



September 1, 2016

Mr. Steve Teel
Site Manager/Hydrogeologist
Washington State Department of Ecology
Toxics Cleanup Program, Southwest Regional Office
P.O. Box 47775
Olympia, Washington 98504-7775

**Subject: Groundwater Monitoring Report, July 2016
CenturyLink Longview Facility
1305 Washington Way, Longview, Washington 98632**

Dear Mr. Teel:

This letter provides a summary of the groundwater sampling event conducted on July 7 and 8, 2016. Groundwater monitoring events are being conducted as a continuation of the Groundwater Monitoring Plan developed in 2008 under the Voluntary Cleanup Program. Groundwater monitoring was conducted in accordance with the Final Direct-Push Sampling Plan, dated March 2, 2015, and approved by Washington State Department of Ecology (Ecology).

Groundwater Levels

The depth to groundwater was measured using an electronic static water level indicator that was lowered into each well. Depth to groundwater was measured to the nearest hundredth of a foot from the top of the well casing. Static water levels ranged from 2.41 to 2.54 feet above mean sea level, and are summarized in the table below and shown on Figure 1. Groundwater levels were approximately 1.8 foot lower than observed in March 2016.

JULY 7, 2016 GROUNDWATER ELEVATIONS

Location	Surveyed Top of Casing (ft amsl)	July 7, 2016 Depth to Water (ft)	July 7, 2016 Groundwater Elevation (ft amsl)
MW-01	15.64	13.12	2.52
MW-02	16.17	13.69	2.48
MW-03	15.02	12.48	2.54
MW-04	14.55	12.08	2.47
MW-05	14.75	12.34	2.41

Notes:
ft Feet
ft amsl Feet above mean sea level

Based on groundwater level data shown on Figure 1, the direction of groundwater flow appears to be toward the west, with a relatively flat gradient of approximately 0.0006 foot per foot. Historically, groundwater flow direction has ranged from west to northwest.

Groundwater Sampling from Permanent Monitoring Wells

Groundwater samples were obtained from all five permanent monitoring wells at the facility on July 7 and 8, 2016. After groundwater level measurements were documented, field personnel collected groundwater samples using a peristaltic pump. New dedicated tubing was used to collect the sample at each well. In accordance with the work plan, low-flow sampling procedures were used. Sampling flow rates ranged from 300 to 400 milliliters per minute for purging and groundwater sample collection.

A calibrated YSI 600 multi-probe water meter was used to measure field parameters during well purging, and before and after sampling. A HACH 2100Q was used to measure turbidity. Water quality parameters measured with the YSI 600 included pH, dissolved oxygen, oxidation-reduction potential, and specific conductance. Low-flow pumping continued until field parameters stabilized within acceptable parameter limits, before samples were collected. Attachment A includes the logs of field parameters measured during the low-flow sampling.

Groundwater Sample Analysis

Once obtained, groundwater samples were labeled in accordance with Tetra Tech, Inc. (Tetra Tech) standard operating procedures, placed in a cooler, and chilled to below 4 degrees Celsius. Samples were delivered directly to ALS Laboratories (ALS), located at 1317 S. 13th Avenue in Kelso, Washington. Samples were delivered following standard chain-of-custody protocol. Chain of custody forms are included with the laboratory data packages in Attachment B.

ALS analyzed the samples for total petroleum hydrocarbons-diesel (TPH-DRO) and total petroleum hydrocarbons-residual range organics (TPH-RRO) by Method Northwest Total Petroleum Hydrocarbons-Diesel Extended Range (Ecology 1997), without silica gel cleanup. ALS also analyzed the samples for polycyclic aromatic hydrocarbons (PAH) by modified U.S. Environmental Protection Agency Method 625-Selected Ion Monitoring. The samples were filtered with a 0.7-micron (μm) filter before analysis by the PAH method.

Groundwater Sample Analytical Results

Table 1 presents analyte concentrations for the sample analyses of permanent groundwater wells sampled during the July 2016 event. At well MW-02, TPH-DRO was detected at 330 micrograms per liter ($\mu\text{g/L}$) and at 310 $\mu\text{g/L}$ in the duplicate sample. This is below the Washington Model Toxic Control Act (MTCA) Method A cleanup level for groundwater of 500 $\mu\text{g/L}$. TPH-DRO was detected at low concentrations in samples from the other four wells, ranging from 21 $\mu\text{g/L}$ to 34 $\mu\text{g/L}$.

TPH-RRO was detected in all five wells, ranging from 33 $\mu\text{g/L}$ to 140 $\mu\text{g/L}$. Samples from all five wells were below the 500 $\mu\text{g/L}$ TPH-RRO Washington Model Toxic Control Act (MTCA) Method A cleanup level for groundwater. MW-02 had the highest TPH-RRO concentration.

Most TPH-DRO and TPH-RRO detections carry a J qualifier that indicates that the concentration is estimated because the constituent was detected below the method detection limit, but above zero. The TPH-DRO results for MW-02 and the associated duplicate sample carried a Y qualifier, indicating that the chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.

The laboratory method blank contained no detectable concentrations of TPH-DRO but did contain TPH-RRO (at 23 µg/L with a J qualifier). These detections could be used to revise and lower the reported concentrations for some of the field samples, but such revisions would not significantly affect the results or change the conclusions in this letter report.

Low concentrations of PAHs were detected in all monitoring wells, except for MW-1; Table 1 summarizes these results. There are no total PAH or compound specific MTCA action levels for PAHs. The MTCA action level of 0.1 µg/L for PAHs is based on the benzo(a)pyrene toxic equivalent quotient (BaP TEQ). Table 1 also shows the BaP TEQ results, which are based on the individual PAH analytical results in Appendix B. None of the BaP TEQ constituents (benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3cd)pyrene) were detected in the samples from MW-01, MW-02, and MW-05. BaP TEQ concentrations were 0.00027 µg/L and 0.00035 µg/L in MW-03 and MW-04, respectively, below the MTCA action level of 0.1 µg/L.

Table 2 summarizes the historical results for DRO and RRO for each well. Table 3 summarizes the historical results for BaP TEQ for each well.

Laboratory Method Detection Limits

In an email dated May 4, 2016, Ecology commented on the March 2016 summary report. Ecology noted that reporting limits for PAHs included in the summary report (0.2 µg/L), were above the MTCA Method A cleanup level of 0.1 µg/L. The PAH laboratory method detection limits in this report are all 0.1 µg/L.

To address this concern, Tetra Tech had ALS reissue the December 2015 and March 2016 laboratory reports with the lower detection limits; the method had been run in such a way that these detection limits were achieved, but the data workup by the laboratory had used an incorrect method setup, resulting in incorrect detection limits being reported. These reissued reports are included as Attachments C and D, respectively. The lower detection limits changed some of the previously reported values for total PAH and BaP TEQ. However, none of the revised BaP TEQ levels are above the MTCA Method A cleanup levels.

The historical data presented in Tables 2 and 3 in this report have been revised to show the method detection limits, rather than "ND" for non-detect. Tables 2 and 3 also include the revised total PAH and BaP TEQ results from December 2015 and March 2016. Tables in future reports also will report non-detect results using the method detection limits.

Conclusions and Recommendations

For the first sampling event of 2016, analytical results for samples from all five wells were below MTCA Method A cleanup level for BaP TEQ and TPH-RRO. Four of the wells were below the MTCA Method A cleanup level for TPH-DRO, but MW-02 contained elevated concentrations of TPH that exceeded the MTCA Method A cleanup level.

During the second sampling event of 2016, analytical results for samples from all monitoring wells had concentrations of TPH-DRO, TPH-RRO, and BaP TEQ below Washington MTCA Method A cleanup levels. MW-02 had the highest concentrations of TPH-DRO and TPH-RRO, however, the MTCA Method A cleanup levels were not exceeded.

Mr. Steve Teel
Site Manager/Hydrogeologist
Washington State Department of Ecology
Toxics Cleanup Program, Southwest Regional Office

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Tetra Tech recommends that quarterly sampling continue at the five monitoring wells to demonstrate continued contaminant concentrations below MTCA Method A cleanup levels. The third quarterly sampling event for 2016 is scheduled for October.

If you have any questions or concerns, please call me at (303) 312-8856 or email me at david.berestka@tetrattech.com.

Sincerely,



David Berestka, P.E.
Project Manager
Tetra Tech, Inc.



Rob Tisdale, Ph.D.
Chemist and Program Manager
Tetra Tech, Inc.

cc: Ed Clement, Regional Environmental Health and Safety Manager, CenturyLink

Attachments:

- A Low-Flow Groundwater Sampling Parameter Forms
- B Laboratory Analytical Reports and Chain of Custody Records
- C Revised Laboratory Analytical Reports and Chain of Custody Records – March 2016 Sampling Event
- D Revised Laboratory Analytical Reports and Chain of Custody Records – December 2015 Sampling Event

ANALYTICAL RESULTS TABLES

TABLE 1
GROUNDWATER SAMPLE ANALYTICAL RESULTS
CENTURYLINK LONGVIEW, WASHINGTON FACILITY

Analyte		TPH-DRO	TPH-RRO	Total PAH	BaP TEQ
MTCA Method A Cleanup Level		500 (µg/L)	500 (µg/L)	NA	0.1 (µg/L)
Location	Date				
MW-01	7/7/2016	24 J	44 J	<0.01	<0.0043
MW-02	7/8/2016	330 Y	140 J	0.019	<0.0043
MW-02 (duplicate)	7/8/2016	310 Y	140 J	0.017	<0.0043
MW-03	7/8/2016	22 J	41 J	0.0092	0.00027
MW-04	7/7/2016	34 J	33 J	2.18	0.00035
MW-05	7/8/2016	21 J	34 J	0.0236	<0.0043

Notes:

All concentrations in micrograms per liter (µg/L)

For wells with duplicate samples, the highest value reported is shown for each constituent

BaP TEQ Benzo(a)Pyrene Toxic Equivalent Quotient

J Data qualifier indicating that the result is an estimated quantity below reporting limit

MTCA Model Toxics Control Act Method A for groundwater

NA Not applicable (no applicable MTCA standard)

O Data qualifier indicating that the chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard

PAH Polycyclic aromatic hydrocarbon

TPH-DRO Total petroleum hydrocarbons diesel range organics

TPH-RRO Total petroleum hydrocarbons residual range organics

Y Data qualifier indicating that the chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.

< 0.01 Concentration is less than the method detection limit shown

TABLE 2
HISTORICAL GROUNDWATER SAMPLE RESULTS – DRO AND RRO
CENTURYLINK LONGVIEW, WASHINGTON FACILITY

Analyte	Date	Sampling Method	MW-01	MW-02	MW-03	MW-04	MW-05
TPH-DRO (MTCA Method A Cleanup Level = 500 µg/L)	3/25/1992	Bailer	82	112	<50	--	--
	12/16/2003	Bailer	<250	<250	<250	--	--
	8/10/2006	Bailer	<50	140	<50	--	--
	9/23/2008	Bailer	--	--	--	<50	140
	2/26/2010	Bailer	--	--	--	<25	100
	9/2/2011	Bailer	--	--	--	73	120
	2/26/2013	Bailer	--	--	--	1,700	<51
	6/3/2013	Bailer	<50	66	<50	210	<50
	12/5/2013	Bailer	97	72	47	1,500	100
	3/27/2014	Bailer	63	87	<250	550	47
	6/25/2014	Bailer	50	33	<260	1,100	<260
	9/10/2014	Bailer	240	90	36	790	48
	3/5/2015	Low Flow	22	82	20	20	27
	7/20/2015	Low Flow	22	77	21	24	30
	12/18/15	Low Flow	38	83	46	96	120
	3/31/16	Low Flow	41	1500	58	30	30
	7/7/2016	Low Flow	24	330	22	34	21
TPH-RRO (MTCA Method A Cleanup Level = 500 µg/L)	3/25/1992	Bailer	<200	<200	<200	--	--
	8/10/2006	Bailer	<250	<250	<250	--	--
	9/23/2008	Bailer	--	--	--	<250	<250
	2/26/2010	Bailer	--	--	--	140	200
	9/2/2011	Bailer	--	--	--	350	210
	2/26/2013	Bailer	--	--	--	11,000	220
	6/3/2013	Bailer	150	<100	<100	1,600	<100
	12/5/2013	Bailer	440	120	120	11,000	170
	3/27/2014	Bailer	370	63	<500	3,900	190
	6/25/2014	Bailer	340	62	21	8,400	51
	9/10/2014	Bailer	1,500	140	120	6,600	82
	3/5/2015	Low Flow	43	70	37	48	53
	7/20/2015	Low Flow	52	71	49	52	42
	12/18/15	Low Flow	84	160	81	81	82
	3/31/16	Low Flow	83	340	110	54	53
	7/7/2016	Low Flow	44	140	41	33	34

Notes:

All concentrations in micrograms per liter (µg/L)

Bold values indicate exceedance of the MTCA Method A Cleanup Level

For wells with duplicate samples, the highest value reported is shown for each constituent

