environmental
Scott Groat
406 N 2nd Street
Yakima, WA 98901

RE: Whitten Oil
Work Order Number: 2309302

October 03, 2023

Attention Scott Groat:

Fremont Analytical, Inc. received 8 sample(s) on 9/21/2023 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

CC:
Ethan Ducken

*DoD-ELAP Accreditation #79636 by PJLA, ISO/IEC 17025:2017 and QSM 5.3 for Environmental Testing
ORELAP Certification: WA 100009 (NELAP Recognized) for Environmental Testing
Washington State Department of Ecology Accredited for Environmental Testing, Lab ID C910*

Original

CLIENT: Fulcrum Environmental
Project: Whitten Oil
Work Order: 2309302

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2309302-001	WOS-091923-CW01	09/19/2023 11:00 AM	09/21/2023 10:16 AM
2309302-002	WOS-091923-CW02	09/19/2023 9:00 AM	09/21/2023 10:16 AM
2309302-003	WOS-091923-MW02	09/19/2023 6:00 PM	09/21/2023 10:16 AM
2309302-004	WOS-091923-MW03	09/19/2023 3:00 PM	09/21/2023 10:16 AM
2309302-005	WOS-091923-MW04	09/19/2023 9:00 AM	09/21/2023 10:16 AM
2309302-006	WOS-091923-MW06	09/19/2023 11:00 AM	09/21/2023 10:16 AM
2309302-007	WOS-091923-MW07	09/19/2023 3:00 PM	09/21/2023 10:16 AM
2309302-008	WOS-091923-MW08	09/19/2023 3:00 PM	09/21/2023 10:16 AM

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

CLIENT: Fulcrum Environmental

Project: Whitten Oil

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:

- * - Associated LCS is outside of 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 Method Detection 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



Analytical Report

Work Order: 2309302
Date Reported: 10/3/2023

Client: Fulcrum Environmental
Project: Whitten Oil
Lab ID: 2309302-001
Client Sample ID: WOS-091923-CW01

Collection Date: 9/19/2023 11:00:00 AM
Matrix: Groundwater

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>			Batch ID: 41594		Analyst: AP		
Diesel Range Organics	292	94.0	35.1		µg/L	1	09/27/23 18:45:07
Heavy Oil	ND	94.0	26.8		µg/L	1	09/27/23 18:45:07
Total Petroleum Hydrocarbons	292	188	61.9		µg/L	1	09/27/23 18:45:07
Surr: 2-Fluorobiphenyl	90.1	50 - 150			%Rec	1	09/27/23 18:45:07
Surr: o-Terphenyl	102	50 - 150			%Rec	1	09/27/23 18:45:07

NOTES:

Chromatographic pattern indicates an unresolved complex mixture, which may be weathered and/or organic material

<u>Gasoline by NWTPH-Gx</u>			Batch ID: 41624		Analyst: CC		
Gasoline Range Organics	ND	50.0	21.6		µg/L	1	09/30/23 9:21:26
Surr: Toluene-d8	94.5	65 - 135			%Rec	1	09/30/23 9:21:26
Surr: 4-Bromofluorobenzene	99.9	65 - 135			%Rec	1	09/30/23 9:21:26

<u>Volatile Organic Compounds by EPA Method 8260D</u>			Batch ID: 41624		Analyst: CC		
Benzene	3.98	0.440	0.179		µg/L	1	09/30/23 9:21:26
Toluene	ND	1.00	0.346		µg/L	1	09/30/23 9:21:26
Ethylbenzene	ND	0.400	0.143		µg/L	1	09/30/23 9:21:26
m,p-Xylene	ND	1.00	0.375		µg/L	1	09/30/23 9:21:26
o-Xylene	ND	0.500	0.144		µg/L	1	09/30/23 9:21:26
Surr: Dibromofluoromethane	108	79.4 - 125			%Rec	1	09/30/23 9:21:26
Surr: Toluene-d8	106	79 - 124			%Rec	1	09/30/23 9:21:26
Surr: 1-Bromo-4-fluorobenzene	98.2	85.5 - 112			%Rec	1	09/30/23 9:21:26



