March 22, 2017

Whitley Fuel Company
c/o Mr. Ben Whitley
1617 2nd Avenue N.
Okanogan, WA 98840

RE: Whitley Fuels Tanker Spill Groundwater Monitoring Wells near Monitor, Washington – Groundwater Sampling Event, March 2017
Loss 83A012312-1 Whitley Fuel LLC
WA Facility/Site ID No.: 357
Cleanup Site ID No.: 4757

Dear Mr.Whitley,

Fulcrum Environmental Consulting, Inc. (Fulcrum) has completed groundwater sampling of monitoring wells at the Whitley Tanker Spill, located on Highway 2, approximately one half mile east of Monitor, Washington (site). Sampling was completed to evaluate groundwater conditions as a result of a 1991 fuel tanker accident.

Groundwater sampling was completed by Kyle Ames, an environmental technician with Fulcrum. Project services were completed under the direction of Travis Trent, a Washington State Licensed Hydrogeologist with Fulcrum. See Attachment A for professional certifications. See Figure 1 in Attachment B for the site location map.

Background

The site is situated south of Highway 2 along the southern boundary of a Washington Department of Transportation Right-of-Way and northern boundary of property owned by Washington State (Chelan County Parcel No. 231913625077). The southern property is currently known as the Wenatchee River County Park.

On July 24, 1991, a transporter tanker owned by Whitley Fuels Company of Okanogan, Washington was involved in an accident and released 10,000 gallons of gasoline along the south side of Highway 2. A resulting fire consumed an unknown amount of fuel.

In 1992, approximately 1,300 cubic yards of petroleum contaminated soil was removed under the supervision of DRT Environmental Consultants, Inc. Two soil samples collected from along the edge of the highway were reported with gasoline concentrations above the current Models Toxic Control Act (MTCA) Method A cleanup level; one of the two samples was reported with benzene concentrations above the cleanup level. Contaminated soils located beneath the highway were not removed to avoid impacting the highway.

Three groundwater monitoring wells were installed in 1994 to assess groundwater conditions. Wells were completed to the following depths:

- MW-01, Western Well: 8.31 feet below ground surface (bgs)
- MW-02, North-Central Well: 11.78 feet bgs (within original gasoline footprint)
- MW-03, Eastern Well: 10.48 feet bgs

Since 1994, sampling had occurred on an about-annual schedule. However, MW-01 and MW-02 were "lost" during extensive flooding in 1996 and were not sampled. MW-03 remained accessible and continued to show

elevated gasoline and benzene impact. In 2016, Fulcrum, located MW-01 and MW-02 through the utilization of metal-detecting equipment and was able to excavate the wells by hand. See Attachment B, Figure 2 for monitoring well locations.

MW-01 is viewed as hydrogeologically upgradient; until the December, 2016 sampling event no analytes had been detected at or above the method reporting limits. While Toluene was found at a concentration of 4.84 µg/L, it is well below MTCA clean up levels. MW-02 is located within the footprint of the original gasoline release. Since sampling began in 1994, MW-02 has shown progressively lower values of gasoline and gasoline constituents. Since the recovery of MW-02 in 2016, all analytes detected have been below MTCA clean up levels. Similarly, MW-03 initially exhibited high values for gasoline, benzene and xylenes in a 1994 sampling event. During the sampling event of September 1995, gasoline was detected at 5,200 µg/L and benzene was detected at 46 µg/L. While in general, these values have decreased since the 1995 sampling event, there have been occasional increases in contamination concentrations. See tables 1 to 3 for the last four monitoring event results.

Scope of Work

Fulcrum's scope of work for this groundwater monitoring event consisted of collection and analysis of groundwater samples from the three onsite monitoring wells. Fulcrum utilized portions of the following documents as guidance criteria for current confirmation sampling protocol:

- *Practical Guidance for Ground-Water Sampling*, Michael J. Barcelona, James P. Gibb, John A. Helfrich, and Edward E. Garske, dated November 1985.
- American Standard of Testing and Materials International (ASTM) D4448 – 01(2013) *Standard Guide for Sampling Ground-Water Monitoring Wells.*
- *Model Toxics Control Act Statute and Regulations,* Washington State Department of Ecology Publication No. 94-06, Revised November 2007.

Samples were collected using a peristaltic pump with disposable tubing following standard sample collection procedures. Field measurements for pH, total dissolved solids, dissolved oxygen content, turbidity, conductivity, temperature and oxygen-reduction potential were collected utilizing a Horiba W-20 Series water quality monitoring system which was calibrated prior to sampling. Collected groundwater samples were submitted under chain-of-custody to Fremont Analytical, Inc., a Washington State Department of Ecology accredited laboratory in Seattle, Washington, for analysis.

Fulcrum has evaluated analytical results against MTCA Method A cleanup. Application of the MTCA Method A or Method B cleanup levels during this portion of the project does not exclude the potential for reevaluation of site contaminants by other methods or other applicable standards at any time.

Field Activities

On March 9, 2017, Fulcrum completed sampling of site groundwater wells. All wells were found with sufficient water; wells were sampled and purged using a peristaltic pump with clean and new disposable polyethylene tubing. A field duplicate sample was collected concurrently with MW-03 and labeled as MW-04.

Fulcrum utilized pH, total dissolved solids, turbidity, conductivity, temperature, oxygen-reduction potential, and purge volume in accordance with ASTM Standards to confirm adequate purging of the wells prior to sample collection.

Analytical Results

Samples were submitted for the following analysis:

- Northwest Total Petroleum Hydrocarbon (NWTPH) – Gasoline (Gx)
- Volatile Organic Compounds by Environmental Protection Agency (EPA) Method 8260 – Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX)
- Methane by RSK-175
- Ions (Nitrite, Nitrate, Sulfate, Alkalinity) by EPA Method 300.0
- Dissolved Manganese (Mn) by EPA Method 200.8

See Attachment C for a summary of laboratory analytical results presented in Table 1. Results are presented in micrograms of analyte per Liter of water (µg/L) which is equal to parts per billion (ppb). See Attachment D for complete laboratory analytical results. See Figure 2 for a groundwater concentration and flow map.