MTCA Model Toxics Control Act Method A for groundwater

TPH-DRO Total petroleum hydrocarbons diesel range organics

TPH-RRO Total petroleum hydrocarbons residual range organics

-- Not sampled

< 0.01 Concentration is less than the method detection limit shown

TABLE 3
HISTORICAL GROUNDWATER SAMPLE ANALYTICAL RESULTS –
BAP TEQ AND TOTAL PAH
CENTURYLINK LONGVIEW, WASHINGTON FACILITY

Analyte	Date	Sampling Method	MW-01	MW-02	MW-03	MW-04	MW-05
BaP TEQ Unfiltered analysis (MTCA Method A Cleanup Level = 0.1 µg/L)	6/3/2013	Bailer	2.2	< 0.1	< 0.1	0.36	< 0.1
	12/5/2013	Bailer	0.20	0.027	0.074	1.4	0.0062
	3/27/2014	Bailer	0.37	0.080	0.049	0.27	0.073
	6/25/2014	Bailer	0.39	0.012	0.00033	0.40	0.0054
	9/10/2014	Bailer	0.14	0.090	0.0037	0.39	0.0051
BaP TEQ Filtered analysis (MTCA Method A Cleanup Level = 0.1 µg/L)	12/5/2013	Bailer	0.00033	--	0.00068	0.00084	--
	3/27/2014	Bailer	< 0.019	< 0.019	--	< 0.019	< 0.019
	6/25/2014	Bailer	< 0.020	--	--	< 0.200	--
	9/10/2014	Bailer	0.00030	0.00027	--	< 0.020	--
	3/5/2015	Low Flow	0.00074	0.00038	< 0.019	0.00044	0.00029
	7/20/2015	Low Flow	0.00029	< 0.020	< 0.021	< 0.021	< 0.021
	12/18/2015	Low Flow	0.0065	0.00029	< 0.019	0.0005	0.00039
	3/31/2016	Low Flow	0.00035	< 0.020	< 0.020	0.00026	< 0.020
	7/7/2016	Low Flow	< 0.020	< 0.020	0.00027	0.00035	< 0.020
Total PAH Unfiltered analysis (No MTCA Method A Cleanup Level)	6/3/2013	Bailer	16	1.6	< 0.1	8.7	< 0.1
	12/5/2013	Bailer	1.7	0.83	0.85	16	2.4
	3/27/2014	Bailer	3.5	1.3	0.50	3.1	0.80
	6/25/2014	Bailer	3.9	2.3	0.12	4.8	0.37
	9/10/2014	Bailer	1.2	1.5	0.049	6.0	5.5
Total PAH Filtered analysis (No MTCA Method A Cleanup Level)	12/5/2013	Bailer	0.028	--	0.043	0.52	--
	3/27/2014	Bailer	0.018	0.21	--	0.080	0.064
	6/25/2014	Bailer	0.063	--	--	0.11	--
	9/10/2014	Bailer	0.012	0.041	--	0.42	--
	3/5/2015	Low Flow	0.046	0.58	0.013	0.24	0.26
	7/20/2015	Low Flow	0.0077	0.019	0.0056	0.29	0.15
	12/18/2015	Low Flow	0.039	1.9	< 0.019	9.7	8.5
	3/31/2016	Low Flow	0.0035	0.032	< 0.020	0.041	0.0092
	7/7/2016	Low Flow	< 0.020	0.019	0.0092	2.2	0.024

Notes:

All concentrations in micrograms per liter (µg/L)
Bold values indicate exceedance of the MTCA Cleanup Level
For wells with duplicate samples, the highest value reported is shown for each constituent
BaP TEQ Benzo(a)Pyrene Toxic Equivalent Quotient
MTCA Model Toxics Control Act Method A for groundwater
-- Not analyzed
< 0.01 Concentration is less than the method detection limit shown

FIGURE

LEGEND



UST

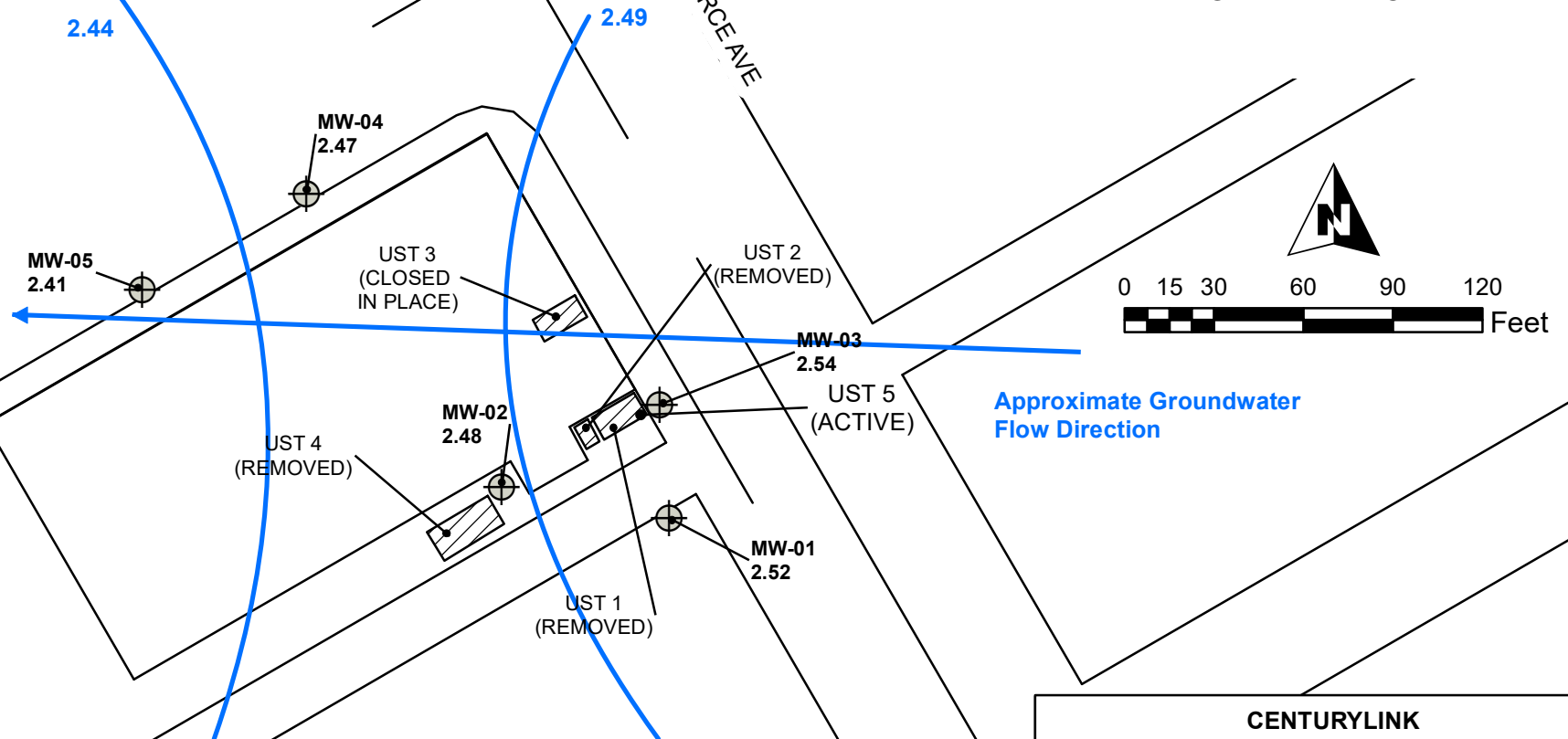


Sampling Wells

3.25 Groundwater Elevation
(Feet Above Mean Sea Level)



Approximate
Groundwater Contour



CENTURYLINK
1305 WASHINGTON WAY
LONGVIEW, WASHINGTON

FIGURE 1
JULY 7, 2016
GROUNDWATER ELEVATION AND CONTOUR MAP



TETRA TECH

ATTACHMENT A
LOW-FLOW GROUNDWATER SAMPLING PARAMETER FORMS

MICROPURGING GROUNDWATER SAMPLING DATA SHEET

Page 1 of 1
Date 7/7/16

Well Name <u>MW-1</u>	Screen Interval _____	Station Elevation _____ GND _____ TOC _____	Immiscible Phases Present <input type="checkbox"/> Yes <input type="checkbox"/> No
Project <u>Century Link - Longview GW Sampling</u>	Static Water Level (from TOC) <u>13.11'</u>	Type _____	
Project No. _____	Well Stick Up <u>@ 1438</u>	Measured with _____	
Well Location _____	Static Elevation _____	PID Readings (background) _____	
Sample Date <u>7/7/16</u>	Well Depth _____ MEAS _____ RPTD _____	PID Reading (TOC) _____	
Sampling Personnel <u>KP</u>	Feet of Water _____	Wells Installed by _____	
Sample ID _____	Gallons/Foot _____	Installation Date _____	
Duplicate ID _____	Casing Volume _____	Development Date(s) _____	

FIELD CHEMISTRY CALIBRATIONS

Date/Time _____ Spec. Conductance: Standard _____ μ mhos/cm at 25 $^{\circ}$ C Reading _____ μ mhos/cm at _____ $^{\circ}$ C
pH: pH 4.00 - _____ at _____ $^{\circ}$ C pH 7.00 - _____ at _____ $^{\circ}$ C pH 10.00 - _____ at _____ $^{\circ}$ C Slope NA
Dissolved Oxygen: D.O. Meter _____ mg/L at _____ $^{\circ}$ C PID: Calibration Gas _____ PPM Span _____ Reading _____

inlet at 15.5' BTOC
started at 1450

PURGING													
started at 1450													
Time	Discharge Rate (mL/min)	Dissolved Oxygen (mg/L)	pH	EH/ORP (mV)	Temp. (°C)	Specific Conduct. (µmhos/cm at °C)	Turbidity (NTU)	Cumulative Volume of Water Removed (Purged)		PID/OVA Reading		Depth to Water (ft)	Comments
								Gallons	Casing Vol.	Location	Value		
1450	350	LOS	6.61	15.2	15.48	347	10.8					13.12	
1455	350	0.43	6.53	10.3	15.14	345	7.87						
1500	350	0.33	6.53	-2.1	15.07	345	6.20						
1505	350	0.29	6.53	-9.4	14.92	345	5.12						
1510	350	0.23	6.54	-15.1	14.94	341	4.06					13.12	
1515	350	0.19	6.55	-20.9	14.92	340	3.03						
1520	350	0.19	6.55	-25.4	14.95	341	2.9						
1525	350	0.19	6.56	-31.6	15.01	339	2.26						
1530	300	0.17	6.56	-33.2	15.02	338	1.91						
1535	300	0.19	6.57	-35.1	15.03	338	1.90						

SAMPLE PARAMETERS

Post-1	1550	300	0.26	6.58	-36	15.15	842	2.10					
--------	------	-----	------	------	-----	-------	-----	------	--	--	--	--	--

Condition of well: _____

Remarks: total purged 24.5 gal

FIELD EQUIPMENT

pH Meter _____	Serial Number _____	Field Chemistry Calibrations
Spec. Cond. Meter _____	Serial Number _____	Fractions _____
Pump _____	Serial Number _____	
Water Level Meter _____	Serial Number _____	Number of Bottles _____
D.O. Meter _____	Serial Number _____	Sample Depth _____
Filter Apparatus _____	Filters _____	Field Notebook _____
Temperature Measure _____		Sample Method _____
Interface Probe _____	Serial Number _____	
PID/OVA _____	Serial Number _____	Discharge Water Containerized <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No



MICROPURGING GROUNDWATER SAMPLING DATA SHEET

Page 1 of 1
Date 7/8/16

DUP-070816 taken

Well Name MW-2

Screen Interval _____

Project Century Link - Longview GW Sampling

Station Elevation _____ GND _____ TOC _____

Immiscible Phases Present ☐ Yes ☐ No

Project No. _____

Static Water Level (from TOC) 13.70

Type _____

Well Location _____

Well Stick Up _____

Measured with _____

Sample Date 7/8/16

Static Elevation _____

PID Readings (background) N/A

Sampling Personnel MP/UP

Well Depth _____ MEAS _____ RPTD _____

PID Reading (TOC) N/A

Sample ID _____

Feet of Water _____

Wells Installed by _____

Duplicate ID _____

Gallons/Foot _____

Installation Date _____

Casing Volume _____

Development Date(s) _____

FIELD CHEMISTRY CALIBRATIONS

Date/Time _____

tubing inlet set at 16' BTOC
Spec. Conductance: Standard _____ μ mhos/cm at 25°C Reading _____ μ mhos/cm at _____ °C

pH: pH 4.00 - _____ at _____ °C

pH 7.00 - _____ at _____ °C pH 10.00 - _____ at _____ °C Slope NA

Dissolved Oxygen: D.O. Meter _____ mg/L at _____ °C

PID: Calibration Gas _____ PPM _____ Span _____ Reading _____

PURGING @ 1050

Time	Discharge Rate (mL/min)	Dissolved Oxygen (mg/L)	pH	EN/ORP (mV)	Temp. (°C)	Specific Conduct. (μ mhos/cm at °C)	Turbidity (NTU)	Cumulative Volume of Water Removed (Purged)		PID/OVA Reading		Depth to Water (ft)	Comments
								Gallons	Casing Vol.	Location	Value		
1055	325	1.95	6.58	72.0	16.99	543	0.71					13.70	
1100	300	1.20	6.46	68.3	16.79	515	0.67						
1105	300	0.92	6.40	66.0	16.64	493	0.3						
1110	300	0.83	6.38	65.2	16.60	487	0.46						
1115	300	0.65	6.37	64.4	16.58	479	0.46					13.71	
1120	300	0.60	6.37	63.3	16.57	475	0.29						
1125	300	0.61	6.37	61.5	16.65	469	0.27						
1130	300	0.57	6.36	60.0	16.57	465	0.24						

sample →

Post

~~PARAMETERS~~ *sample time: 1130*

1154	300	3.35	6.38	53	16.63	452	0.20						
------	-----	------	------	----	-------	-----	------	--	--	--	--	--	--