Analytical Report

Work Order: 2309302
Date Reported: 10/3/2023

Client: Fulcrum Environmental
Project: Whitten Oil
Lab ID: 2309302-002
Client Sample ID: WOS-091923-CW02

Collection Date: 9/19/2023 9:00:00 AM
Matrix: Groundwater

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 41594		Analyst: AP	
Diesel Range Organics	719	94.3	35.2		µg/L	1	09/27/23 18:56:00
Heavy Oil	ND	94.3	26.9		µg/L	1	09/27/23 18:56:00
Total Petroleum Hydrocarbons	719	189	62.1		µg/L	1	09/27/23 18:56:00
Surr: 2-Fluorobiphenyl	94.3	50 - 150			%Rec	1	09/27/23 18:56:00
Surr: o-Terphenyl	97.8	50 - 150			%Rec	1	09/27/23 18:56:00

NOTES:
Chromatographic pattern indicates an unresolved complex mixture, which may be weathered and/or organic material

<u>Gasoline by NWTPH-Gx</u>				Batch ID: 41624		Analyst: CC	
Gasoline Range Organics	162	50.0	21.6		µg/L	1	09/30/23 9:51:32
Surr: Toluene-d8	92.5	65 - 135			%Rec	1	09/30/23 9:51:32
Surr: 4-Bromofluorobenzene	103	65 - 135			%Rec	1	09/30/23 9:51:32

<u>Volatile Organic Compounds by EPA Method 8260D</u>				Batch ID: 41624		Analyst: CC	
Benzene	75.1	4.40	1.79	D	µg/L	10	10/02/23 13:46:16
Toluene	5.58	1.00	0.346		µg/L	1	09/30/23 9:51:32
Ethylbenzene	0.490	0.400	0.143		µg/L	1	09/30/23 9:51:32
m,p-Xylene	0.907	1.00	0.375	J	µg/L	1	09/30/23 9:51:32
o-Xylene	1.18	0.500	0.144		µg/L	1	09/30/23 9:51:32
Surr: Dibromofluoromethane	107	79.4 - 125			%Rec	1	09/30/23 9:51:32
Surr: Toluene-d8	104	79 - 124			%Rec	1	09/30/23 9:51:32
Surr: 1-Bromo-4-fluorobenzene	102	85.5 - 112			%Rec	1	09/30/23 9:51:32



Analytical Report

Work Order: 2309302
Date Reported: 10/3/2023

Client: Fulcrum Environmental
Project: Whitten Oil
Lab ID: 2309302-003
Client Sample ID: WOS-091923-MW02

Collection Date: 9/19/2023 6:00:00 PM
Matrix: Groundwater

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 41594		Analyst: AP	
Diesel Range Organics	1,070	95.1	35.5		µg/L	1	09/27/23 19:06:53
Heavy Oil	ND	95.1	27.1		µg/L	1	09/27/23 19:06:53
Total Petroleum Hydrocarbons	1,070	190	62.6		µg/L	1	09/27/23 19:06:53
Surr: 2-Fluorobiphenyl	104	50 - 150			%Rec	1	09/27/23 19:06:53
Surr: o-Terphenyl	109	50 - 150			%Rec	1	09/27/23 19:06:53

NOTES:

Chromatographic pattern indicates an unresolved complex mixture, which may be weathered and/or organic material
Detection is biased high by overlap with gasoline-range material

<u>Gasoline by NWTPH-Gx</u>				Batch ID: 41624		Analyst: CC	
Gasoline Range Organics	420	50.0	21.6		µg/L	1	09/30/23 10:21:47
Surr: Toluene-d8	93.3	65 - 135			%Rec	1	09/30/23 10:21:47
Surr: 4-Bromofluorobenzene	104	65 - 135			%Rec	1	09/30/23 10:21:47