Table 1: Laboratory Data for MW-01

	Analyte	6/16/2016	9/19/2016	12/7/2016	3/9/2017	MTCA Method A CUL
Contaminants	Gasoline	ND	ND	ND	ND	800
	Benzene	ND	ND	ND	ND	5
	Toluene	ND	ND	4.84	ND	1,000
	Ethylbenzene	ND	ND	ND	ND	700
	Xylenes	ND	ND	ND	ND	1,000
Geochemical Indicators	Nitrite	-	ND	ND	ND	NE
	Nitrate	-	2,430	1,330	761	NE
	Sulfate	-	9,510	8,930	11,500	NE
	Manganese	-	28	23.9	26.9	NE
	Alkalinity	-	103,000	104,000	102,000	NE
	Methane	-	5	74.0	48.6	NE

All values are presented in micrograms per Liter (µg/L)
Contaminant Concentrations above MTCA are shown in **BOLD**
ND – Non Detect
NE – Not Established

Table 2: Laboratory Data for MW-02

	Analyte	6/16/2016	9/19/2016	12/7/2016	3/9/2017	MTCA Method A CUL
Contaminants	Gasoline	235	ND	140	ND	800
	Benzene	ND	ND	ND	ND	5
	Toluene	ND	ND	ND	ND	1,000
	Ethylbenzene	4.54	ND	ND	ND	700
	Xylenes	3.54	ND	ND	ND	1,000
Geochemical Indicators	Nitrite	ND	ND	ND	ND	NE
	Nitrate	135	ND	897	13,400	NE
	Sulfate	18,800	28,400	4,600	30,300	NE
	Manganese	2,870	4,980	2,640	463	NE
	Alkalinity	392,000	597,000	384,000	424,000	NE
	Methane	20.5	34.6	34.6	8.17	NE

All values are presented in micrograms per Liter (µg/L)
Contaminant Concentrations above MTCA are shown in **BOLD**
ND – Non Detect
NE – Not Established

Table 3: Laboratory Data for MW-03

	Analyte	6/16/2016	9/19/2016	12/7/2016	3/9/2017	MTCA Method A CUL
Contaminants	Gasoline	471	ND	391	ND	800
	Benzene	6.65	1.94	4.87	ND	5
	Toluene	ND	ND	ND	ND	1,000
	Ethylbenzene	1.5	ND	ND	ND	700
	Xylenes	ND	ND	ND	ND	1,000
Geochemical Indicators	Nitrite	ND	ND	ND	ND	NE
	Nitrate	364	ND	1,120	ND	NE
	Sulfate	12,800	ND	1,640	183,000	NE
	Manganese	1,600	790	1,480	248	NE
	Alkalinity	802,000	543,000	675,000	1,180,000	NE
	Methane	43.3	810	879	14.2	NE

All values are presented in micrograms per Liter (µg/L)
Contaminant Concentrations above MTCA are shown in **BOLD**
ND – Non Detect
NE – Not Established

The following data qualifiers were noted in the laboratory results. All analytical quality assurance parameters were within acceptable ranges.

- Dilution required for samples from MW-01, MW-02 and MW-03 for Nitrite, Nitrate and Sulfate.

No contaminant analytes were detected at or above the method reporting limit.

Review of these notes indicates that laboratory QA/QC is satisfactory and identified laboratory QA/QC should not affect project data or objectives.

Discussion and Conclusions

Groundwater elevation and gradient data collected during the sampling event identified groundwater at elevations ranging from 5.79 feet bgs to 7.62 feet bgs. Groundwater at the site flows in a southeast direction. A groundwater gradient map is presented in Attachment B, Figure 2.

No contaminants were identified above MTCA Method A clean up levels.

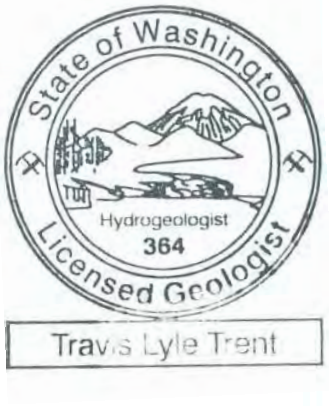
Elevated concentrations of geochemical parameters, including Nitrate, Sulfate, Manganese, Alkalinity and Methane indicates that degradation of petroleum hydrocarbons is likely occurring within the historic plume boundaries.

Please contact Travis Trent at 509.459.9200 if you have any questions or comments.

Sincerely,

Kyle Ames
Environmental Technician

Travis Trent, LHG
Hydrogeologist



P. 509.459.9220 F. 509.459.9219
207 West Boone Avenue
Spokane, Washington 99201

P. 509.574.0839 F. 509.575.8453
406 North 2nd Street
Yakima, Washington 98901

FULCRUM environmental consulting

ATTACHMENT A

Professional Certificates

STATE OF WASHINGTON

DEPARTMENT OF LICENSING – BUSINESS AND PROFESSIONS DIVISION

THIS CERTIFIES THAT THE PERSON NAMED HEREON IS AUTHORIZED, AS PROVIDED BY LAW, AS A

GEOLOGIST
HYDROGEOLOGIST

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

Cert/Lic No.	Issued Date	Expiration Date	
364	01/08/2002	06/06/2014	Director

PL-630-159 (R/2/04)