Condition of well: _____

Remarks: _____

FIELD EQUIPMENT

pH Meter _____	Serial Number _____	Field Chemistry Calibrations
Spec. Cond. Meter _____	Serial Number _____	Fractions _____
Pump _____	Serial Number _____	
Water Level Meter _____	Serial Number _____	Number of Bottles _____
D.O. Meter _____	Serial Number _____	Sample Depth _____
Filter Apparatus _____	Filters _____	Field Notebook _____
Temperature Measure _____		Sample Method _____
Interface Probe _____	Serial Number _____	
PID/OVA _____	Serial Number _____	Discharge Water Containerized <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

MICROPURGING GROUNDWATER SAMPLING DATA SHEET

Page 1 of 1
Date 7/8/16

Well Name <u>MW-3</u>	Screen Interval _____	Station Elevation _____ GND _____ TOC _____	Immiscible Phases Present <input type="checkbox"/> Yes <input type="checkbox"/> No
Project <u>Century Link - Longview GW Sampling</u>	Static Water Level (from TOC) <u>12.50' BTOC</u>	Well Stick Up <u>@ 850</u>	Type _____
Project No. _____	Static Elevation _____	Well Depth _____ MEAS _____ RPTD _____	Measured with _____
Well Location _____	Feet of Water _____	Gallons/Foot _____	PID Readings (background) _____
Sample Date <u>7/8/16</u>	Casing Volume _____	Installation Date _____	PID Reading (TOC) _____
Sampling Personnel <u>MP</u> <u>UP</u>	Development Date(s) _____		
Sample ID _____			
Duplicate ID _____			

FIELD CHEMISTRY CALIBRATIONS
 Date/Time _____ Spec. Conductance: Standard _____ μ mhos/cm at 25°C Reading _____ μ mhos/cm at _____ °C
 pH: pH 4.00 - _____ at _____ °C pH 7.00 - _____ at _____ °C pH 10.00 - _____ at _____ °C Slope NA
 Dissolved Oxygen: D.O. Meter _____ mg/L at _____ °C PID: Calibration Gas _____ PPM _____ Span _____ Reading _____

45/cmc PURGING started at 9:14

Time	Discharge Rate (mL/min)	Dissolved Oxygen (mg/L)	pH	Eh/ORP (mV)	Temp. (°C)	Specific Conduct. (μ mhos/cm at °C)	Turbidity (NTU)	Cumulative Volume of Water Removed (Purged)		PID/OVA Reading		Depth to Water (ft)	Comments
								Gallons	Casing Vol.	Location	Value		
0917	300	1.14	6.24	165.0	15.13	366	0.66					12.50	
0922	300	0.61	6.35	138.5	15.04	358	0.38						
0927	300	0.58	6.38	122.0	15.02	351	0.32						
0932	300	0.51	6.40	105.3	15.05	348	0.25						
0937	300	0.48	6.41	94	15.06	346	0.27					12.50	
0942	300	0.50	6.41	85.0	15.05	347	0.21						
0947	300	0.49	6.41	76.0	15.10	348	0.26						
0952	300	0.41	6.43	68.6	15.09	345	0.15						
0957	300	0.52	6.42	62.8	15.12	349	0.20						
1002	300	0.41	6.43	58.1	15.11	348	0.18						
1007	300	0.43	6.43	54.2	15.08	347	0.25						

Sample -> 1007 Post **SAMPLE PARAMETERS** Sampling time: 1007

1020	300	0.59	6.43	43.2	15.14	347	0.23						
------	-----	------	------	------	-------	-----	------	--	--	--	--	--	--

Condition of well: _____
 Remarks: ~5 gal purged

FIELD EQUIPMENT	Field Chemistry Calibrations
pH Meter _____ Serial Number _____	Fractions _____
Spec. Cond. Meter _____ Serial Number _____	
Pump _____ Serial Number _____	
Water Level Meter _____ Serial Number _____	Number of Bottles _____
D.O. Meter _____ Serial Number _____	Sample Depth _____
Filter Apparatus _____ Filters _____	Field Notebook _____
Temperature Measure _____	Sample Method _____
Interface Probe _____ Serial Number _____	
PID/OVA _____ Serial Number _____	Discharge Water Containerized <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

MICROPURGING GROUNDWATER SAMPLING DATA SHEET

Page 1 of 1
Date 7/7/16

Well Name <u>MW-4</u>		Screen Interval _____	
Project <u>Century Link - Longview GW Sampling</u>		Station Elevation _____ GND _____ TOC _____	
Project No. _____		Static Water Level (from TOC) <u>12.08'</u>	
Well Location _____		Well Stick Up <u>12.08' BTDC</u>	
Sample Date <u>7/7/16</u>		Static Elevation <u>(@ 12:04)</u>	
Sampling Personnel <u>MR/VP</u>		Well Depth _____ MEAS _____ RPTD _____	
_____		Feet of Water _____	
Sample ID _____		Gallons/Foot _____	
Duplicate ID _____		Casing Volume _____	
_____		Installation Date _____	
_____		Development Date(s) _____	

FIELD CHEMISTRY CALIBRATIONS

Date/Time _____ Spec. Conductance: Standard _____ μ mhos/cm at 25 °C Reading _____ μ mhos/cm at _____ °C
 pH: pH 4.00 - _____ at _____ °C pH 7.00 - _____ at _____ °C pH 10.00 - _____ at _____ °C Slope NA
 Dissolved Oxygen: D.O. Meter _____ mg/L at _____ °C PID: Calibration Gas _____ PPM _____ Span _____ Reading _____

PURGING started at 1215

Time	Discharge Rate (mL/min)	Dissolved Oxygen (mg/L)	pH	En/ORP (mV)	Temp. (°C)	Specific Conduct. (μ mhos/cm at °C)	Turbidity (NTU)	Cumulative Volume of Water Removed (Purged)		PID/OVA Reading		Depth to Water (ft)	Comments
								Gallons	Casing Vol.	Location	Value		
1220	375	0.56	6.5	8.6	14.81	219	7.25					12.08	
1225	350	0.40	6.37	-8.3	14.77	222	4.0						
1230	350	0.37	6.35	-20.8	14.82	221	2.41						
1235	350	0.35	6.35	-24.4	14.81	221	1.19						
1240	350	0.45	6.31	-36.5	14.88	225	0.76					12.08	
1245	450	Freeze tag - need to reset											
1250	325	0.41	6.32	-34.8	14.94	221	0.59						
1255	325	0.45	6.31	-38.0	14.98	223	0.55						
1300	325	0.43	6.31	-40.1	15.00	223	0.47						
1305	325	0.41	6.32	-39.7	14.96	221	0.42						
1315	325	0.	6.32	-39.1	15.14	224	0.64						

Post

SAMPLE PARAMETERS

1305	325	0.41	6.32	-39.7	14.96	221	0.48						
------	-----	------	------	-------	-------	-----	------	--	--	--	--	--	--

total purged 39.5 gal

Condition of well: _____
 Remarks: _____

FIELD EQUIPMENT

pH Meter _____	Serial Number _____	Field Chemistry Calibrations
Spec. Cond. Meter _____	Serial Number _____	Fractions _____
Pump _____	Serial Number _____	
Water Level Meter _____	Serial Number _____	Number of Bottles _____
D.O. Meter _____	Serial Number _____	Sample Depth _____
Filter Apparatus _____	Filters _____	Field Notebook _____
Temperature Measure _____		Sample Method _____
Interface Probe _____	Serial Number _____	
PID/OVA _____	Serial Number _____	Discharge Water Containerized <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

MICROPURGING GROUNDWATER SAMPLING DATA SHEET

Page 1 of 2
Date 7/7/16

Well Name MW-5 **Screen Interval** _____
Project Century Link - Longview GW Sampling **Station Elevation** _____ **GND** _____ **TOC** _____ **Immiscible Phases Present** ☐ Yes ☐ No
Project No. _____ **Static Water Level (from TOC)** 12.34' **Type** _____
Well Location _____ **Well Stick Up** @ 10:29 **Measured with** _____
Sample Date 7/7/16 **Static Elevation** _____ **PID Readings (background)** _____
Sampling Personnel Mike Payaric **Well Depth** _____ **MEAS** _____ **RPTD** _____ **PID Reading (TOC)** _____
Valencia Pineda **Feet of Water** _____ **Wells Installed by** _____
Sample ID _____ **Gallons/Foot** _____ **Installation Date** _____
Duplicate ID _____ **Casing Volume** _____ **Development Date(s)** _____

FIELD CHEMISTRY CALIBRATIONS

Date/Time _____ **Spec. Conductance: Standard** _____ **µmhos/cm at 25° C** **Reading** _____ **µmhos/cm at** _____ **° C**
pH **pH 4.00** - _____ **at** _____ **° C** **pH 7.00** - _____ **at** _____ **° C** **pH 10.00** - _____ **at** _____ **° C** **Slope** NA
Dissolved Oxygen: D.O. Meter _____ **mg/L at** _____ **° C** **PID: Calibration Gas** _____ **PPM** _____ **Span** _____ **Reading** _____

PURGING - started at 10:38

Time	Discharge Rate (mL/min)	Dissolved Oxygen (mg/L)	pH	Eh/ORP (mV)	Temp. (°C)	Specific Conduct. (µmhos/cm at °C)	Turbidity (NTU)	Cumulative Volume of Water Removed (Purged)		PID/OVA Reading		Depth to Water (ft)	Comments
								Gallons	Casing Vol.	Location	Value		
1040	375	2.91	6.96	211.1	15.09	314	1.41					12.35	
1045	350	2.48	6.0	204.2	15.04	293	0.85						
1050	350	2.31	6.0	201.2	14.99	287	0.56						
1055	300	2.42	6.01	208.7	14.99	284	0.48						
1100	300	2.28	6.06	194.5	15.01	284	0.34					12.35	
1105	300	2.31	6.07	173.1	15.06	284	0.33						
1110	300	2.29	6.07	151.2	15.01	285	0.35						
1115	300	2.26	6.08	130.0	15.03	285	0.29						
1120	300	2.11	6.09	104.0	15.13	285	0.26						
1125	300	2.09	6.09	41.7	15.12	286	0.28						
1130	300	2.08	6.09	72.2	15.11	285	0.32						

SAMPLE PARAMETERS

1135	300	2.04	6.09	66.9	15.18	286	0.26						
------	-----	------	------	------	-------	-----	------	--	--	--	--	--	--

Condition of well: _____

Remarks: _____

FIELD EQUIPMENT

pH Meter _____ **Serial Number** _____ **Field Chemistry Calibrations** _____
Spec. Cond. Meter _____ **Serial Number** _____ **Fractions** _____
Pump _____ **Serial Number** _____ _____
Water Level Meter _____ **Serial Number** _____ **Number of Bottles** _____
D.O. Meter _____ **Serial Number** _____ **Sample Depth** _____
Filter Apparatus _____ **Filters** _____ **Field Notebook** _____
Temperature Measure _____ **Sample Method** _____
Interface Probe _____ **Serial Number** _____ _____
PID/OVA _____ **Serial Number** _____ **Discharge Water Containerized** ☒ Yes ☐ No

MICROPURGING GROUNDWATER SAMPLING DATA SHEET

Page 2 of 2
Date 7/7/16

Well Name <u>MW-5</u>		Screen Interval _____	
Project <u>Century Link - Longview GW Sampling</u>		Station Elevation _____ GND _____ TOC _____	Immiscible Phases Present <input type="checkbox"/> Yes <input type="checkbox"/> No
Project No. _____		Static Water Level (from TOC) <u>12.34</u>	Type _____
Well Location _____		Well Stick Up _____	Measured with _____
Sample Date <u>7/7/16</u>		Static Elevation _____	PID Readings (background) _____
Sampling Personnel <u>VP</u> <u>MP</u>		Well Depth _____ MEAS _____ RPTD _____	PID Reading (TOC) _____
Sample ID _____		Feet of Water _____	Wells Installed by _____
Duplicate ID _____		Gallons/Foot _____	Installation Date _____
		Casing Volume _____	Development Date(s) _____

FIELD CHEMISTRY CALIBRATIONS

Date/Time _____ Spec. Conductance: Standard _____ μ mhos/cm at 25°C Reading _____ μ mhos/cm at _____ °C
 pH: pH 4.00 - _____ at _____ °C pH 7.00 - _____ at _____ °C pH 10.00 - _____ at _____ °C Slope NA
 Dissolved Oxygen: D.O. Meter _____ mg/L at _____ °C PID: Calibration Gas _____ PPM _____ Span _____ Reading _____