<u>Volatile Organic Compounds by EPA Method 8260D</u>				Batch ID: 41624		Analyst: CC	
Benzene	0.481	0.440	0.179		µg/L	1	09/30/23 10:21:47
Toluene	ND	1.00	0.346		µg/L	1	09/30/23 10:21:47
Ethylbenzene	ND	0.400	0.143		µg/L	1	09/30/23 10:21:47
m,p-Xylene	ND	1.00	0.375		µg/L	1	09/30/23 10:21:47
o-Xylene	ND	0.500	0.144		µg/L	1	09/30/23 10:21:47
Surr: Dibromofluoromethane	106	79.4 - 125			%Rec	1	09/30/23 10:21:47
Surr: Toluene-d8	106	79 - 124			%Rec	1	09/30/23 10:21:47
Surr: 1-Bromo-4-fluorobenzene	102	85.5 - 112			%Rec	1	09/30/23 10:21:47



Analytical Report

Work Order: 2309302
Date Reported: 10/3/2023

Client: Fulcrum Environmental
Project: Whitten Oil
Lab ID: 2309302-004
Client Sample ID: WOS-091923-MW03

Collection Date: 9/19/2023 3:00:00 PM
Matrix: Groundwater

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 41594		Analyst: AP	
Diesel Range Organics	521	95.1	35.5		µg/L	1	09/27/23 19:17:54
Heavy Oil	ND	95.1	27.1		µg/L	1	09/27/23 19:17:54
Total Petroleum Hydrocarbons	521	190	62.6		µg/L	1	09/27/23 19:17:54
Surr: 2-Fluorobiphenyl	94.2	50 - 150			%Rec	1	09/27/23 19:17:54
Surr: o-Terphenyl	100	50 - 150			%Rec	1	09/27/23 19:17:54

NOTES:

Chromatographic pattern indicates an unresolved complex mixture, which may be weathered and/or organic material

<u>Gasoline by NWTPH-Gx</u>				Batch ID: 41624		Analyst: CC	
Gasoline Range Organics	53.0	50.0	21.6		µg/L	1	09/30/23 11:22:04
Surr: Toluene-d8	94.5	65 - 135			%Rec	1	09/30/23 11:22:04
Surr: 4-Bromofluorobenzene	101	65 - 135			%Rec	1	09/30/23 11:22:04

NOTES:

Detection is due to non-petroleum compounds

<u>Volatile Organic Compounds by EPA Method 8260D</u>				Batch ID: 41624		Analyst: CC	
Benzene	15.3	0.440	0.179		µg/L	1	09/30/23 11:22:04
Toluene	0.524	1.00	0.346	J	µg/L	1	09/30/23 11:22:04
Ethylbenzene	ND	0.400	0.143		µg/L	1	09/30/23 11:22:04
m,p-Xylene	ND	1.00	0.375		µg/L	1	09/30/23 11:22:04
o-Xylene	ND	0.500	0.144		µg/L	1	09/30/23 11:22:04
Surr: Dibromofluoromethane	107	79.4 - 125			%Rec	1	09/30/23 11:22:04
Surr: Toluene-d8	105	79 - 124			%Rec	1	09/30/23 11:22:04
Surr: 1-Bromo-4-fluorobenzene	99.4	85.5 - 112			%Rec	1	09/30/23 11:22:04



Analytical Report

Work Order: 2309302
Date Reported: 10/3/2023

Client: Fulcrum Environmental
Project: Whitten Oil
Lab ID: 2309302-005
Client Sample ID: WOS-091923-MW04

Collection Date: 9/19/2023 9:00:00 AM
Matrix: Groundwater

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>			Batch ID: 41594		Analyst: AP		
Diesel Range Organics	1,710	95.2	35.6		µg/L	1	09/27/23 19:28:46
Heavy Oil	ND	95.2	27.2		µg/L	1	09/27/23 19:28:46
Total Petroleum Hydrocarbons	1,710	190	62.7		µg/L	1	09/27/23 19:28:46
Surr: 2-Fluorobiphenyl	109	50 - 150			%Rec	1	09/27/23 19:28:46
Surr: o-Terphenyl	116	50 - 150			%Rec	1	09/27/23 19:28:46