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ATTACHMENT B

Figures

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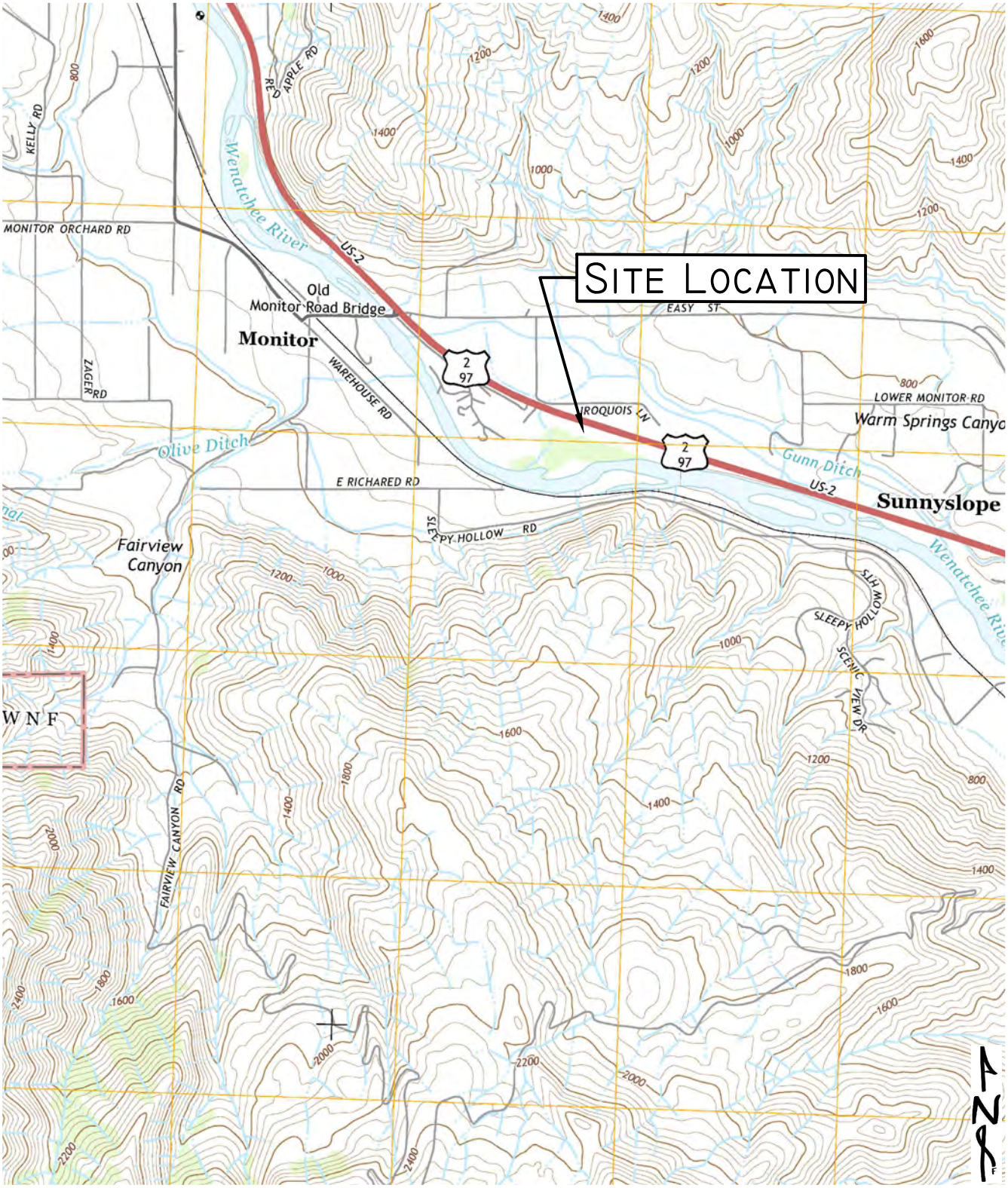
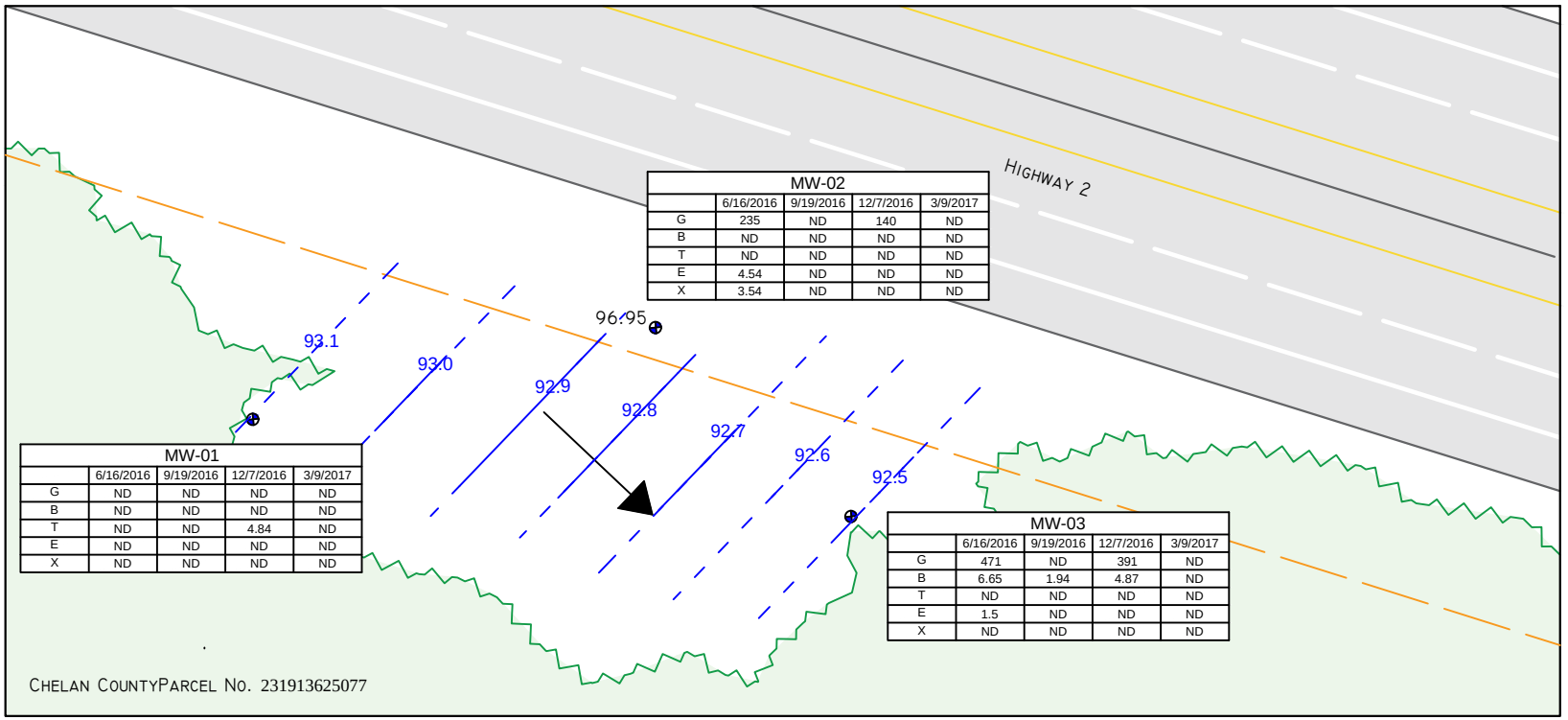


Background Image
Courtesy of USGS

Fulcrum Environmental Consulting, Inc. 406 North Second Street, Yakima, Washington 98901 p: 509.574.0839 f: 509.575.8453 efulcrum.net Whitley Fuel Tanker Spill . 141310. AHY. 011315	Whitley Fuel Tanker Truck Spill Monitor,Washington	General Site Location Map Figure 1



DEPTHS TO WATER (BELOW TOP OF CASING):

MW-01: 7.03 FT
MW-02: 7.12 FT
MW-03: 9.06 FT

CLEANUP LEVELS

G (GASOLINE):	800/1,000
B (BENZENE):	5.0
T (TOLUENE):	1,000
E (ETHYLBENZENE):	700
X (TOTAL XYLENES):	1,000

LEGEND

- GROUNDWATER MONITORING WELL
- GROUNDWATER FLOW DIRECTION
- GROUNDWATER ELEVATION CONTOUR (FT)
- PROPERTY BOUNDARY

NOTES:
1) GROUNDWATER ELEVATION WAS CALCUATED USING AN ARBITRARY DATUM. GROUNDWATER MEASUREMENTS IN MONITORING WELLS ARE RELATIVE TO EACH OTHER.
2) DRAWING IS NOT TO EXACT SCALE AND IS FOR REFERENCE ONLY.
3) SELECT ANALYTICAL DATA PRESENTED; SEE EVENT LETTER FOR ADDITIONAL DETAILS.
4) RESULTS PRESENTED IN UG/L.