PURGING started at 1038

Time	Discharge Rate (mL/min)	Dissolved Oxygen (mg/L)	pH	EH/ORP (mV)	Temp. (°C)	Specific Conduct. (μ mhos/cm at °C)	Turbidity (NTU)	Cumulative Volume of Water Removed (Purged)		PID/OVA Reading		Depth to Water (ft)	Comments
								Gallons	Casing Vol.	Location	Value		
<u>1135</u>	<u>300</u>	<u>2.04</u>	<u>6.09</u>	<u>66.9</u>	<u>15.18</u>	<u>286</u>	<u>0.26</u>						
<u>1150</u>	<u>300</u>	<u>2.03</u>	<u>6.10</u>	<u>27.3</u>	<u>15.52</u>	<u>288</u>	<u>0.21</u>						

SAMPLE PARAMETERS

<u>1135</u>	<u>300</u>	<u>2.04</u>	<u>6.09</u>	<u>66.9</u>	<u>15.18</u>	<u>286</u>	<u>0.26</u>						
-------------	------------	-------------	-------------	-------------	--------------	------------	-------------	--	--	--	--	--	--

Condition of well: _____
 Remarks: _____

FIELD EQUIPMENT

pH Meter _____	Serial Number _____	Field Chemistry Calibrations
Spec. Cond. Meter _____	Serial Number _____	Fractions _____
Pump _____	Serial Number _____	
Water Level Meter _____	Serial Number _____	Number of Bottles _____
D.O. Meter _____	Serial Number _____	Sample Depth _____
Filter Apparatus _____	Filters _____	Field Notebook _____
Temperature Measure _____		Sample Method _____
Interface Probe _____	Serial Number _____	
PID/OVA _____	Serial Number _____	Discharge Water Containerized <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

total purged ~ 5 gal

ATTACHMENT B
LABORATORY ANALYTICAL REPORTS AND CHAIN OF CUSTODY RECORDS
JULY 2016 SAMPLING EVENT



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August 03, 2016

Analytical Report for Service Request No: K1607582

Rob Tisdale
Tetra Tech EM, Incorporated
216 16th St , Suite 1500
Denver, CO 80202

RE: CenturyLink Longview WA / 103P3080177

Dear Rob,

Enclosed are the results of the sample(s) submitted to our laboratory July 07, 2016
For your reference, these analyses have been assigned our service request number **K1607582**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at gregory.salata@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Senior Project
Manager



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Polynuclear Aromatic Hydrocarbons

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



Case Narrative

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ALS ENVIRONMENTAL

Client: Tetra Tech EM, Incorporated
Project: Century Link Longview WA/ 103P3080177
Sample Matrix: Water

Service Request No.: K1607582
Date Received: 07/07/16

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Control Sample (LCS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Three water samples were received for analysis at ALS Environmental on 07/07/16. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Diesel Range Organics by Method NWTPH-Dx

Relative Percent Difference Exceptions:

The Relative Percent Difference (RPD) criterion for the replicate analysis of all analytes in sample Batch QC was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of these samples were observed.

Polynuclear Aromatic Hydrocarbons by EPA Method 8270

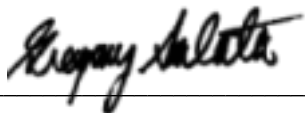
Elevated Detection Limits:

The detection limit was elevated for Fluorene in sample MW-5. The chromatogram indicated the presence of non-target background components. The result was flagged to indicate the matrix interference.

Samples for PAH analysis were filtered prior to extraction.

No other anomalies associated with the analysis of these samples were observed.

Approved by _____





Chain of Custody

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K1607582



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Columbia Analytical Services, Inc.

Part of the ALS Group A Campbell Brothers Limited Company

Work Order No.:

Project Manager:						David Berestka					
Client Name:						Tetra Tech					
Address:						216 16th Street					
City, State ZIP:						Denver, CO 80202					
Email:						David.Berestka@tetrattech.com					
Phone:						303-312-8856					
Project Name:						CenturyLink Longview WA					
Project Number:						103P3080177					
P.O. Number:											
Sampler's Name:						Mike Pavarini/Vanessa Pineda					
SAMPLE RECEIPT											
Temperature (°C):				Temp Blank Present							
Received Intact:				Yes No N/A				Wet Ice / Blue Ice			
Cooler Custody Seals:				Yes No N/A				Total Containers:			
Sample Custody Seals:				Yes No N/A							
Sample Identification				Matrix		Date Sampled		Time Sampled		Lab ID	
MW-5				GW		7/7/10		1135			
MW-4				GW		7/7/10		1305			
MW-1 VP MW-1				GW		7/7/10		1535			
Total											
Dissolved											
Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Si, Sn, Sr, Ti, V, Zn, Zr											
Additional Methods Available Upon Request											
RELINQUISHED BY											
Print Name				Signature				Date/Time			
Vanessa Pineda				[Signature]				7/7/10 1617			
RECEIVED BY											
Print Name				Signature				Date/Time			
Fran [Signature]				[Signature]				7/14 1618			

PC Greg

Cooler Receipt and Preservation Form

Client Tetra tech Service Request K16 07582
 Received: 7-7-16 Opened: 7-7-16 By: CS Unloaded: 7-7-16 By: CS

1. Samples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered
 2. Samples were received in: (circle) Cooler Box Envelope Other NA
 3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
 If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID	Tracking Number	NA	Filed
10.4	10.2	5.8	5.6	-0.2	354	NA	NA		

4. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves _____
 5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
 6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
 7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
 8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
 9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
 10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
 11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
 12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page ____ of ____



Diesel and Residual Range Organics

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607582
Date Collected: 07/07/2016
Date Received: 07/07/2016

Diesel and Residual Range Organics

Sample Name: MW-5
Lab Code: K1607582-001
Extraction Method: METHOD
Analysis Method: NWTTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	21	J	270	12	1	07/11/16	07/13/16	KWG1605678	
Residual Range Organics (RRO)	34	J	530	20	1	07/11/16	07/13/16	KWG1605678	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	82	50-150	07/13/16	Acceptable
n-Triacontane	78	50-150	07/13/16	Acceptable

Comments: _____

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607582
Date Collected: 07/07/2016
Date Received: 07/07/2016

Diesel and Residual Range Organics

Sample Name: MW-4
Lab Code: K1607582-002
Extraction Method: METHOD
Analysis Method: NWT PH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	34	J	270	12	1	07/11/16	07/13/16	KWG1605678	
Residual Range Organics (RRO)	33	J	530	20	1	07/11/16	07/13/16	KWG1605678	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	74	50-150	07/13/16	Acceptable
n-Triacontane	73	50-150	07/13/16	Acceptable

Comments: _____

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607582
Date Collected: 07/07/2016
Date Received: 07/07/2016

Diesel and Residual Range Organics

Sample Name: MW-1
Lab Code: K1607582-003
Extraction Method: METHOD
Analysis Method: NWTPEH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	24	J	270	12	1	07/11/16	07/13/16	KWG1605678	
Residual Range Organics (RRO)	44	J	530	20	1	07/11/16	07/13/16	KWG1605678	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	76	50-150	07/13/16	Acceptable
n-Triacontane	76	50-150	07/13/16	Acceptable

Comments: _____

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607582
Date Collected: NA
Date Received: NA

Diesel and Residual Range Organics

Sample Name: Method Blank **Units:** ug/L
Lab Code: KWG1605678-5 **Basis:** NA
Extraction Method: METHOD **Level:** Low
Analysis Method: NWT PH-Dx

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	250	11	1	07/11/16	07/13/16	KWG1605678	
Residual Range Organics (RRO)	23	J	500	19	1	07/11/16	07/13/16	KWG1605678	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	77	50-150	07/13/16	Acceptable
n-Triacontane	79	50-150	07/13/16	Acceptable

Comments: _____

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607582

Surrogate Recovery Summary
Diesel and Residual Range Organics

Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
Batch QC	K1607464-010	85	83
MW-5	K1607582-001	82	78
MW-4	K1607582-002	74	73
MW-1	K1607582-003	76	76
Batch QCDUP	KWG1605678-1	84	84
Method Blank	KWG1605678-5	77	79
Lab Control Sample	KWG1605678-4	95	90

Surrogate Recovery Control Limits (%)

Sur1 = o-Terphenyl	50-150
Sur2 = n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607582
Date Extracted: 07/11/2016
Date Analyzed: 07/13/2016

Duplicate Sample Summary
Diesel and Residual Range Organics

Sample Name: Batch QC
Lab Code: K1607464-010
Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1605678

Analyte Name	MRL	MDL	Sample Result	Batch QCDUP KWG1605678-1 Duplicate Sample		Relative Percent Difference	RPD Limit
				Result	Average		
Diesel Range Organics (DRO)	260	12	18	13	15	27 #	30
Residual Range Organics (RRO)	520	20	34	38	36	11 #	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607582
Date Extracted: 07/11/2016
Date Analyzed: 07/13/2016

Lab Control Spike Summary
Diesel and Residual Range Organics

Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1605678

Lab Control Sample
KWG1605678-4
Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
Diesel Range Organics (DRO)	2570	3200	80	46-140
Residual Range Organics (RRO)	1350	1600	84	45-159

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



Polynuclear Aromatic Hydrocarbons

ALS Environmental—Kelso Laboratory
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www.alsglobal.com

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607582
Date Collected: 07/07/2016
Date Received: 07/07/2016

Polynuclear Aromatic Hydrocarbons

Sample Name: MW-5
Lab Code: K1607582-001
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	07/12/16	07/18/16	KWG1605713	
Acenaphthylene	0.0049	J	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Acenaphthene	0.0057	J	0.020	0.0044	1	07/12/16	07/18/16	KWG1605713	
Dibenzofuran	ND	U	0.020	0.0093	1	07/12/16	07/18/16	KWG1605713	
Fluorene	ND	Ui	0.020	0.0080	1	07/12/16	07/18/16	KWG1605713	
Phenanthrene	ND	U	0.020	0.0050	1	07/12/16	07/18/16	KWG1605713	
Anthracene	0.013	J	0.020	0.0036	1	07/12/16	07/18/16	KWG1605713	
Fluoranthene	ND	U	0.020	0.010	1	07/12/16	07/18/16	KWG1605713	
Pyrene	ND	U	0.020	0.0053	1	07/12/16	07/18/16	KWG1605713	
Benz(a)anthracene	ND	U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Chrysene	ND	U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	07/12/16	07/18/16	KWG1605713	
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	07/12/16	07/18/16	KWG1605713	
Benzo(a)pyrene	ND	U	0.020	0.0043	1	07/12/16	07/18/16	KWG1605713	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	07/12/16	07/18/16	KWG1605713	
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	07/12/16	07/18/16	KWG1605713	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	81	42-131	07/18/16	Acceptable
Fluoranthene-d10	94	42-133	07/18/16	Acceptable
Terphenyl-d14	91	32-129	07/18/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments: _____

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607582
Date Collected: 07/07/2016
Date Received: 07/07/2016

Polynuclear Aromatic Hydrocarbons

Sample Name: MW-4
Lab Code: K1607582-002
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	1.5		0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	07/12/16	07/18/16	KWG1605713	
Acenaphthylene	0.0076	J	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Acenaphthene	0.52		0.020	0.0044	1	07/12/16	07/18/16	KWG1605713	
Dibenzofuran	ND	U	0.020	0.0093	1	07/12/16	07/18/16	KWG1605713	
Fluorene	0.062		0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
Phenanthrene	ND	U	0.020	0.0050	1	07/12/16	07/18/16	KWG1605713	
Anthracene	0.010	J	0.020	0.0036	1	07/12/16	07/18/16	KWG1605713	
Fluoranthene	ND	U	0.020	0.010	1	07/12/16	07/18/16	KWG1605713	
Pyrene	0.079		0.020	0.0053	1	07/12/16	07/18/16	KWG1605713	
Benz(a)anthracene	0.0035	J	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Chrysene	ND	U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	07/12/16	07/18/16	KWG1605713	
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	07/12/16	07/18/16	KWG1605713	
Benzo(a)pyrene	ND	U	0.020	0.0043	1	07/12/16	07/18/16	KWG1605713	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	07/12/16	07/18/16	KWG1605713	
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	07/12/16	07/18/16	KWG1605713	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	74	42-131	07/18/16	Acceptable
Fluoranthene-d10	96	42-133	07/18/16	Acceptable
Terphenyl-d14	93	32-129	07/18/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments: _____

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607582
Date Collected: 07/07/2016
Date Received: 07/07/2016