NOTES:

Chromatographic pattern indicates an unresolved complex mixture, which may be weathered and/or organic material
Detection is biased high by overlap with gasoline-range material

<u>Gasoline by NWTPH-Gx</u>			Batch ID: 41624		Analyst: CC		
Gasoline Range Organics	1,190	500	216	D	µg/L	10	10/02/23 14:16:30
Surr: Toluene-d8	86.8	65 - 135		D	%Rec	10	10/02/23 14:16:30
Surr: 4-Bromofluorobenzene	108	65 - 135		D	%Rec	10	10/02/23 14:16:30

<u>Volatile Organic Compounds by EPA Method 8260D</u>			Batch ID: 41624		Analyst: CC		
Benzene	177	4.40	1.79	D	µg/L	10	10/02/23 14:16:30
Toluene	2.50	1.00	0.346		µg/L	1	09/30/23 11:52:09
Ethylbenzene	15.0	0.400	0.143		µg/L	1	09/30/23 11:52:09
m,p-Xylene	3.25	1.00	0.375		µg/L	1	09/30/23 11:52:09
o-Xylene	ND	0.500	0.144		µg/L	1	09/30/23 11:52:09
Surr: Dibromofluoromethane	107	79.4 - 125			%Rec	1	09/30/23 11:52:09
Surr: Toluene-d8	104	79 - 124			%Rec	1	09/30/23 11:52:09
Surr: 1-Bromo-4-fluorobenzene	103	85.5 - 112			%Rec	1	09/30/23 11:52:09



Analytical Report

Work Order: 2309302
Date Reported: 10/3/2023

Client: Fulcrum Environmental
Project: Whitten Oil
Lab ID: 2309302-006
Client Sample ID: WOS-091923-MW06

Collection Date: 9/19/2023 11:00:00 AM
Matrix: Groundwater

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 41594		Analyst: AP	
Diesel Range Organics	356	94.6	35.3		µg/L	1	09/27/23 20:23:29
Heavy Oil	ND	94.6	27.0		µg/L	1	09/27/23 20:23:29
Total Petroleum Hydrocarbons	356	189	62.3		µg/L	1	09/27/23 20:23:29
Surr: 2-Fluorobiphenyl	93.9	50 - 150			%Rec	1	09/27/23 20:23:29
Surr: o-Terphenyl	99.9	50 - 150			%Rec	1	09/27/23 20:23:29

NOTES:

Chromatographic pattern indicates an unresolved complex mixture, which may be weathered and/or organic material
Detection is biased high by overlap with gasoline-range material

<u>Gasoline by NWTPH-Gx</u>				Batch ID: 41624		Analyst: CC	
Gasoline Range Organics	221	50.0	21.6		µg/L	1	09/30/23 12:22:17
Surr: Toluene-d8	93.8	65 - 135			%Rec	1	09/30/23 12:22:17
Surr: 4-Bromofluorobenzene	105	65 - 135			%Rec	1	09/30/23 12:22:17

<u>Volatile Organic Compounds by EPA Method 8260D</u>				Batch ID: 41624		Analyst: CC	
Benzene	0.440	0.440	0.179	J	µg/L	1	09/30/23 12:22:17
Toluene	ND	1.00	0.346		µg/L	1	09/30/23 12:22:17
Ethylbenzene	0.209	0.400	0.143	J	µg/L	1	09/30/23 12:22:17
m,p-Xylene	ND	1.00	0.375		µg/L	1	09/30/23 12:22:17
o-Xylene	ND	0.500	0.144		µg/L	1	09/30/23 12:22:17
Surr: Dibromofluoromethane	105	79.4 - 125			%Rec	1	09/30/23 12:22:17
Surr: Toluene-d8	106	79 - 124			%Rec	1	09/30/23 12:22:17
Surr: 1-Bromo-4-fluorobenzene	103	85.5 - 112			%Rec	1	09/30/23 12:22:17