Fulcrum Environmental Consulting, Inc.
406 North Second Street, Yakima, Washington 98901
p: 509.574.0839 f: 509.575.8453 efulcrum.net
Whitley Fuel Tanker Spill. 141310. ALY. 071116

Whitley Fuel Tanker Truck Spill
Monitor,Washington

Groundwater Elevation and
Analytical Results - March 2017

Figure
2

FULCRUM environmental consulting

ATTACHMENT C

Laboratory Analytical Results Summary Table

Table 1. Groundwater Analytical Summary – March 2017 Quarterly Event

	Analyte	MTCA Cleanup Level	MW-01	MW-02	MW-03
		Depth to Water	*5.79 ft.*	*5.81 ft.*	*7.62 ft.*
Field Parameters	pH	**NE**	6.47	6.83	7.39
	Conductivity (m S/M)	**NE**	71.2	188	270
	Turbidity (NTU)	**NE**	-	-	-
	DO (g/L)	**NE**	0.0	0.0	0.00112
	Temperature (°C)	**NE**	8.79	9.01	7.99
	TDS (g/L)	**NE**	0.45	1.2	1.7
	ORP (mV)	**NE**	-73	-8	-15
Regulatory Requirements[1]	Gasoline	**800 / 1,000**	ND	ND	ND
	Benzene	**5.0**	ND	ND	ND
	Toluene	**1,000**	ND	ND	ND
	Ethylbenzene	**700**	ND	ND	ND
	m,p-Xylene	**1,000[3]**	ND	ND	ND
	o-Xylene		ND	ND	ND
Groundwater Quality[1]	Nitrite[4]	**1,600**	ND	ND	ND
	Nitrate[4]	**25,600**	761	13,400	ND
	Sulfate[4]	**NE**	11,500	30,300	183,000
	Manganese[4]	**2,240**	26.9	463	248
	Alkalinity	**NE**	102,000	424,000	1,180,000
	Methane	**NE**	48.6	8.17	14.2

NE – Not Established.
ND - Non-Detect
[1] Results presented in ug/L.
[2] Readings surpassed equipment reporting limits.
[3] Results for total xylenes present.
[4] Nitrite, Nitrate, and Manganese cleanup levels are MTCA Method B Non-Cancer

Whitley Fuels Tanker Spill Groudwater Monitoring Data (1994 to Current)

Well		Date	10/26/1994	3/10/1995	6/12/1995	9/11/1995	12/4/1995	2/27/1996	9/10/2002	9/3/2003	9/2/2004	9/7/2005	9/13/2006	9/24/2007	9/3/2008	9/2/2009	9/7/2010	9/28/2011	9/12/2012	9/10/2013	6/16/2016	9/19/2016	12/7/2016	3/9/2017	MTCA Method A CUL
MW-01	Contaminants	Gasoline	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	ND	ND	800
		Benzene	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	ND	ND	5
		Toluene	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	4.84	ND	1,000
		Ethylbenzene	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	ND	ND	700
		Xylene	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	ND	ND	1,000
	Geochemical Indicators	Nitrite	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	ND	ND	NE
		Nitrate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	170	2,430	1,330	761	NE
		Sulfate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,400	9,510	8,930	11,500	NE
		Manganese	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	51.2	28	23.9	26.9	NE
		Alkalinity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	183,000	103,000	104,000	102,000	NE
		Methane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17.9	5	74	48.6	NE
		pH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.93	5.86	6.55	6.47	NE
		Cond. (m S/M)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	99.9	11.6	35.8	71.2	NE
		Turb. (NTU)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	NE
		DO (g/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.7	-	6	0	NE
		Temp. °C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.47	15.81	12.95	8.79	NE
		TDS (g/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	1.4	0.23	0.45	NE
		ORP (mV)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-204	53	-121	-73	NE
		Total Iron (mg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	2	NE
MW-02	Contaminants	Gasoline	91,400,00	ND	ND	5,400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	235	ND	140	ND	800
		Benzene	5,010	ND	1	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	ND	ND	5
		Toluene	14	ND	ND	64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	ND	ND	1,000
		Ethylbenzene	0.8	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.54	ND	ND	ND	700
		Xylene	4,590	ND	ND	770	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.54	ND	ND	ND	1,000
	Geochemical Indicators	Nitrite	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	ND	ND	NE
		Nitrate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	135	ND	897	13,400	NE
		Sulfate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18,800	28,400	4,600	30,300	NE
		Manganese	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,870	4,980	2,640	463	NE
		Alkalinity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	392,000	597,000	384,000	424,000	NE
		Methane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.5	35.6	34.6	8.17	NE
		pH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.60	6.92	7.38	6.83	NE
		Cond. (m S/M)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.113	18.1	>9.99 S/M	188	NE
		Turb. (NTU)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.1	11.9	-	-	NE
		DO (g/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	-	2.3	0.00	NE
		Temp. °C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.62	18.25	13.42	9.01	NE
		TDS (g/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.7	1.2	>99	1.2	NE
		ORP (mV)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-181	-138	-184	-8	NE
		Total Iron (mg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	2	NE
MW-03	Contaminants	TPH (Gas)	23,700,000	311	280	5200	2400	ND	134	<100	696	837	<100	157	<100	239	377	491	484	401	471	ND	391	ND	800
		Benzene	203	ND	ND	46	21	ND	2	<0.5	47.9	46	1.33	12.5	4.3	10.3	14.7	8.5	10.6	11.5	6.65	1.94	4.87	ND	5
		Toluene	197	ND	ND	6.6	2.7	ND	<2	<2.0	2.57	2.38	<2	<2	<2	<1	<1	1	<1	<1	ND	ND	ND	ND	1,000
		Ethylbenzene	ND	ND	ND	93	8.4	ND	<1	<1.0	76.2	47.8	<1	3.87	<1	6.29	3.54	<1	1.1	1.7	1.5	ND	ND	ND	700
		Xylene	1050	9.3	ND	180	230	ND	<1.5	<1.5	67.3	82.8	<1.5	6.17	<1.5	3.3	<3	<3	<3	<3	ND	ND	ND	ND	1,000
	Geochemical Indicators	Nitrite	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	ND	ND	NE
		Nitrate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	364	ND	1,120	ND	NE
		Sulfate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12,800	ND	1,640	183,000	NE
		Manganese	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,600	790	1,480	248	NE
		Alkalinity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	802,000	543,000	675,000	1,180,000	NE
		Methane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	43.3	810	879	14.2	NE
		pH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.66	7.14	7.36	7.39	NE
		Cond. (m S/M)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.182	56.9	139	270	NE
		Turb. (NTU)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14.0	12.6	480	-	NE
		DO (g/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.9	-	4.9	0.00112	NE
		Temp. °C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.20	15.95	11.98	7.99	NE
		TDS (g/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2	3.9	0.9	1.7	NE
		ORP (mV)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-154	-145	-153	-15	NE
		Total Iron (mg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	2	NE

FULCRUM environmental consulting

ATTACHMENT D

Complete Laboratory Analytical Results

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

Fulcrum Environmental
Travis Trent
406 N. 2nd Street
Yakima, WA 98901

RE: Whitley Tanker Spill
Work Order Number: 1703114

March 17, 2017

Attention Travis Trent:

Fremont Analytical, Inc. received 4 sample(s) on 3/10/2017 for the analyses presented in the following report.

Dissolved Gases by RSK-175
Dissolved Metals by EPA Method 200.8
Gasoline by NWTPH-Gx
Ion Chromatography by EPA Method 300.0
Total Alkalinity by SM 2320B
Volatile Organic Compounds by EPA Method 8260C

This report consists of the following:

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

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

Thank you for using Fremont Analytical.