Polynuclear Aromatic Hydrocarbons

Sample Name: MW-1
Lab Code: K1607582-003
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	07/12/16	07/18/16	KWG1605713	
Acenaphthylene	ND	U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Acenaphthene	ND	U	0.020	0.0044	1	07/12/16	07/18/16	KWG1605713	
Dibenzofuran	ND	U	0.020	0.0093	1	07/12/16	07/18/16	KWG1605713	
Fluorene	ND	U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
Phenanthrene	ND	U	0.020	0.0050	1	07/12/16	07/18/16	KWG1605713	
Anthracene	ND	U	0.020	0.0036	1	07/12/16	07/18/16	KWG1605713	
Fluoranthene	ND	U	0.020	0.010	1	07/12/16	07/18/16	KWG1605713	
Pyrene	ND	U	0.020	0.0053	1	07/12/16	07/18/16	KWG1605713	
Benz(a)anthracene	ND	U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Chrysene	ND	U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	07/12/16	07/18/16	KWG1605713	
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	07/12/16	07/18/16	KWG1605713	
Benzo(a)pyrene	ND	U	0.020	0.0043	1	07/12/16	07/18/16	KWG1605713	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	07/12/16	07/18/16	KWG1605713	
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	07/12/16	07/18/16	KWG1605713	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	77	42-131	07/18/16	Acceptable
Fluoranthene-d10	92	42-133	07/18/16	Acceptable
Terphenyl-d14	90	32-129	07/18/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments: _____

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607582
Date Collected: NA
Date Received: NA

Polynuclear Aromatic Hydrocarbons

Sample Name: Method Blank
Lab Code: KWG1605713-3
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	07/12/16	07/18/16	KWG1605713	
Acenaphthylene	ND	U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Acenaphthene	ND	U	0.020	0.0044	1	07/12/16	07/18/16	KWG1605713	
Dibenzofuran	ND	U	0.020	0.0093	1	07/12/16	07/18/16	KWG1605713	
Fluorene	ND	U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
Phenanthrene	ND	U	0.020	0.0050	1	07/12/16	07/18/16	KWG1605713	
Anthracene	ND	U	0.020	0.0036	1	07/12/16	07/18/16	KWG1605713	
Fluoranthene	ND	U	0.020	0.010	1	07/12/16	07/18/16	KWG1605713	
Pyrene	ND	U	0.020	0.0053	1	07/12/16	07/18/16	KWG1605713	
Benz(a)anthracene	ND	U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Chrysene	ND	U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	07/12/16	07/18/16	KWG1605713	
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	07/12/16	07/18/16	KWG1605713	
Benzo(a)pyrene	ND	U	0.020	0.0043	1	07/12/16	07/18/16	KWG1605713	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	07/12/16	07/18/16	KWG1605713	
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	07/12/16	07/18/16	KWG1605713	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	81	42-131	07/18/16	Acceptable
Fluoranthene-d10	90	42-133	07/18/16	Acceptable
Terphenyl-d14	90	32-129	07/18/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments: _____

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607582

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
MW-5	K1607582-001	81	94	91
MW-4	K1607582-002	74	96	93
MW-1	K1607582-003	77	92	90
Method Blank	KWG1605713-3	81	90	90
Lab Control Sample	KWG1605713-1	87	96	92
Duplicate Lab Control Sample	KWG1605713-2	89	98	92

Surrogate Recovery Control Limits (%)

Sur1 = Fluorene-d10	42-131
Sur2 = Fluoranthene-d10	42-133
Sur3 = Terphenyl-d14	32-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607582
Date Extracted: 07/12/2016
Date Analyzed: 07/18/2016

Lab Control Spike/Duplicate Lab Control Spike Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1605713

Analyte Name	Lab Control Sample KWG1605713-1 Lab Control Spike			Duplicate Lab Control Sample KWG1605713-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Naphthalene	2.13	2.50	85	2.21	2.50	88	52-115	4	30
2-Methylnaphthalene	1.94	2.50	77	2.00	2.50	80	48-120	3	30
Acenaphthylene	2.31	2.50	92	2.39	2.50	95	58-124	3	30
Acenaphthene	2.30	2.50	92	2.35	2.50	94	63-121	2	30
Dibenzofuran	2.43	2.50	97	2.47	2.50	99	56-132	2	30
Fluorene	2.25	2.50	90	2.31	2.50	92	68-121	3	30
Phenanthrene	2.12	2.50	85	2.19	2.50	88	64-126	3	30
Anthracene	1.98	2.50	79	2.06	2.50	82	68-127	4	30
Fluoranthene	2.25	2.50	90	2.32	2.50	93	70-127	3	30
Pyrene	2.30	2.50	92	2.31	2.50	92	72-127	0	30
Benz(a)anthracene	2.20	2.50	88	2.20	2.50	88	74-124	0	30
Chrysene	2.37	2.50	95	2.38	2.50	95	74-132	0	30
Benzo(b)fluoranthene	2.36	2.50	94	2.36	2.50	94	73-136	0	30
Benzo(k)fluoranthene	2.38	2.50	95	2.42	2.50	97	74-134	1	30
Benzo(a)pyrene	2.11	2.50	84	2.14	2.50	85	75-131	1	30
Indeno(1,2,3-cd)pyrene	2.05	2.50	82	2.05	2.50	82	63-136	0	30
Dibenz(a,h)anthracene	1.99	2.50	79	2.01	2.50	80	59-135	1	30
Benzo(g,h,i)perylene	1.98	2.50	79	2.03	2.50	81	63-127	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



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August 03, 2016

Analytical Report for Service Request No: K1607647

Rob Tisdale
Tetra Tech EM, Incorporated
216 16th St , Suite 1500
Denver, CO 80202

RE: Century Link Longview WA / 103P3080177

Dear Rob,

Enclosed are the results of the sample(s) submitted to our laboratory July 08, 2016
For your reference, these analyses have been assigned our service request number **K1607647**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at gregory.salata@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Senior Project
Manager



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Table of Contents

Acronyms

Qualifiers

State Certifications, Accreditations, And Licenses

Case Narrative

Chain of Custody

Diesel and Residual Range Organics

Polynuclear Aromatic Hydrocarbons

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
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www.alsglobal.com

ALS ENVIRONMENTAL

Client: Tetra Tech EM, Incorporated
Project: Century Link Longview WA/ 103P3080177
Sample Matrix: Water

Service Request No.: K1607647
Date Received: 07/08/16

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Control Sample (LCS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Three water samples were received for analysis at ALS Environmental on 07/08/16. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Diesel Range Organics by Method NWTPH-Dx

No anomalies associated with the analysis of these samples were observed.

Polynuclear Aromatic Hydrocarbons by EPA Method 8270

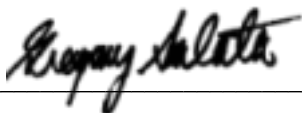
Sample Notes and Discussion:

The results reported for Pyrene in sample MW-3 may contain a slight bias. The chromatogram indicated the presence of non-target background components. The matrix interference may have resulted in a slight high bias in the affected sample. The result was flagged with "X" to indicate the issue.

Samples for PAH analysis were filtered prior to extraction.

No other anomalies associated with the analysis of these samples were observed.

Approved by _____





Chain of Custody

ALS Environmental—Kelso Laboratory
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Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

K1607647



www.castlab.com = www.alsglobal.com



PC _____

Cooler Receipt and Preservation Form

Client Tetra Tech Service Request K16 07647
 Received: 7-8-16 Opened: 7-8-16 By: ES Unloaded: 7-8-16 By: ES

1. Samples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered
 2. Samples were received in: (circle) Cooler Box Envelope Other NA
 3. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____
 If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID	Tracking Number	NA	Filed
4.3	4.3	6.1	6.1	2	371	NA		NA	

4. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves
 5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
 6. Did all bottles arrive in good condition (unbroken)? Indicate in the table below. NA (Y) N
 7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
 8. Did all sample labels and tags agree with custody papers? Indicate major discrepancies in the table on page 2. NA (Y) N
 9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
 10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? Indicate in the table below (NA) Y N
 11. Were VOA vials received without headspace? Indicate in the table below. (NA) Y N
 12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page _____ of _____



Diesel and Residual Range Organics

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ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: Century Link Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607647
Date Collected: 07/08/2016
Date Received: 07/08/2016

Diesel and Residual Range Organics

Sample Name: MW-3
Lab Code: K1607647-001
Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	22	J	260	12	1	07/11/16	07/13/16	KWG1605678	
Residual Range Organics (RRO)	41	J	510	20	1	07/11/16	07/13/16	KWG1605678	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	77	50-150	07/13/16	Acceptable
n-Triacontane	73	50-150	07/13/16	Acceptable

Comments: _____

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: Century Link Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607647
Date Collected: 07/08/2016
Date Received: 07/08/2016

Diesel and Residual Range Organics

Sample Name: MW-2 **Units:** ug/L
Lab Code: K1607647-002 **Basis:** NA
Extraction Method: METHOD **Level:** Low
Analysis Method: NWT PH-Dx

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	330	Y	270	12	1	07/11/16	07/13/16	KWG1605678	
Residual Range Organics (RRO)	140	J	530	20	1	07/11/16	07/13/16	KWG1605678	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	84	50-150	07/13/16	Acceptable
n-Triacontane	80	50-150	07/13/16	Acceptable

Comments: _____

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: Century Link Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607647
Date Collected: 07/08/2016
Date Received: 07/08/2016

Diesel and Residual Range Organics

Sample Name: Dup-070816 **Units:** ug/L
Lab Code: K1607647-003 **Basis:** NA
Extraction Method: METHOD **Level:** Low
Analysis Method: NWT PH-Dx

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	310	Y	250	11	1	07/11/16	07/13/16	KWG1605678	
Residual Range Organics (RRO)	140	J	500	19	1	07/11/16	07/13/16	KWG1605678	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	77	50-150	07/13/16	Acceptable
n-Triacontane	75	50-150	07/13/16	Acceptable

Comments: _____

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: Century Link Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607647
Date Collected: NA
Date Received: NA

Diesel and Residual Range Organics

Sample Name: Method Blank **Units:** ug/L
Lab Code: KWG1605678-5 **Basis:** NA
Extraction Method: METHOD **Level:** Low
Analysis Method: NWTTPH-Dx

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	250	11	1	07/11/16	07/13/16	KWG1605678	
Residual Range Organics (RRO)	23	J	500	19	1	07/11/16	07/13/16	KWG1605678	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	77	50-150	07/13/16	Acceptable
n-Triacontane	79	50-150	07/13/16	Acceptable

Comments: _____

Client: Tetra Tech EM, Incorporated
Project: Century Link Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607647

Surrogate Recovery Summary
Diesel and Residual Range Organics

Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
Batch QC	K1607464-010	85	83
MW-3	K1607647-001	77	73
MW-2	K1607647-002	84	80
Dup-070816	K1607647-003	77	75
Batch QCDUP	KWG1605678-1	84	84
Method Blank	KWG1605678-5	77	79
Lab Control Sample	KWG1605678-4	95	90

Surrogate Recovery Control Limits (%)

Sur1 = o-Terphenyl	50-150
Sur2 = n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech EM, Incorporated
Project: Century Link Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607647
Date Extracted: 07/11/2016
Date Analyzed: 07/13/2016

Duplicate Sample Summary
Diesel and Residual Range Organics

Sample Name: Batch QC
Lab Code: K1607464-010
Extraction Method: METHOD
Analysis Method: NWTPE-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1605678

Analyte Name	MRL	MDL	Sample Result	Batch QCDUP KWG1605678-1 Duplicate Sample		Relative Percent Difference	RPD Limit
				Result	Average		
Diesel Range Organics (DRO)	260	12	18	13	15	27 #	30
Residual Range Organics (RRO)	520	20	34	38	36	11 #	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: Tetra Tech EM, Incorporated
Project: Century Link Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607647
Date Extracted: 07/11/2016
Date Analyzed: 07/13/2016

Lab Control Spike Summary
Diesel and Residual Range Organics

Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1605678

Lab Control Sample
KWG1605678-4
Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
Diesel Range Organics (DRO)	2570	3200	80	46-140
Residual Range Organics (RRO)	1350	1600	84	45-159

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



Polynuclear Aromatic Hydrocarbons

ALS Environmental—Kelso Laboratory
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Analytical Results

Client: Tetra Tech EM, Incorporated
Project: Century Link Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607647
Date Collected: 07/08/2016
Date Received: 07/08/2016

Polynuclear Aromatic Hydrocarbons

Sample Name: MW-3
Lab Code: K1607647-001
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	07/12/16	07/18/16	KWG1605713	
Acenaphthylene	ND	U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Acenaphthene	ND	U	0.020	0.0044	1	07/12/16	07/18/16	KWG1605713	
Dibenzofuran	ND	U	0.020	0.0093	1	07/12/16	07/18/16	KWG1605713	
Fluorene	ND	U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
Phenanthrene	ND	U	0.020	0.0050	1	07/12/16	07/18/16	KWG1605713	
Anthracene	ND	U	0.020	0.0036	1	07/12/16	07/18/16	KWG1605713	
Fluoranthene	ND	U	0.020	0.010	1	07/12/16	07/18/16	KWG1605713	
Pyrene	0.0065	JX	0.020	0.0053	1	07/12/16	07/18/16	KWG1605713	
Benz(a)anthracene	0.0027	J	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Chrysene	ND	U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	07/12/16	07/18/16	KWG1605713	
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	07/12/16	07/18/16	KWG1605713	
Benzo(a)pyrene	ND	U	0.020	0.0043	1	07/12/16	07/18/16	KWG1605713	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	07/12/16	07/18/16	KWG1605713	
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	07/12/16	07/18/16	KWG1605713	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	66	42-131	07/18/16	Acceptable
Fluoranthene-d10	90	42-133	07/18/16	Acceptable
Terphenyl-d14	90	32-129	07/18/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: Century Link Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607647
Date Collected: 07/08/2016
Date Received: 07/08/2016