Analytical Report

Work Order: 2309302
Date Reported: 10/3/2023

Client: Fulcrum Environmental
Project: Whitten Oil
Lab ID: 2309302-007
Client Sample ID: WOS-091923-MW07

Collection Date: 9/19/2023 3:00:00 PM
Matrix: Groundwater

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 41594		Analyst: AP	
Diesel Range Organics	34,100	939	351	D	µg/L	10	09/29/23 19:04:14
Heavy Oil	ND	939	268	D	µg/L	10	09/29/23 19:04:14
Total Petroleum Hydrocarbons	34,100	1,880	619	D	µg/L	10	09/29/23 19:04:14
Surr: 2-Fluorobiphenyl	139	50 - 150		D	%Rec	10	09/29/23 19:04:14
Surr: o-Terphenyl	108	50 - 150		D	%Rec	10	09/29/23 19:04:14

NOTES:

Chromatographic pattern indicates an unresolved complex mixture, which may be weathered and/or organic material
Detection is biased high by overlap with gasoline-range material

<u>Gasoline by NWTPH-Gx</u>				Batch ID: 41624		Analyst: CC	
Gasoline Range Organics	ND	1,000	432	D	µg/L	20	10/02/23 15:16:44
Surr: Toluene-d8	88.9	65 - 135		D	%Rec	20	10/02/23 15:16:44
Surr: 4-Bromofluorobenzene	104	65 - 135		D	%Rec	20	10/02/23 15:16:44

<u>Volatile Organic Compounds by EPA Method 8260D</u>				Batch ID: 41624		Analyst: CC	
Benzene	ND	8.80	3.57	D	µg/L	20	10/02/23 15:16:44
Toluene	ND	20.0	6.92	D	µg/L	20	10/02/23 15:16:44
Ethylbenzene	ND	8.00	2.87	D	µg/L	20	10/02/23 15:16:44
m,p-Xylene	ND	20.0	7.51	D	µg/L	20	10/02/23 15:16:44
o-Xylene	ND	10.0	2.87	D	µg/L	20	10/02/23 15:16:44
Surr: Dibromofluoromethane	112	79.4 - 125		D	%Rec	20	10/02/23 15:16:44
Surr: Toluene-d8	117	79 - 124		D	%Rec	20	10/02/23 15:16:44
Surr: 1-Bromo-4-fluorobenzene	103	85.5 - 112		D	%Rec	20	10/02/23 15:16:44



Analytical Report

Work Order: 2309302
Date Reported: 10/3/2023

Client: Fulcrum Environmental
Project: Whitten Oil
Lab ID: 2309302-008
Client Sample ID: WOS-091923-MW08

Collection Date: 9/19/2023 3:00:00 PM
Matrix: Groundwater

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

Batch ID: 41594 Analyst: AP

Diesel Range Organics	480	96.1	35.9		µg/L	1	09/27/23 20:34:21
Heavy Oil	ND	96.1	27.4		µg/L	1	09/27/23 20:34:21
Total Petroleum Hydrocarbons	480	192	63.3		µg/L	1	09/27/23 20:34:21
Surr: 2-Fluorobiphenyl	97.7	50 - 150			%Rec	1	09/27/23 20:34:21
Surr: o-Terphenyl	99.4	50 - 150			%Rec	1	09/27/23 20:34:21

NOTES:

Chromatographic pattern indicates an unresolved complex mixture, which may be weathered and/or organic material

Gasoline by NWTPH-Gx

Batch ID: 41624 Analyst: CC

Gasoline Range Organics	37.1	50.0	21.6	J	µg/L	1	09/30/23 12:52:25
Surr: Toluene-d8	92.7	65 - 135			%Rec	1	09/30/23 12:52:25
Surr: 4-Bromofluorobenzene	103	65 - 135			%Rec	1	09/30/23 12:52:25