Sincerely,

Chelsea Ward
Project Manager

CC:
Kyle Ames

Date: *03/17/2017*

CLIENT: Fulcrum Environmental
Project: Whitley Tanker Spill
Work Order: 1703114

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1703114-001	30917-01	03/09/2017 12:00 AM	03/10/2017 9:57 AM
1703114-002	30917-02	03/09/2017 12:00 AM	03/10/2017 9:57 AM
1703114-003	30917-03	03/09/2017 12:00 AM	03/10/2017 9:57 AM
1703114-004	30917-04	03/09/2017 12:00 AM	03/10/2017 9:57 AM

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

Case Narrative

WO#: **1703114**

Date: **3/17/2017**

CLIENT: Fulcrum Environmental

Project: Whitley Tanker Spill

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

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

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

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

Qualifiers:

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

Acronyms:

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

Analytical Report

Work Order: **1703114**
Date Reported: **3/17/2017**

Client: Fulcrum Environmental
Collection Date: 3/9/2017
Project: Whitley Tanker Spill
Lab ID: 1703114-001
Matrix: Water
Client Sample ID: **30917-01**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dissolved Gases by RSK-175				Batch ID: R34932		Analyst: BC
Methane	0.0486	0.00500		mg/L	1	3/14/2017 2:30:00 PM
Gasoline by NWTPH-Gx				Batch ID: 16496		Analyst: NG
Gasoline	ND	50.0		µg/L	1	3/15/2017 8:04:52 AM
Surr: Toluene-d8	101	65-135		%Rec	1	3/15/2017 8:04:52 AM
Surr: 4-Bromofluorobenzene	95.1	65-135		%Rec	1	3/15/2017 8:04:52 AM
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 16496		Analyst: NG
Benzene	ND	1.00		µg/L	1	3/15/2017 8:04:52 AM
Toluene	ND	1.00		µg/L	1	3/15/2017 8:04:52 AM
Ethylbenzene	ND	1.00		µg/L	1	3/15/2017 8:04:52 AM
m,p-Xylene	ND	1.00		µg/L	1	3/15/2017 8:04:52 AM
o-Xylene	ND	1.00		µg/L	1	3/15/2017 8:04:52 AM
Surr: Dibromofluoromethane	104	45.4-152		%Rec	1	3/15/2017 8:04:52 AM
Surr: Toluene-d8	93.7	40.1-139		%Rec	1	3/15/2017 8:04:52 AM
Surr: 1-Bromo-4-fluorobenzene	94.3	64.2-128		%Rec	1	3/15/2017 8:04:52 AM
Ion Chromatography by EPA Method 300.0				Batch ID: R34946		Analyst: KT
Nitrite (as N)	ND	0.200	D	mg/L	2	3/10/2017 10:42:00 AM
Nitrate (as N)	0.761	0.200	D	mg/L	2	3/10/2017 10:42:00 AM
Sulfate	11.5	0.600	D	mg/L	2	3/10/2017 10:42:00 AM
NOTES: Diluted due to high levels of non-target analytes.						
Dissolved Metals by EPA Method 200.8				Batch ID: 16513		Analyst: TN
Manganese	26.9	2.00		µg/L	1	3/17/2017 1:43:26 PM
Total Alkalinity by SM 2320B				Batch ID: R34998		Analyst: MW
Alkalinity, Total (As CaCO3)	102	2.50		mg/L	1	3/17/2017 10:16:00 AM

Analytical Report

Work Order: **1703114**
Date Reported: **3/17/2017**

Client: Fulcrum Environmental
Project: Whitley Tanker Spill
Lab ID: 1703114-002
Client Sample ID: **30917-02**

Collection Date: 3/9/2017
Matrix: Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dissolved Gases by RSK-175				Batch ID: R34932		Analyst: BC
Methane	0.00817	0.00500		mg/L	1	3/14/2017 2:33:00 PM
Gasoline by NWTPH-Gx				Batch ID: 16496		Analyst: NG
Gasoline	ND	50.0		µg/L	1	3/15/2017 8:33:34 AM
Surr: Toluene-d8	101	65-135		%Rec	1	3/15/2017 8:33:34 AM
Surr: 4-Bromofluorobenzene	95.2	65-135		%Rec	1	3/15/2017 8:33:34 AM
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 16496		Analyst: NG
Benzene	ND	1.00		µg/L	1	3/15/2017 8:33:34 AM
Toluene	ND	1.00		µg/L	1	3/15/2017 8:33:34 AM
Ethylbenzene	ND	1.00		µg/L	1	3/15/2017 8:33:34 AM
m,p-Xylene	ND	1.00		µg/L	1	3/15/2017 8:33:34 AM
o-Xylene	ND	1.00		µg/L	1	3/15/2017 8:33:34 AM
Surr: Dibromofluoromethane	102	45.4-152		%Rec	1	3/15/2017 8:33:34 AM
Surr: Toluene-d8	93.9	40.1-139		%Rec	1	3/15/2017 8:33:34 AM
Surr: 1-Bromo-4-fluorobenzene	94.6	64.2-128		%Rec	1	3/15/2017 8:33:34 AM
Ion Chromatography by EPA Method 300.0				Batch ID: R34946		Analyst: KT
Nitrite (as N)	ND	1.00	D	mg/L	10	3/10/2017 10:53:00 AM
Nitrate (as N)	13.4	1.00	D	mg/L	10	3/10/2017 10:53:00 AM
Sulfate	30.3	3.00	D	mg/L	10	3/10/2017 10:53:00 AM
NOTES: Diluted due to high levels of non-target analytes.						
Dissolved Metals by EPA Method 200.8				Batch ID: 16513		Analyst: TN
Manganese	463	2.00		µg/L	1	3/17/2017 1:47:28 PM
Total Alkalinity by SM 2320B				Batch ID: R34998		Analyst: MW
Alkalinity, Total (As CaCO3)	424	2.50		mg/L	1	3/17/2017 10:32:00 AM