Polynuclear Aromatic Hydrocarbons

Sample Name: MW-2
Lab Code: K1607647-002
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	07/12/16	07/18/16	KWG1605713	
Acenaphthylene	ND	U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Acenaphthene	ND	U	0.020	0.0044	1	07/12/16	07/18/16	KWG1605713	
Dibenzofuran	ND	U	0.020	0.0093	1	07/12/16	07/18/16	KWG1605713	
Fluorene	ND	U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
Phenanthrene	ND	U	0.020	0.0050	1	07/12/16	07/18/16	KWG1605713	
Anthracene	0.019	J	0.020	0.0036	1	07/12/16	07/18/16	KWG1605713	
Fluoranthene	ND	U	0.020	0.010	1	07/12/16	07/18/16	KWG1605713	
Pyrene	ND	U	0.020	0.0053	1	07/12/16	07/18/16	KWG1605713	
Benz(a)anthracene	ND	U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Chrysene	ND	U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	07/12/16	07/18/16	KWG1605713	
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	07/12/16	07/18/16	KWG1605713	
Benzo(a)pyrene	ND	U	0.020	0.0043	1	07/12/16	07/18/16	KWG1605713	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	07/12/16	07/18/16	KWG1605713	
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	07/12/16	07/18/16	KWG1605713	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	82	42-131	07/18/16	Acceptable
Fluoranthene-d10	92	42-133	07/18/16	Acceptable
Terphenyl-d14	88	32-129	07/18/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: Century Link Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607647
Date Collected: 07/08/2016
Date Received: 07/08/2016

Polynuclear Aromatic Hydrocarbons

Sample Name: Dup-070816
Lab Code: K1607647-003
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	07/12/16	07/18/16	KWG1605713	
Acenaphthylene	ND	U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Acenaphthene	ND	U	0.020	0.0044	1	07/12/16	07/18/16	KWG1605713	
Dibenzofuran	ND	U	0.020	0.0093	1	07/12/16	07/18/16	KWG1605713	
Fluorene	ND	U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
Phenanthrene	ND	U	0.020	0.0050	1	07/12/16	07/18/16	KWG1605713	
Anthracene	0.017	J	0.020	0.0036	1	07/12/16	07/18/16	KWG1605713	
Fluoranthene	ND	U	0.020	0.010	1	07/12/16	07/18/16	KWG1605713	
Pyrene	ND	U	0.020	0.0053	1	07/12/16	07/18/16	KWG1605713	
Benz(a)anthracene	ND	U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Chrysene	ND	U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	07/12/16	07/18/16	KWG1605713	
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	07/12/16	07/18/16	KWG1605713	
Benzo(a)pyrene	ND	U	0.020	0.0043	1	07/12/16	07/18/16	KWG1605713	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	07/12/16	07/18/16	KWG1605713	
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	07/12/16	07/18/16	KWG1605713	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	73	42-131	07/18/16	Acceptable
Fluoranthene-d10	89	42-133	07/18/16	Acceptable
Terphenyl-d14	87	32-129	07/18/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: Century Link Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607647
Date Collected: NA
Date Received: NA

Polynuclear Aromatic Hydrocarbons

Sample Name: Method Blank
Lab Code: KWG1605713-3
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	07/12/16	07/18/16	KWG1605713	
Acenaphthylene	ND	U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Acenaphthene	ND	U	0.020	0.0044	1	07/12/16	07/18/16	KWG1605713	
Dibenzofuran	ND	U	0.020	0.0093	1	07/12/16	07/18/16	KWG1605713	
Fluorene	ND	U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
Phenanthrene	ND	U	0.020	0.0050	1	07/12/16	07/18/16	KWG1605713	
Anthracene	ND	U	0.020	0.0036	1	07/12/16	07/18/16	KWG1605713	
Fluoranthene	ND	U	0.020	0.010	1	07/12/16	07/18/16	KWG1605713	
Pyrene	ND	U	0.020	0.0053	1	07/12/16	07/18/16	KWG1605713	
Benz(a)anthracene	ND	U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Chrysene	ND	U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	07/12/16	07/18/16	KWG1605713	
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	07/12/16	07/18/16	KWG1605713	
Benzo(a)pyrene	ND	U	0.020	0.0043	1	07/12/16	07/18/16	KWG1605713	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	07/12/16	07/18/16	KWG1605713	
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	07/12/16	07/18/16	KWG1605713	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	81	42-131	07/18/16	Acceptable
Fluoranthene-d10	90	42-133	07/18/16	Acceptable
Terphenyl-d14	90	32-129	07/18/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments: _____

Client: Tetra Tech EM, Incorporated
Project: Century Link Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607647

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
MW-3	K1607647-001	66	90	90
MW-2	K1607647-002	82	92	88
Dup-070816	K1607647-003	73	89	87
Method Blank	KWG1605713-3	81	90	90
Lab Control Sample	KWG1605713-1	87	96	92
Duplicate Lab Control Sample	KWG1605713-2	89	98	92

Surrogate Recovery Control Limits (%)

Sur1 = Fluorene-d10	42-131
Sur2 = Fluoranthene-d10	42-133
Sur3 = Terphenyl-d14	32-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: Tetra Tech EM, Incorporated
Project: Century Link Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1607647
Date Extracted: 07/12/2016
Date Analyzed: 07/18/2016

Lab Control Spike/Duplicate Lab Control Spike Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1605713

Analyte Name	Lab Control Sample KWG1605713-1 Lab Control Spike			Duplicate Lab Control Sample KWG1605713-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Naphthalene	2.13	2.50	85	2.21	2.50	88	52-115	4	30
2-Methylnaphthalene	1.94	2.50	77	2.00	2.50	80	48-120	3	30
Acenaphthylene	2.31	2.50	92	2.39	2.50	95	58-124	3	30
Acenaphthene	2.30	2.50	92	2.35	2.50	94	63-121	2	30
Dibenzofuran	2.43	2.50	97	2.47	2.50	99	56-132	2	30
Fluorene	2.25	2.50	90	2.31	2.50	92	68-121	3	30
Phenanthrene	2.12	2.50	85	2.19	2.50	88	64-126	3	30
Anthracene	1.98	2.50	79	2.06	2.50	82	68-127	4	30
Fluoranthene	2.25	2.50	90	2.32	2.50	93	70-127	3	30
Pyrene	2.30	2.50	92	2.31	2.50	92	72-127	0	30
Benz(a)anthracene	2.20	2.50	88	2.20	2.50	88	74-124	0	30
Chrysene	2.37	2.50	95	2.38	2.50	95	74-132	0	30
Benzo(b)fluoranthene	2.36	2.50	94	2.36	2.50	94	73-136	0	30
Benzo(k)fluoranthene	2.38	2.50	95	2.42	2.50	97	74-134	1	30
Benzo(a)pyrene	2.11	2.50	84	2.14	2.50	85	75-131	1	30
Indeno(1,2,3-cd)pyrene	2.05	2.50	82	2.05	2.50	82	63-136	0	30
Dibenz(a,h)anthracene	1.99	2.50	79	2.01	2.50	80	59-135	1	30
Benzo(g,h,i)perylene	1.98	2.50	79	2.03	2.50	81	63-127	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ATTACHMENT C
REVISED LABORATORY ANALYTICAL REPORTS AND CHAIN OF CUSTODY RECORDS
MARCH 2016 SAMPLING EVENT



ALS Environmental
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www.alsglobal.com

June 02, 2016

Analytical Report for Service Request No: K1603183
Revised Service Request No: K1603183.01

Rob Tisdale
Tetra Tech EM, Incorporated
216 16th St, Suite 1500

Denver, CO 80202

RE: CenturyLink Longview WA / 103P3080177

Dear Rob,

Enclosed is the revised report for the sample(s) submitted to our laboratory March 31, 2016
For your reference, these analyses have been assigned our service request number **K1603183**.

The PAH reporting list has been corrected.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

We apologize for any inconvenience this may have created.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at gregory.salata@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Senior Project
Manager



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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



Case Narrative

ALS Environmental—Kelso Laboratory
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Phone (360)577-7222 Fax (360)636-1068
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ALS ENVIRONMENTAL

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/ 103P3070177
Sample Matrix: Water

Service Request No.: K1603215
Date Received: 04/01/16

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Control Sample (LCS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Three water samples were received for analysis at ALS Environmental on 04/01/16. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Diesel Range Organics by Method NWTPH-Dx

Sample Notes and Discussion:

Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No other anomalies associated with the analysis of these samples were observed.

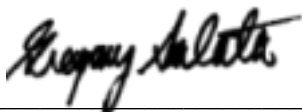
Polynuclear Aromatic Hydrocarbons by EPA Method 8270

Lab Control Sample Exceptions:

The lower control criterion was exceeded by 1-19% for several compounds in replicate Laboratory Control Samples (LCS/DLCS) KWG1602648-1 and KWG1602648-52. The analytes in question were not detected in the associated field samples. The error associated with reduced recovery equates to a potential low bias. The results were flagged to indicate the issue. No further corrective action was taken.

No other anomalies associated with the analysis of these samples were observed.

Approved by _____





Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
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Chain of Custody



ADDRESS 1317 South 13th Ave., Kelso, WA 98626
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 Columbia Analytical Services, Inc.
 Part of the ALS Group A Campbell Brothers Limited Company

Work Order No.:

2160383

Project Manager: David Berestka				Bill to: Vanessa Pineda			
Client Name: Tetra Tech				Company: Tetra Tech			
Address: 216 16th Street				Address: 216 16th Street Suite 1500			
City, State ZIP: Denver, CO 80202				City, State ZIP: Denver, CO 80202			
Email: David.Berestka@tetrattech.com		Phone: 303-312-8856		Email: vanessa.pineda@tetrattech.com		Phone: 303-312-8812	
Project Name: CenturyLink Longview WA				REQUESTED ANALYSIS			
Project Number: 103P3080177							
P.O. Number:							
Sampler's Name: Mike Pavarini/Vanessa Pineda							
SAMPLE RECEIPT				TAT			
Temperature (C):		Temp Blank Present					
Received Intact: Yes No N/A		Wet Ice / Blue Ice					
Cooler Custody Seals: Yes No N/A		Total Containers:					
Sample Custody Seals: Yes No N/A				*** Please call for availability			
Sample Identification		Matrix	Date Sampled	Time Sampled	Lab ID	Due Date:	
						Comments	
						Additional Methods Available Upon Request	
Total		Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Si, Sn, Sr, Ti, V, Zn, Zr					
Dissolved		Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Si, Sn, Sr, Ti, V, Zn, Zr					
RELINQUISHED BY						RECEIVED BY	
Print Name		Signature		Date/Time		Print Name	
Vanessa Pineda				3/31/16 1652		K Smith	
						3/31/16 1652	

PC bray

Cooler Receipt and Preservation Form

Client TetraTech Service Request K16 03183
Received: 3/31/16 Opened: 3/31/16 By: HO Unloaded: 3/31/16 By: HO

1. Samples were received via? Mail Fed Ex UPS DHL PDX Courier Hand Delivered
2. Samples were received in: (circle) Cooler Box Envelope Other NA
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID	Tracking Number	NA	Filed
13.0	13.0	6.2	6.2	0	367				
27.1	27.4	36.6	36.6	0	369				

4. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head- space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page ____ of ____



Diesel and Residual Range Organics

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603183
Date Collected: 03/31/2016
Date Received: 03/31/2016

Diesel and Residual Range Organics

Sample Name: MW5
Lab Code: K1603183-001
Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	30	J	260	12	1	04/06/16	04/11/16	KWG1602647	
Residual Range Organics (RRO)	53	J	510	20	1	04/06/16	04/11/16	KWG1602647	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	84	50-150	04/11/16	Acceptable
n-Triacontane	81	50-150	04/11/16	Acceptable

Comments: _____

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603183
Date Collected: 03/31/2016
Date Received: 03/31/2016

Diesel and Residual Range Organics

Sample Name: MW4
Lab Code: K1603183-002
Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	30	J	260	12	1	04/06/16	04/11/16	KWG1602647	
Residual Range Organics (RRO)	54	J	510	20	1	04/06/16	04/11/16	KWG1602647	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	89	50-150	04/11/16	Acceptable
n-Triacontane	86	50-150	04/11/16	Acceptable

Comments: _____

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603183
Date Collected: 03/31/2016
Date Received: 03/31/2016

Diesel and Residual Range Organics

Sample Name: MW4-BT
Lab Code: K1603183-003
Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	33	J	260	12	1	04/06/16	04/11/16	KWG1602647	
Residual Range Organics (RRO)	97	J	510	20	1	04/06/16	04/11/16	KWG1602647	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	91	50-150	04/11/16	Acceptable
n-Triacontane	89	50-150	04/11/16	Acceptable

Comments: _____

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603183
Date Collected: 03/31/2016
Date Received: 03/31/2016