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 41624 Analyst: CC

Benzene	10.1	0.440	0.179		µg/L	1	09/30/23 12:52:25
Toluene	ND	1.00	0.346		µg/L	1	09/30/23 12:52:25
Ethylbenzene	ND	0.400	0.143		µg/L	1	09/30/23 12:52:25
m,p-Xylene	ND	1.00	0.375		µg/L	1	09/30/23 12:52:25
o-Xylene	ND	0.500	0.144		µg/L	1	09/30/23 12:52:25
Surr: Dibromofluoromethane	107	79.4 - 125			%Rec	1	09/30/23 12:52:25
Surr: Toluene-d8	107	79 - 124			%Rec	1	09/30/23 12:52:25
Surr: 1-Bromo-4-fluorobenzene	102	85.5 - 112			%Rec	1	09/30/23 12:52:25

Work Order: 2309302
CLIENT: Fulcrum Environmental
Project: Whitten Oil

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

Sample ID: MB-41594	SampType: MBLK	Units: µg/L			Prep Date: 9/26/2023	RunNo: 86850					
Client ID: MBLKW	Batch ID: 41594				Analysis Date: 9/27/2023	SeqNo: 1812395					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel Range Organics	ND	94.9									
Heavy Oil	35.7	94.9									J
Total Petroleum Hydrocarbons	ND	190									
Surr: 2-Fluorobiphenyl	19.2		23.73		80.9	50	150				
Surr: o-Terphenyl	19.1		23.73		80.7	50	150				

Sample ID: LCS-41594	SampType: LCS	Units: µg/L			Prep Date: 9/26/2023	RunNo: 86850					
Client ID: LCSW	Batch ID: 41594				Analysis Date: 9/27/2023	SeqNo: 1812396					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	934	187	1,171	0	79.8	38.3	125				
Surr: 2-Fluorobiphenyl	18.3		23.41		78.1	50	150				
Surr: o-Terphenyl	23.8		23.41		102	50	150				

Sample ID: 2309302-008BMS	SampType: MS	Units: µg/L			Prep Date: 9/26/2023	RunNo: 86850					
Client ID: WOS-091923-MW08	Batch ID: 41594				Analysis Date: 9/27/2023	SeqNo: 1812405					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	1,550	188	1,174	480.0	91.5	25.4	127				
Surr: 2-Fluorobiphenyl	24.6		23.47		105	50	150				
Surr: o-Terphenyl	28.0		23.47		119	50	150				

Sample ID: 2309302-008BMSD	SampType: MSD	Units: µg/L			Prep Date: 9/26/2023	RunNo: 86850					
Client ID: WOS-091923-MW08	Batch ID: 41594				Analysis Date: 9/27/2023	SeqNo: 1812406					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	1,680	187	1,170	480.0	103	25.4	127	1,554	7.99	30	
Surr: 2-Fluorobiphenyl	23.0		23.39		98.5	50	150		0		
Surr: o-Terphenyl	30.1		23.39		129	50	150		0		

Work Order: 2309302
CLIENT: Fulcrum Environmental
Project: Whitten Oil

QC SUMMARY REPORT
Gasoline by NWTPH-Gx

Sample ID: LCS-41624		SampType: LCS			Units: µg/L		Prep Date: 9/28/2023		RunNo: 86868		
Client ID: LCSW		Batch ID: 41624					Analysis Date: 9/30/2023		SeqNo: 1813282		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline Range Organics	520	50.0	500.0	0	104	65	135				
Surr: Toluene-d8	24.2		25.00		96.6	65	135				
Surr: 4-Bromofluorobenzene	25.2		25.00		101	65	135				

Sample ID: MB-41624		SampType: MBLK			Units: µg/L		Prep Date: 9/28/2023		RunNo: 86868		
Client ID: MBLKW		Batch ID: 41624					Analysis Date: 9/30/2023		SeqNo: 1813281		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline Range Organics	ND	50.0									
Surr: Toluene-d8	23.8		25.00		95.3	65	135				
Surr: 4-Bromofluorobenzene	25.0		25.00		100	65	135				