Analytical Report

Work Order: **1703114**
Date Reported: **3/17/2017**

Client: Fulcrum Environmental
Collection Date: 3/9/2017
Project: Whitley Tanker Spill
Lab ID: 1703114-003
Matrix: Water
Client Sample ID: **30917-03**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dissolved Gases by RSK-175				Batch ID: R34932		Analyst: BC
Methane	0.0142	0.00500		mg/L	1	3/14/2017 2:35:00 PM
Gasoline by NWTPH-Gx				Batch ID: 16496		Analyst: NG
Gasoline	ND	50.0		µg/L	1	3/15/2017 9:02:21 AM
Surr: Toluene-d8	99.9	65-135		%Rec	1	3/15/2017 9:02:21 AM
Surr: 4-Bromofluorobenzene	96.9	65-135		%Rec	1	3/15/2017 9:02:21 AM
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 16496		Analyst: NG
Benzene	ND	1.00		µg/L	1	3/15/2017 9:02:21 AM
Toluene	ND	1.00		µg/L	1	3/15/2017 9:02:21 AM
Ethylbenzene	ND	1.00		µg/L	1	3/15/2017 9:02:21 AM
m,p-Xylene	ND	1.00		µg/L	1	3/15/2017 9:02:21 AM
o-Xylene	ND	1.00		µg/L	1	3/15/2017 9:02:21 AM
Surr: Dibromofluoromethane	103	45.4-152		%Rec	1	3/15/2017 9:02:21 AM
Surr: Toluene-d8	95.5	40.1-139		%Rec	1	3/15/2017 9:02:21 AM
Surr: 1-Bromo-4-fluorobenzene	96.1	64.2-128		%Rec	1	3/15/2017 9:02:21 AM
Ion Chromatography by EPA Method 300.0				Batch ID: R34946		Analyst: KT
Nitrite (as N)	ND	2.00	D	mg/L	20	3/10/2017 11:24:00 AM
Nitrate (as N)	ND	2.00	D	mg/L	20	3/10/2017 11:24:00 AM
Sulfate	183	6.00	D	mg/L	20	3/10/2017 11:24:00 AM
NOTES: Diluted due to high levels of non-target analytes.						
Dissolved Metals by EPA Method 200.8				Batch ID: 16513		Analyst: TN
Manganese	248	2.00		µg/L	1	3/17/2017 1:51:29 PM
Total Alkalinity by SM 2320B				Batch ID: R34998		Analyst: MW
Alkalinity, Total (As CaCO3)	1,180	2.50		mg/L	1	3/17/2017 10:40:00 AM

Analytical Report

Work Order: **1703114**
Date Reported: **3/17/2017**

Client: Fulcrum Environmental
Collection Date: 3/9/2017
Project: Whitley Tanker Spill
Lab ID: 1703114-004
Matrix: Water
Client Sample ID: **30917-04**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dissolved Gases by RSK-175				Batch ID: R34932		Analyst: BC
Methane	0.0400	0.00500		mg/L	1	3/14/2017 2:38:00 PM
Gasoline by NWTPH-Gx				Batch ID: 16496		Analyst: NG
Gasoline	ND	50.0		µg/L	1	3/15/2017 9:31:07 AM
Surr: Toluene-d8	99.7	65-135		%Rec	1	3/15/2017 9:31:07 AM
Surr: 4-Bromofluorobenzene	97.8	65-135		%Rec	1	3/15/2017 9:31:07 AM
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 16496		Analyst: NG
Benzene	ND	1.00		µg/L	1	3/15/2017 9:31:07 AM
Toluene	ND	1.00		µg/L	1	3/15/2017 9:31:07 AM
Ethylbenzene	ND	1.00		µg/L	1	3/15/2017 9:31:07 AM
m,p-Xylene	ND	1.00		µg/L	1	3/15/2017 9:31:07 AM
o-Xylene	ND	1.00		µg/L	1	3/15/2017 9:31:07 AM
Surr: Dibromofluoromethane	104	45.4-152		%Rec	1	3/15/2017 9:31:07 AM
Surr: Toluene-d8	95.7	40.1-139		%Rec	1	3/15/2017 9:31:07 AM
Surr: 1-Bromo-4-fluorobenzene	97.2	64.2-128		%Rec	1	3/15/2017 9:31:07 AM
Ion Chromatography by EPA Method 300.0				Batch ID: R34946		Analyst: KT
Nitrite (as N)	ND	2.00	D	mg/L	20	3/10/2017 11:34:00 AM
Nitrate (as N)	0.694	2.00	JD	mg/L	20	3/10/2017 11:34:00 AM
Sulfate	168	6.00	D	mg/L	20	3/10/2017 11:34:00 AM
NOTES: Diluted due to high levels of non-target analytes.						
Dissolved Metals by EPA Method 200.8				Batch ID: 16513		Analyst: TN
Manganese	163	2.00		µg/L	1	3/17/2017 1:55:31 PM
Total Alkalinity by SM 2320B				Batch ID: R34998		Analyst: MW
Alkalinity, Total (As CaCO3)	1,130	2.50		mg/L	1	3/17/2017 10:48:00 AM

Date: *3/17/2017*

Work Order: 1703114
CLIENT: Fulcrum Environmental
Project: Whitley Tanker Spill

QC SUMMARY REPORT

Total Alkalinity by SM 2320B

Sample ID	**MB-R34998**	SampType:	**MBLK**		Units:	**mg/L**	Prep Date:	**3/17/2017**	RunNo:	**34998**
Client ID:	**MBLKW**	Batch ID:	**R34998**				Analysis Date:	**3/17/2017**	SeqNo:	**668814**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	ND	2.50									

Sample ID	**LCS-R34998**	SampType:	**LCS**		Units:	**mg/L**	Prep Date:	**3/17/2017**	RunNo:	**34998**
Client ID:	**LCSW**	Batch ID:	**R34998**				Analysis Date:	**3/17/2017**	SeqNo:	**668815**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	110	2.50	100.0	0	110	80	120				

Sample ID	**1703114-001CDUP**	SampType:	**DUP**		Units:	**mg/L**	Prep Date:	**3/17/2017**	RunNo:	**34998**
Client ID:	**30917-01**	Batch ID:	**R34998**				Analysis Date:	**3/17/2017**	SeqNo:	**668817**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	100	2.50						102.0	1.98	20	

Work Order: 1703114
CLIENT: Fulcrum Environmental
Project: Whitley Tanker Spill

QC SUMMARY REPORT

Ion Chromatography by EPA Method 300.0

Sample ID	**MB-R34946**	SampType:	**MBLK**	Units:	**mg/L**	Prep Date:	**3/10/2017**	RunNo:	**34946**
Client ID:	**MBLKW**	Batch ID:	**R34946**			Analysis Date:	**3/10/2017**	SeqNo:	**667499**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrite (as N)	ND	0.100									
Nitrate (as N)	ND	0.100									
Sulfate	ND	0.300									

Sample ID	**LCS-R34946**	SampType:	**LCS**	Units:	**mg/L**	Prep Date:	**3/10/2017**	RunNo:	**34946**
Client ID:	**LCSW**	Batch ID:	**R34946**			Analysis Date:	**3/10/2017**	SeqNo:	**667500**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrite (as N)	1.47	0.100	1.500	0	98.1	90	110				
Nitrate (as N)	1.50	0.100	1.500	0	99.9	90	110				
Sulfate	7.34	0.300	7.500	0	97.8	90	110				

Sample ID	**1703096-003BDUP**	SampType:	**DUP**	Units:	**mg/L**	Prep Date:	**3/10/2017**	RunNo:	**34946**
Client ID:	**BATCH**	Batch ID:	**R34946**			Analysis Date:	**3/10/2017**	SeqNo:	**667504**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrite (as N)	ND	0.100						0		20	
Nitrate (as N)	0.753	0.100						0.7580	0.715	20	
Sulfate	3.21	0.300						3.211	0.0779	20	

Sample ID	**1703096-003BMS**	SampType:	**MS**	Units:	**mg/L**	Prep Date:	**3/10/2017**	RunNo:	**34946**
Client ID:	**BATCH**	Batch ID:	**R34946**			Analysis Date:	**3/10/2017**	SeqNo:	**667505**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrite (as N)	1.42	0.100	1.500	0	94.8	80	120				
Nitrate (as N)	2.35	0.100	1.500	0.7580	106	80	120				
Sulfate	10.3	0.300	7.500	3.211	95.2	80	120				