Diesel and Residual Range Organics

Sample Name: MW4-BB
Lab Code: K1603183-004
Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	90	J	260	12	1	04/06/16	04/11/16	KWG1602647	
Residual Range Organics (RRO)	590	O	510	20	1	04/06/16	04/11/16	KWG1602647	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	81	50-150	04/11/16	Acceptable
n-Triacontane	85	50-150	04/11/16	Acceptable

Comments: _____

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603183
Date Collected: 03/31/2016
Date Received: 03/31/2016

Diesel and Residual Range Organics

Sample Name: MW-1
Lab Code: K1603183-005
Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	41	J	260	12	1	04/06/16	04/11/16	KWG1602647	
Residual Range Organics (RRO)	83	J	510	20	1	04/06/16	04/11/16	KWG1602647	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	82	50-150	04/11/16	Acceptable
n-Triacontane	82	50-150	04/11/16	Acceptable

Comments: _____

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603183
Date Collected: NA
Date Received: NA

Diesel and Residual Range Organics

Sample Name: Method Blank
Lab Code: KWG1602647-3
Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	21	J	250	11	1	04/06/16	04/11/16	KWG1602647	
Residual Range Organics (RRO)	55	J	500	19	1	04/06/16	04/11/16	KWG1602647	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	94	50-150	04/11/16	Acceptable
n-Triacontane	91	50-150	04/11/16	Acceptable

Comments: _____

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603183

**Surrogate Recovery Summary
Diesel and Residual Range Organics**

Extraction Method: METHOD
Analysis Method: NWTPE-Dx

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
MW5	K1603183-001	84	81
MW4	K1603183-002	89	86
MW4-BT	K1603183-003	91	89
MW4-BB	K1603183-004	81	85
MW-1	K1603183-005	82	82
Method Blank	KWG1602647-3	94	91
Lab Control Sample	KWG1602647-1	97	91
Duplicate Lab Control Sample	KWG1602647-2	99	93

Surrogate Recovery Control Limits (%)

Sur1 = o-Terphenyl	50-150
Sur2 = n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603183
Date Extracted: 04/06/2016
Date Analyzed: 04/11/2016

Lab Control Spike/Duplicate Lab Control Spike Summary
Diesel and Residual Range Organics

Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1602647

Analyte Name	Lab Control Sample KWG1602647-1 Lab Control Spike			Duplicate Lab Control Sample KWG1602647-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Diesel Range Organics (DRO)	2920	3200	91	3030	3200	95	46-140	4	30
Residual Range Organics (RRO)	1380	1600	86	1420	1600	89	45-159	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



Polynuclear Aromatic Hydrocarbons

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603183
Date Collected: 03/31/2016
Date Received: 03/31/2016

Polynuclear Aromatic Hydrocarbons

Sample Name: MW5
Lab Code: K1603183-001
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	04/06/16	04/11/16	KWG1602648	
1-Methylnaphthalene	ND	U	0.020	0.0035	1	04/06/16	04/11/16	KWG1602648	
Acenaphthylene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	
Acenaphthene	ND	U	0.020	0.0044	1	04/06/16	04/11/16	KWG1602648	
Fluorene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
Phenanthrene	ND	U	0.020	0.0050	1	04/06/16	04/11/16	KWG1602648	
Anthracene	0.0092	J	0.020	0.0036	1	04/06/16	04/11/16	KWG1602648	*
Carbazole	ND	U	0.020	0.0045	1	04/06/16	04/11/16	KWG1602648	
Fluoranthene	ND	U	0.020	0.010	1	04/06/16	04/11/16	KWG1602648	*
Pyrene	ND	U	0.020	0.0053	1	04/06/16	04/11/16	KWG1602648	*
Benz(a)anthracene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Chrysene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	*
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	04/06/16	04/11/16	KWG1602648	*
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	04/06/16	04/11/16	KWG1602648	*
Benzo(a)pyrene	ND	U	0.020	0.0043	1	04/06/16	04/11/16	KWG1602648	*
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	04/06/16	04/11/16	KWG1602648	*
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	04/06/16	04/11/16	KWG1602648	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	89	42-131	04/11/16	Acceptable
Fluoranthene-d10	104	42-133	04/11/16	Acceptable
Terphenyl-d14	97	32-129	04/11/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603183
Date Collected: 03/31/2016
Date Received: 03/31/2016

Polynuclear Aromatic Hydrocarbons

Sample Name: MW4
Lab Code: K1603183-002
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	04/06/16	04/11/16	KWG1602648	
1-Methylnaphthalene	ND	U	0.020	0.0035	1	04/06/16	04/11/16	KWG1602648	
Acenaphthylene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	
Acenaphthene	ND	U	0.020	0.0044	1	04/06/16	04/11/16	KWG1602648	
Fluorene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
Phenanthrene	ND	U	0.020	0.0050	1	04/06/16	04/11/16	KWG1602648	
Anthracene	0.0040	J	0.020	0.0036	1	04/06/16	04/11/16	KWG1602648	*
Carbazole	ND	U	0.020	0.0045	1	04/06/16	04/11/16	KWG1602648	
Fluoranthene	ND	U	0.020	0.010	1	04/06/16	04/11/16	KWG1602648	*
Pyrene	0.034		0.020	0.0053	1	04/06/16	04/11/16	KWG1602648	*
Benz(a)anthracene	0.0026	J	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Chrysene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	*
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	04/06/16	04/11/16	KWG1602648	*
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	04/06/16	04/11/16	KWG1602648	*
Benzo(a)pyrene	ND	U	0.020	0.0043	1	04/06/16	04/11/16	KWG1602648	*
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	04/06/16	04/11/16	KWG1602648	*
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	04/06/16	04/11/16	KWG1602648	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	93	42-131	04/11/16	Acceptable
Fluoranthene-d10	108	42-133	04/11/16	Acceptable
Terphenyl-d14	100	32-129	04/11/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603183
Date Collected: 03/31/2016
Date Received: 03/31/2016

Polynuclear Aromatic Hydrocarbons

Sample Name: MW4-BT
Lab Code: K1603183-003
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	04/06/16	04/11/16	KWG1602648	
1-Methylnaphthalene	ND	U	0.020	0.0035	1	04/06/16	04/11/16	KWG1602648	
Acenaphthylene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	
Acenaphthene	ND	U	0.020	0.0044	1	04/06/16	04/11/16	KWG1602648	
Fluorene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
Phenanthrene	ND	U	0.020	0.0050	1	04/06/16	04/11/16	KWG1602648	
Anthracene	ND	U	0.020	0.0036	1	04/06/16	04/11/16	KWG1602648	*
Carbazole	ND	U	0.020	0.0045	1	04/06/16	04/11/16	KWG1602648	
Fluoranthene	ND	U	0.020	0.010	1	04/06/16	04/11/16	KWG1602648	*
Pyrene	ND	U	0.020	0.0053	1	04/06/16	04/11/16	KWG1602648	*
Benz(a)anthracene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Chrysene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	*
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	04/06/16	04/11/16	KWG1602648	*
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	04/06/16	04/11/16	KWG1602648	*
Benzo(a)pyrene	ND	U	0.020	0.0043	1	04/06/16	04/11/16	KWG1602648	*
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	04/06/16	04/11/16	KWG1602648	*
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	04/06/16	04/11/16	KWG1602648	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	93	42-131	04/11/16	Acceptable
Fluoranthene-d10	95	42-133	04/11/16	Acceptable
Terphenyl-d14	89	32-129	04/11/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603183
Date Collected: 03/31/2016
Date Received: 03/31/2016

Polynuclear Aromatic Hydrocarbons

Sample Name: MW4-BB
Lab Code: K1603183-004
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	04/06/16	04/11/16	KWG1602648	
1-Methylnaphthalene	ND	U	0.020	0.0035	1	04/06/16	04/11/16	KWG1602648	
Acenaphthylene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	
Acenaphthene	ND	U	0.020	0.0044	1	04/06/16	04/11/16	KWG1602648	
Fluorene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
Phenanthrene	ND	U	0.020	0.0050	1	04/06/16	04/11/16	KWG1602648	
Anthracene	ND	U	0.020	0.0036	1	04/06/16	04/11/16	KWG1602648	*
Carbazole	ND	U	0.020	0.0045	1	04/06/16	04/11/16	KWG1602648	
Fluoranthene	ND	U	0.020	0.010	1	04/06/16	04/11/16	KWG1602648	*
Pyrene	0.0098	J	0.020	0.0053	1	04/06/16	04/11/16	KWG1602648	*
Benz(a)anthracene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Chrysene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	*
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	04/06/16	04/11/16	KWG1602648	*
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	04/06/16	04/11/16	KWG1602648	*
Benzo(a)pyrene	ND	U	0.020	0.0043	1	04/06/16	04/11/16	KWG1602648	*
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	04/06/16	04/11/16	KWG1602648	*
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	04/06/16	04/11/16	KWG1602648	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	94	42-131	04/11/16	Acceptable
Fluoranthene-d10	105	42-133	04/11/16	Acceptable
Terphenyl-d14	97	32-129	04/11/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603183
Date Collected: 03/31/2016
Date Received: 03/31/2016

Polynuclear Aromatic Hydrocarbons

Sample Name: MW-1
Lab Code: K1603183-005
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	04/06/16	04/11/16	KWG1602648	
1-Methylnaphthalene	ND	U	0.020	0.0035	1	04/06/16	04/11/16	KWG1602648	
Acenaphthylene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	
Acenaphthene	ND	U	0.020	0.0044	1	04/06/16	04/11/16	KWG1602648	
Fluorene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
Phenanthrene	ND	U	0.020	0.0050	1	04/06/16	04/11/16	KWG1602648	
Anthracene	ND	U	0.020	0.0036	1	04/06/16	04/11/16	KWG1602648	*
Carbazole	ND	U	0.020	0.0045	1	04/06/16	04/11/16	KWG1602648	
Fluoranthene	ND	U	0.020	0.010	1	04/06/16	04/11/16	KWG1602648	*
Pyrene	ND	U	0.020	0.0053	1	04/06/16	04/11/16	KWG1602648	*
Benz(a)anthracene	0.0035	J	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Chrysene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	*
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	04/06/16	04/11/16	KWG1602648	*
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	04/06/16	04/11/16	KWG1602648	*
Benzo(a)pyrene	ND	U	0.020	0.0043	1	04/06/16	04/11/16	KWG1602648	*
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	04/06/16	04/11/16	KWG1602648	*
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	04/06/16	04/11/16	KWG1602648	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	92	42-131	04/11/16	Acceptable
Fluoranthene-d10	107	42-133	04/11/16	Acceptable
Terphenyl-d14	98	32-129	04/11/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603183
Date Collected: NA
Date Received: NA

Polynuclear Aromatic Hydrocarbons

Sample Name: Method Blank
Lab Code: KWG1602648-3
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	04/06/16	04/11/16	KWG1602648	
1-Methylnaphthalene	ND	U	0.020	0.0035	1	04/06/16	04/11/16	KWG1602648	
Acenaphthylene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	
Acenaphthene	ND	U	0.020	0.0044	1	04/06/16	04/11/16	KWG1602648	
Fluorene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
Phenanthrene	ND	U	0.020	0.0050	1	04/06/16	04/11/16	KWG1602648	
Anthracene	ND	U	0.020	0.0036	1	04/06/16	04/11/16	KWG1602648	*
Carbazole	ND	U	0.020	0.0045	1	04/06/16	04/11/16	KWG1602648	
Fluoranthene	ND	U	0.020	0.010	1	04/06/16	04/11/16	KWG1602648	*
Pyrene	ND	U	0.020	0.0053	1	04/06/16	04/11/16	KWG1602648	*
Benz(a)anthracene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Chrysene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	*
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	04/06/16	04/11/16	KWG1602648	*
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	04/06/16	04/11/16	KWG1602648	*
Benzo(a)pyrene	ND	U	0.020	0.0043	1	04/06/16	04/11/16	KWG1602648	*
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	04/06/16	04/11/16	KWG1602648	*
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	04/06/16	04/11/16	KWG1602648	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	96	42-131	04/11/16	Acceptable
Fluoranthene-d10	104	42-133	04/11/16	Acceptable
Terphenyl-d14	94	32-129	04/11/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603183

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
MW5	K1603183-001	89	104	97
MW4	K1603183-002	93	108	100
MW4-BT	K1603183-003	93	95	89
MW4-BB	K1603183-004	94	105	97
MW-1	K1603183-005	92	107	98
Method Blank	KWG1602648-3	96	104	94
Lab Control Sample	KWG1602648-1	105	116	101
Duplicate Lab Control Sample	KWG1602648-2	101	97	76

Surrogate Recovery Control Limits (%)

Sur1 = Fluorene-d10	42-131
Sur2 = Fluoranthene-d10	42-133
Sur3 = Terphenyl-d14	32-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603183
Date Extracted: 04/06/2016
Date Analyzed: 04/12/2016

Lab Control Spike/Duplicate Lab Control Spike Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1602648