Sample ID: 2309302-003ADUP		SampType: DUP			Units: µg/L		Prep Date: 9/28/2023		RunNo: 86868		
Client ID: WOS-091923-MW02		Batch ID: 41624					Analysis Date: 9/30/2023		SeqNo: 1813260		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline Range Organics	443	50.0						419.7	5.43	30	
Surr: Toluene-d8	23.5		25.00		93.9	65	135		0		
Surr: 4-Bromofluorobenzene	26.0		25.00		104	65	135		0		

Sample ID: 2309492-002AMS		SampType: MS			Units: µg/L		Prep Date: 9/28/2023		RunNo: 86868		
Client ID: BATCH		Batch ID: 41624					Analysis Date: 9/30/2023		SeqNo: 1813277		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline Range Organics	408	50.0	500.0	99.73	61.7	65	135				S
Surr: Toluene-d8	23.0		25.00		92.2	65	135				
Surr: 4-Bromofluorobenzene	25.6		25.00		102	65	135				

Work Order: 2309302
CLIENT: Fulcrum Environmental
Project: Whitten Oil

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260D

Sample ID: LCS-41624		SampType: LCS		Units: µg/L		Prep Date: 9/28/2023		RunNo: 86867			
Client ID: LCSW		Batch ID: 41624				Analysis Date: 9/30/2023		SeqNo: 1812992			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.7	0.440	20.00	0	109	80	120				
Toluene	22.0	1.00	20.00	0	110	80	120				
Ethylbenzene	20.6	0.400	20.00	0	103	80	120				
m,p-Xylene	41.0	1.00	40.00	0	102	80	120				
o-Xylene	20.1	0.500	20.00	0	101	80	120				
Surr: Dibromofluoromethane	27.1		25.00		108	79.4	125				
Surr: Toluene-d8	26.3		25.00		105	79	124				
Surr: 1-Bromo-4-fluorobenzene	24.8		25.00		99.1	85.5	112				

Sample ID: MB-41624		SampType: MBLK		Units: µg/L		Prep Date: 9/28/2023		RunNo: 86867			
Client ID: MBLKW		Batch ID: 41624				Analysis Date: 9/30/2023		SeqNo: 1812989			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.440									
Toluene	ND	1.00									
Ethylbenzene	ND	0.400									
m,p-Xylene	ND	1.00									
o-Xylene	ND	0.500									
Surr: Dibromofluoromethane	25.3		25.00		101	80	120				
Surr: Toluene-d8	26.4		25.00		106	80	120				
Surr: 1-Bromo-4-fluorobenzene	24.6		25.00		98.3	80	120				

Sample ID: 2309302-003ADUP		SampType: DUP		Units: µg/L		Prep Date: 9/28/2023		RunNo: 86867			
Client ID: WOS-091923-MW02		Batch ID: 41624				Analysis Date: 9/30/2023		SeqNo: 1812970			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	0.438	0.440						0.4812	9.36	30	J
Toluene	ND	1.00						0	0	30	
Ethylbenzene	ND	0.400						0	0	30	
m,p-Xylene	ND	1.00						0	0	30	
o-Xylene	ND	0.500						0	0	30	

Work Order: 2309302
CLIENT: Fulcrum Environmental
Project: Whitten Oil

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260D

Sample ID: 2309302-003ADUP	SampType: DUP	Units: µg/L			Prep Date: 9/28/2023	RunNo: 86867					
Client ID: WOS-091923-MW02	Batch ID: 41624				Analysis Date: 9/30/2023	SeqNo: 1812970					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Dibromofluoromethane	26.4		25.00		105	79.4	125		0		
Surr: Toluene-d8	26.5		25.00		106	79	124		0		
Surr: 1-Bromo-4-fluorobenzene	25.6		25.00		102	85.5	112		0		