Work Order: 1703114
CLIENT: Fulcrum Environmental
Project: Whitley Tanker Spill

QC SUMMARY REPORT

Ion Chromatography by EPA Method 300.0

Sample ID **1703096-003BMSD** SampType: **MSD** Units: **mg/L** Prep Date: **3/10/2017** RunNo: **34946**
Client ID: **BATCH** Batch ID: **R34946** Analysis Date: **3/10/2017** SeqNo: **667506**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrite (as N)	1.38	0.100	1.500	0	92.3	80	120	1.422	2.68	20	
Nitrate (as N)	2.27	0.100	1.500	0.7580	101	80	120	2.347	3.41	20	
Sulfate	10.0	0.300	7.500	3.211	91.1	80	120	10.35	3.01	20	

Work Order: 1703114
CLIENT: Fulcrum Environmental
Project: Whitley Tanker Spill

QC SUMMARY REPORT

Dissolved Metals by EPA Method 200.8

Sample ID	**MB-16501FB**	SampType: **MBLK**			Units: **µg/L**		Prep Date: **3/16/2017**		RunNo: **35021**	
Client ID:	**MBLKW**	Batch ID: **16513**					Analysis Date: **3/17/2017**		SeqNo: **668968**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	2.00									

Sample ID	**MB-16513**	SampType: **MBLK**			Units: **µg/L**		Prep Date: **3/16/2017**		RunNo: **35021**	
Client ID:	**MBLKW**	Batch ID: **16513**					Analysis Date: **3/17/2017**		SeqNo: **668969**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	2.00									

Sample ID	**LCS-16513**	SampType: **LCS**			Units: **µg/L**		Prep Date: **3/16/2017**		RunNo: **35021**	
Client ID:	**LCSW**	Batch ID: **16513**					Analysis Date: **3/17/2017**		SeqNo: **668970**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	101	2.00	100.0	0	101	85	115				

Sample ID	**1703089-001ADUP**	SampType: **DUP**			Units: **µg/L**		Prep Date: **3/16/2017**		RunNo: **35021**	
Client ID:	**BATCH**	Batch ID: **16513**					Analysis Date: **3/17/2017**		SeqNo: **668972**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	5.38	2.00						1.048	135	30	R

NOTES:
R - High RPD observed. The method is in control as indicated by the LCS.

Sample ID	**1703089-001AMS**	SampType: **MS**			Units: **µg/L**		Prep Date: **3/16/2017**		RunNo: **35021**	
Client ID:	**BATCH**	Batch ID: **16513**					Analysis Date: **3/17/2017**		SeqNo: **668973**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	568	2.00	500.0	1.048	113	70	130				

Work Order: 1703114
CLIENT: Fulcrum Environmental
Project: Whitley Tanker Spill

QC SUMMARY REPORT

Dissolved Metals by EPA Method 200.8

Sample ID	1703089-001AMSD	SampType:	MSD			Units:	µg/L	Prep Date:	3/16/2017		RunNo:	35021	
Client ID:	BATCH	Batch ID:	16513					Analysis Date:	3/17/2017		SeqNo:	668976	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Manganese		515	2.00	500.0	1.048	103	70	130	568.3	9.81	30		

Work Order: 1703114
CLIENT: Fulcrum Environmental
Project: Whitley Tanker Spill

QC SUMMARY REPORT

Dissolved Gases by RSK-175

Sample ID	LCS-R34932	SampType:	LCS			Units:	mg/L		Prep Date:	3/14/2017		RunNo:	34932	
Client ID:	LCSW	Batch ID:	R34932						Analysis Date:	3/14/2017		SeqNo:	667192	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Methane		470	0.00500	500.0	0	94.1	70	130						

Sample ID	MB-R34932	SampType:	MBLK			Units:	mg/L		Prep Date:	3/14/2017		RunNo:	34932	
Client ID:	MBLKW	Batch ID:	R34932						Analysis Date:	3/14/2017		SeqNo:	667193	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Methane		ND	0.00500											

Sample ID	1703114-004AREP	SampType:	REP			Units:	mg/L		Prep Date:	3/14/2017		RunNo:	34932	
Client ID:	30917-04	Batch ID:	R34932						Analysis Date:	3/14/2017		SeqNo:	667189	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Methane		0.0466	0.00500						0.04001	15.3	20			

Work Order: 1703114
CLIENT: Fulcrum Environmental
Project: Whitley Tanker Spill

QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID	**LCS-16496**	SampType: **LCS**		Units: **µg/L**		Prep Date: **3/14/2017**		RunNo: **34984**			
Client ID:	**LCSW**	Batch ID: **16496**				Analysis Date: **3/15/2017**		SeqNo: **668306**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	467	50.0	500.0	0	93.5	65	135				
Surr: Toluene-d8	24.8		25.00		99.3	65	135				
Surr: 4-Bromofluorobenzene	24.8		25.00		99.2	65	135				

Sample ID	**LCSD-16496**	SampType: **LCSD**		Units: **µg/L**		Prep Date: **3/14/2017**		RunNo: **34984**			
Client ID:	**LCSW02**	Batch ID: **16496**				Analysis Date: **3/15/2017**		SeqNo: **668305**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	422	50.0	500.0	0	84.3	65	135	467.3	10.3	20	
Surr: Toluene-d8	24.9		25.00		99.4	65	135		0		
Surr: 4-Bromofluorobenzene	24.8		25.00		99.3	65	135		0		

Sample ID	**MB-16496**	SampType: **MBLK**		Units: **µg/L**		Prep Date: **3/14/2017**		RunNo: **34984**			
Client ID:	**MBLKW**	Batch ID: **16496**				Analysis Date: **3/15/2017**		SeqNo: **668307**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	50.0									
Surr: Toluene-d8	25.3		25.00		101	65	135				
Surr: 4-Bromofluorobenzene	24.2		25.00		96.6	65	135				

Sample ID	**1703131-001ADUP**	SampType: **DUP**		Units: **µg/L**		Prep Date: **3/14/2017**		RunNo: **34984**			
Client ID:	**BATCH**	Batch ID: **16496**				Analysis Date: **3/15/2017**		SeqNo: **668301**			
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	25.0		25.00		99.9	65	135		0		
Surr: 4-Bromofluorobenzene	23.6		25.00		94.3	65	135		0		

Work Order: 1703114
CLIENT: Fulcrum Environmental
Project: Whitley Tanker Spill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **LCS-16496** SampType: **LCS** Units: **µg/L** Prep Date: **3/14/2017** RunNo: **34983**
Client ID: **LCSW** Batch ID: **16496** Analysis Date: **3/15/2017** SeqNo: **668266**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.0	1.00	20.00	0	105	69.3	132				
Toluene	19.7	1.00	20.00	0	98.5	61.3	145				
Ethylbenzene	20.3	1.00	20.00	0	102	72	130				
m,p-Xylene	40.6	1.00	40.00	0	101	70.3	134				
o-Xylene	20.3	1.00	20.00	0	101	72.1	131				
Surr: Dibromofluoromethane	25.0		25.00		99.9	45.4	152				
Surr: Toluene-d8	24.7		25.00		98.8	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	25.7		25.00		103	64.2	128				