Sample ID: 2309302-008AMS	SampType: MS	Units: µg/L			Prep Date: 9/28/2023	RunNo: 86867					
Client ID: WOS-091923-MW08	Batch ID: 41624				Analysis Date: 9/30/2023	SeqNo: 1812976					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	37.7	0.440	20.00	10.10	138	68	136				S
Toluene	24.7	1.00	20.00	0	123	78.9	121				S
Ethylbenzene	21.8	0.400	20.00	0	109	74.9	128				
m,p-Xylene	43.0	1.00	40.00	0	107	75.7	128				
o-Xylene	20.7	0.500	20.00	0	104	75.9	124				
Surr: Dibromofluoromethane	27.6		25.00		110	79.4	125				
Surr: Toluene-d8	26.8		25.00		107	79	124				
Surr: 1-Bromo-4-fluorobenzene	25.5		25.00		102	85.5	112				

NOTES:

S - Outlying spike recovery(ies) observed.

Client Name: FE	Work Order Number: 2309302
Logged by: Morgan Wilson	Date Received: 9/21/2023 10:16:00 AM

Chain of Custody

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

Log In

3. Custody Seals present on shipping container/cooler?
(Refer to comments for Custody Seals not intact) Yes No Not Present
4. Was an attempt made to cool the samples? Yes No NA
5. Were all items received at a temperature of >2°C to 6°C * Yes No NA
6. Sample(s) in proper container(s)? Yes No
7. Sufficient sample volume for indicated test(s)? Yes No
8. Are samples properly preserved? Yes No
9. Was preservative added to bottles? Yes No NA
10. Is there headspace in the VOA vials? Yes No NA
11. Did all samples containers arrive in good condition(unbroken)? Yes No
12. Does paperwork match bottle labels? Yes No
13. Are matrices correctly identified on Chain of Custody? Yes No
14. Is it clear what analyses were requested? Yes No
15. Were all holding times able to be met? Yes No

Special Handling (if applicable)

16. 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"/>		

17. Additional remarks:

Item Information

Item #	Temp °C
Sample	5.8

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



Fremont
ANALYTICAL
An Alliance Technical Group Company

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

Chain of Custody Record & Laboratory Services Agreement

Client: Fulcrum Environmental

Date: 04/20/2023 Page: 1 of: 1

Project Name: Whitaker O.I

Address: 207 W Rose Ave

Project No: 233710.00

Collected by: Ethan Decker

City, State, Zip: Spokane, WA 99201

Location: Colville, WA

Report To (PM): Scott Lorent

Telephone: 509 459 9220

Disposal: Samples will be disposed in 30 days unless otherwise requested.
 Retain volume (specify above) Return to client

Email(s): ethan.decker@fulcrum.net & scott@fulcrum.net

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	# of Cont.	Analytes											Comments	
					VOCs (EPA 8260 / 624)	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DY)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) Dissolved (D)	Anions (IC)**		EDB (8011)
1 WDS-091923-CW01	09/19/23	1100	GW	4	X	X	X	X	X	X	X	X	X	X	X	X	
2 -CW02		0900		4	X	X	X	X	X	X	X	X	X	X	X	X	
3 -MW02		1800		4	X	X	X	X	X	X	X	X	X	X	X	X	
4 -MW03		1500		4	X	X	X	X	X	X	X	X	X	X	X	X	
5 -HW04		0500		4	X	X	X	X	X	X	X	X	X	X	X	X	
6 -MW06		1100		4	X	X	X	X	X	X	X	X	X	X	X	X	
7 -MW07		1500		4	X	X	X	X	X	X	X	X	X	X	X	X	
8 -MW08		1500		10	X	X	X	X	X	X	X	X	X	X	X	X	Extra Volume
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): MICA-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 V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide Fluoride Nitrate+Nitrite

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.

Turn-around Time:
 Standard Next Day
 3 Day Same Day
 2 Day (specify)

Relinquished (Signature) Ethan J Decker Print Name Ethan J Decker Date/Time 04/20/23 1400

Relinquished (Signature) [Signature] Print Name [Name] Date/Time 9/21/23 1016