Sample ID **1703099-001BMS** SampType: **MS** Units: **µg/L** Prep Date: **3/14/2017** RunNo: **34983**
Client ID: **BATCH** Batch ID: **16496** Analysis Date: **3/15/2017** SeqNo: **668243**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	44.6	1.00	20.00	23.44	106	65.4	138				
Toluene	38.7	1.00	20.00	22.82	79.4	64	139				
Ethylbenzene	22.0	1.00	20.00	1.067	105	64.5	136				
m,p-Xylene	59.0	1.00	40.00	16.79	106	63.3	135				
o-Xylene	37.8	1.00	20.00	16.47	107	65.4	134				
Surr: Dibromofluoromethane	25.6		25.00		102	45.4	152				
Surr: Toluene-d8	24.8		25.00		99.1	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	26.3		25.00		105	64.2	128				

Sample ID **1703099-001BMSD** SampType: **MSD** Units: **µg/L** Prep Date: **3/14/2017** RunNo: **34983**
Client ID: **BATCH** Batch ID: **16496** Analysis Date: **3/15/2017** SeqNo: **668244**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	45.6	1.00	20.00	23.44	111	65.4	138	44.62	2.17	30	
Toluene	39.4	1.00	20.00	22.82	82.6	64	139	38.71	1.65	30	
Ethylbenzene	22.1	1.00	20.00	1.067	105	64.5	136	22.03	0.410	30	
m,p-Xylene	59.7	1.00	40.00	16.79	107	63.3	135	58.99	1.18	30	

Work Order: 1703114
CLIENT: Fulcrum Environmental
Project: Whitley Tanker Spill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1703099-001BMSD**	SampType: **MSD**	Units: **µg/L**	Prep Date: **3/14/2017**	RunNo: **34983**
Client ID: **BATCH**	Batch ID: **16496**		Analysis Date: **3/15/2017**	SeqNo: **668244**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
o-Xylene	38.0	1.00	20.00	16.47	107	65.4	134	37.79	0.445	30	
Surr: Dibromofluoromethane	25.6		25.00		102	45.4	152		0		
Surr: Toluene-d8	24.8		25.00		99.0	40.1	139		0		
Surr: 1-Bromo-4-fluorobenzene	26.2		25.00		105	64.2	128		0		

Sample ID **MB-16496**	SampType: **MBLK**	Units: **µg/L**	Prep Date: **3/14/2017**	RunNo: **34983**
Client ID: **MBLKW**	Batch ID: **16496**		Analysis Date: **3/15/2017**	SeqNo: **668268**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.00									
Toluene	ND	1.00									
Ethylbenzene	ND	1.00									
m,p-Xylene	ND	1.00									
o-Xylene	ND	1.00									
Surr: Dibromofluoromethane	25.2		25.00		101	45.4	152				
Surr: Toluene-d8	23.4		25.00		93.5	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	23.9		25.00		95.4	64.2	128				

Sample ID **1703131-001ADUP**	SampType: **DUP**	Units: **µg/L**	Prep Date: **3/14/2017**	RunNo: **34983**
Client ID: **BATCH**	Batch ID: **16496**		Analysis Date: **3/15/2017**	SeqNo: **668251**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.00						0		30	
Toluene	ND	1.00						0		30	
Ethylbenzene	ND	1.00						0		30	
m,p-Xylene	ND	1.00						0		30	
o-Xylene	ND	1.00						0		30	
Surr: Dibromofluoromethane	25.3		25.00		101	45.4	152		0		
Surr: Toluene-d8	23.2		25.00		92.8	40.1	139		0		
Surr: 1-Bromo-4-fluorobenzene	23.5		25.00		94.0	64.2	128		0		

Work Order: 1703114
CLIENT: Fulcrum Environmental
Project: Whitley Tanker Spill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1703131-001ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **3/14/2017** RunNo: **34983**
Client ID: **BATCH** Batch ID: **16496** Analysis Date: **3/15/2017** SeqNo: **668251**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID **1703131-007ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **3/14/2017** RunNo: **34983**
Client ID: **BATCH** Batch ID: **16496** Analysis Date: **3/15/2017** SeqNo: **668258**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.00						0		30	
Toluene	ND	1.00						0		30	
Ethylbenzene	ND	1.00						0		30	
m,p-Xylene	ND	1.00						0		30	
o-Xylene	ND	1.00						0		30	
Surr: Dibromofluoromethane	25.6		25.00		103	45.4	152		0		
Surr: Toluene-d8	22.5		25.00		89.9	40.1	139		0		
Surr: 1-Bromo-4-fluorobenzene	23.6		25.00		94.4	64.2	128		0		

Sample Log-In Check List

Client Name:	**FE**	Work Order Number:	**1703114**
Logged by:	**Clare Griggs**	Date Received:	**3/10/2017 9:57:00 AM**

Chain of Custody

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

Log In

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

Special Handling (if applicable)

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

Person Notified:	Kyle Ames	Date	3/10/2017
By Whom:	Clare Griggs	Via:	☐ eMail ☑ Phone ☐ Fax ☐ In Person
Regarding:	Confirming samples to be analyzed.		
Client Instructions:	See revised COC.		

19. Additional remarks:

Item Information

Item #	Temp ºC
Cooler	5.6
Sample	7.0

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

Chain of Custody Record and Laboratory Services Agreement

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

Date: 3-9-17

Laboratory Project No (internal): 1703114

Page: 1 of: 1

Client: Fulcrum Environmental Consulting, Inc.
Address: 406 North 2nd Street
City, State, Zip: Yakima, WA 98901
Telephone: (509)574-0839 Fax: (509) 459-9219

Project Name: Whitley Tanker Spill
Project No: 141310 Collected by: Kyle Ames
Location: Monitor, WA
Report To (PM): Travis Trent
PM Email: ttrent@efulcrum.net; cc: kames@efulcrum.net

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

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) | Dissolved (D)	Anions (IC)***	EDB (8011)	Alkalinity	Methane	Comments
30917-01	3/9/2017		W		X								X	D	X		X	X	
30917-02	3/9/2017		W		X								X	D	X		X	X	
30917-03	3/9/2017		W		X								X	D	X		X	X	
30917-04	3/9/17		W		X								X	D	X		X	X		Run per K.A. 3/10/17 cg
5																				
6																				
7																				
8																				
9																				
10																				

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

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

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

Turn-around times for samples received after 4:00pm will begin on the following business day.

Special Remarks:

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 x [signature] Date/Time 3-9-17
Received x [signature] Date/Time 3/10/17 0957

Relinquished x Date/Time
Received x Date/Time

TAT → SameDay^ NextDay^ 2 Day 3 Day (STD)

^Please coordinate with the lab in advance