Analyte Name	Lab Control Sample KWG1602648-1 Lab Control Spike			Duplicate Lab Control Sample KWG1602648-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Naphthalene	2.04	2.50	82	2.09	2.50	84	52-115	2	30
2-Methylnaphthalene	1.83	2.50	73	1.81	2.50	72	48-120	1	30
1-Methylnaphthalene	1.86	2.50	74	1.84	2.50	73	47-119	1	30
Acenaphthylene	1.92	2.50	77	1.91	2.50	76	58-124	1	30
Acenaphthene	1.88	2.50	75	1.82	2.50	73	63-121	3	30
Fluorene	1.88	2.50	75	1.80	2.50	72	68-121	4	30
Phenanthrene	1.82	2.50	73	1.68	2.50	67	64-126	8	30
Anthracene	1.71	2.50	68	1.59	2.50	63 *	68-127	7	30
Carbazole	2.10	2.50	84	2.02	2.50	81	68-135	4	30
Fluoranthene	1.91	2.50	76	1.69	2.50	68 *	70-127	12	30
Pyrene	1.61	2.50	64 *	1.43	2.50	57 *	72-127	12	30
Benz(a)anthracene	1.61	2.50	64 *	1.39	2.50	56 *	74-124	15	30
Chrysene	1.82	2.50	73 *	1.58	2.50	63 *	74-132	14	30
Benzo(b)fluoranthene	1.73	2.50	69 *	1.48	2.50	59 *	73-136	16	30
Benzo(k)fluoranthene	1.87	2.50	75	1.58	2.50	63 *	74-134	17	30
Benzo(a)pyrene	1.64	2.50	66 *	1.40	2.50	56 *	75-131	16	30
Indeno(1,2,3-cd)pyrene	1.61	2.50	64	1.34	2.50	54 *	63-136	18	30
Dibenz(a,h)anthracene	1.56	2.50	62	1.35	2.50	54 *	59-135	15	30
Benzo(g,h,i)perylene	1.62	2.50	65	1.39	2.50	56 *	63-127	15	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



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June 02, 2016

Analytical Report for Service Request No: K1603215
Revised Service Request No: K1603215.01

Rob Tisdale
Tetra Tech EM, Incorporated
216 16th St, Suite 1500

Denver, CO 80202

RE: CenturyLink Longview WA / 103P3080177

Dear Rob ,

Enclosed is the revised report for the sample(s) submitted to our laboratory April 01, 2016
For your reference, these analyses have been assigned our service request number **K1603215**.

The PAH reporting list has been corrected.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

We apologize for any inconvenience this may have created.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at gregory.salata@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Senior Project
Manager



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Polynuclear Aromatic Hydrocarbons

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



Case Narrative

ALS Environmental—Kelso Laboratory
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ALS ENVIRONMENTAL

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/ 103P3080177
Sample Matrix: Water

Service Request No.: K1603215
Date Received: 04/01/16

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Control Sample (LCS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Three water samples were received for analysis at ALS Environmental on 04/01/16. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Diesel Range Organics by Method NWTPH-Dx

Sample Notes and Discussion:

Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No other anomalies associated with the analysis of these samples were observed.

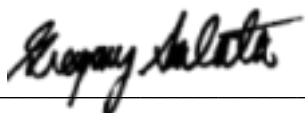
Polynuclear Aromatic Hydrocarbons by EPA Method 8270

Lab Control Sample Exceptions:

The lower control criterion was exceeded by 1-19% for several compounds in replicate Laboratory Control Samples (LCS/DLCS) KWG1602648-1 and KWG1602648-52. The analytes in question were not detected in the associated field samples. The error associated with reduced recovery equates to a potential low bias. The results were flagged to indicate the issue. No further corrective action was taken.

No other anomalies associated with the analysis of these samples were observed.

Approved by _____





Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

KL603215



ADDRESS 1317 South 13th Ave., Kelso, WA 98626

PHONE 1 360 577 7222 FAX 1 360 636 1068

Columbia Analytical Services, Inc.

Part of the ALS Group A Campbell Brothers Limited Company

Work Order No.:

[illegible]

PC Grady

Cooler Receipt and Preservation Form

Client Tetra Tech Service Request K16 03215
 Received: 4/1/16 Opened: 4/1/16 By: [Signature] Unloaded: 4/1/16 By: [Signature]

1. Samples were received via? Mail Fed Ex UPS DHL PDX Courier Hand Delivered
 2. Samples were received in: (circle) Cooler Box Envelope Other NA
 3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
 If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID	Tracking Number	NA	Filed
<u>3.3</u>	<u>3.0</u>	<u>10.6</u>	<u>10.5</u>	<u>-0.1</u>	<u>354</u>	<u>NA</u>		<u>NA</u>	

4. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves _____
 5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
 6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
 7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
 8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
 9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
 10. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? *Indicate in the table below* NA Y N
 11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
 12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page ____ of ____



Diesel and Residual Range Organics

ALS Environmental—Kelso Laboratory
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Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603215
Date Collected: 04/01/2016
Date Received: 04/01/2016

Diesel and Residual Range Organics

Sample Name: DUP-040116
Lab Code: K1603215-001
Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	1200	Y	260	12	1	04/06/16	04/11/16	KWG1602647	
Residual Range Organics (RRO)	280	J	510	20	1	04/06/16	04/11/16	KWG1602647	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	67	50-150	04/11/16	Acceptable
n-Triacontane	65	50-150	04/11/16	Acceptable

Comments: _____

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603215
Date Collected: 04/01/2016
Date Received: 04/01/2016

Diesel and Residual Range Organics

Sample Name: MW-2
Lab Code: K1603215-002
Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	1500	Y	260	12	1	04/06/16	04/11/16	KWG1602647	
Residual Range Organics (RRO)	340	J	510	20	1	04/06/16	04/11/16	KWG1602647	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	61	50-150	04/11/16	Acceptable
n-Triacontane	59	50-150	04/11/16	Acceptable

Comments: _____

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603215
Date Collected: 04/01/2016
Date Received: 04/01/2016

Diesel and Residual Range Organics

Sample Name: MW-3
Lab Code: K1603215-003
Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	58	J	260	12	1	04/06/16	04/11/16	KWG1602647	
Residual Range Organics (RRO)	110	J	510	20	1	04/06/16	04/11/16	KWG1602647	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	94	50-150	04/11/16	Acceptable
n-Triacontane	90	50-150	04/11/16	Acceptable

Comments: _____

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603215
Date Collected: NA
Date Received: NA

Diesel and Residual Range Organics

Sample Name: Method Blank
Lab Code: KWG1602647-3
Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	21	J	250	11	1	04/06/16	04/11/16	KWG1602647	
Residual Range Organics (RRO)	55	J	500	19	1	04/06/16	04/11/16	KWG1602647	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	94	50-150	04/11/16	Acceptable
n-Triacontane	91	50-150	04/11/16	Acceptable

Comments: _____

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603215

**Surrogate Recovery Summary
Diesel and Residual Range Organics**

Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
DUP-040116	K1603215-001	67	65
MW-2	K1603215-002	61	59
MW-3	K1603215-003	94	90
Method Blank	KWG1602647-3	94	91
Lab Control Sample	KWG1602647-1	97	91
Duplicate Lab Control Sample	KWG1602647-2	99	93

Surrogate Recovery Control Limits (%)

Sur1 = o-Terphenyl	50-150
Sur2 = n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603215
Date Extracted: 04/06/2016
Date Analyzed: 04/11/2016

Lab Control Spike/Duplicate Lab Control Spike Summary
Diesel and Residual Range Organics

Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1602647

Analyte Name	Lab Control Sample KWG1602647-1 Lab Control Spike			Duplicate Lab Control Sample KWG1602647-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Diesel Range Organics (DRO)	2920	3200	91	3030	3200	95	46-140	4	30
Residual Range Organics (RRO)	1380	1600	86	1420	1600	89	45-159	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



Polynuclear Aromatic Hydrocarbons

ALS Environmental—Kelso Laboratory
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Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603215
Date Collected: 04/01/2016
Date Received: 04/01/2016

Polynuclear Aromatic Hydrocarbons

Sample Name: DUP-040116
Lab Code: K1603215-001
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	0.032		0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	04/06/16	04/11/16	KWG1602648	
1-Methylnaphthalene	ND	U	0.020	0.0035	1	04/06/16	04/11/16	KWG1602648	
Acenaphthylene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	
Acenaphthene	ND	U	0.020	0.0044	1	04/06/16	04/11/16	KWG1602648	
Fluorene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
Phenanthrene	ND	U	0.020	0.0050	1	04/06/16	04/11/16	KWG1602648	
Anthracene	ND	U	0.020	0.0036	1	04/06/16	04/11/16	KWG1602648	*
Carbazole	ND	U	0.020	0.0045	1	04/06/16	04/11/16	KWG1602648	
Fluoranthene	ND	U	0.020	0.010	1	04/06/16	04/11/16	KWG1602648	*
Pyrene	ND	U	0.020	0.0053	1	04/06/16	04/11/16	KWG1602648	*
Benz(a)anthracene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Chrysene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	*
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	04/06/16	04/11/16	KWG1602648	*
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	04/06/16	04/11/16	KWG1602648	*
Benzo(a)pyrene	ND	U	0.020	0.0043	1	04/06/16	04/11/16	KWG1602648	*
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	04/06/16	04/11/16	KWG1602648	*
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	04/06/16	04/11/16	KWG1602648	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	91	42-131	04/11/16	Acceptable
Fluoranthene-d10	101	42-133	04/11/16	Acceptable
Terphenyl-d14	93	32-129	04/11/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603215
Date Collected: 04/01/2016
Date Received: 04/01/2016

Polynuclear Aromatic Hydrocarbons

Sample Name: MW-2
Lab Code: K1603215-002
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	0.029		0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	04/06/16	04/11/16	KWG1602648	
1-Methylnaphthalene	ND	U	0.020	0.0035	1	04/06/16	04/11/16	KWG1602648	
Acenaphthylene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	
Acenaphthene	ND	U	0.020	0.0044	1	04/06/16	04/11/16	KWG1602648	
Fluorene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
Phenanthrene	ND	U	0.020	0.0050	1	04/06/16	04/11/16	KWG1602648	
Anthracene	ND	U	0.020	0.0036	1	04/06/16	04/11/16	KWG1602648	*
Carbazole	ND	U	0.020	0.0045	1	04/06/16	04/11/16	KWG1602648	
Fluoranthene	ND	U	0.020	0.010	1	04/06/16	04/11/16	KWG1602648	*
Pyrene	ND	U	0.020	0.0053	1	04/06/16	04/11/16	KWG1602648	*
Benz(a)anthracene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Chrysene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	*
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	04/06/16	04/11/16	KWG1602648	*
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	04/06/16	04/11/16	KWG1602648	*
Benzo(a)pyrene	ND	U	0.020	0.0043	1	04/06/16	04/11/16	KWG1602648	*
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	04/06/16	04/11/16	KWG1602648	*
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	04/06/16	04/11/16	KWG1602648	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	89	42-131	04/11/16	Acceptable
Fluoranthene-d10	104	42-133	04/11/16	Acceptable
Terphenyl-d14	95	32-129	04/11/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603215
Date Collected: 04/01/2016
Date Received: 04/01/2016

Polynuclear Aromatic Hydrocarbons

Sample Name: MW-3
Lab Code: K1603215-003
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	04/06/16	04/11/16	KWG1602648	
1-Methylnaphthalene	ND	U	0.020	0.0035	1	04/06/16	04/11/16	KWG1602648	
Acenaphthylene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	
Acenaphthene	ND	U	0.020	0.0044	1	04/06/16	04/11/16	KWG1602648	
Fluorene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
Phenanthrene	ND	U	0.020	0.0050	1	04/06/16	04/11/16	KWG1602648	
Anthracene	ND	U	0.020	0.0036	1	04/06/16	04/11/16	KWG1602648	*
Carbazole	ND	U	0.020	0.0045	1	04/06/16	04/11/16	KWG1602648	
Fluoranthene	ND	U	0.020	0.010	1	04/06/16	04/11/16	KWG1602648	*
Pyrene	ND	U	0.020	0.0053	1	04/06/16	04/11/16	KWG1602648	*
Benz(a)anthracene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Chrysene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	*
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	04/06/16	04/11/16	KWG1602648	*
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	04/06/16	04/11/16	KWG1602648	*
Benzo(a)pyrene	ND	U	0.020	0.0043	1	04/06/16	04/11/16	KWG1602648	*
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	04/06/16	04/11/16	KWG1602648	*
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	04/06/16	04/11/16	KWG1602648	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	97	42-131	04/11/16	Acceptable
Fluoranthene-d10	110	42-133	04/11/16	Acceptable
Terphenyl-d14	101	32-129	04/11/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603215
Date Collected: NA
Date Received: NA

Polynuclear Aromatic Hydrocarbons

Sample Name: Method Blank
Lab Code: KWG1602648-3
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	04/06/16	04/11/16	KWG1602648	
1-Methylnaphthalene	ND	U	0.020	0.0035	1	04/06/16	04/11/16	KWG1602648	
Acenaphthylene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	
Acenaphthene	ND	U	0.020	0.0044	1	04/06/16	04/11/16	KWG1602648	
Fluorene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
Phenanthrene	ND	U	0.020	0.0050	1	04/06/16	04/11/16	KWG1602648	
Anthracene	ND	U	0.020	0.0036	1	04/06/16	04/11/16	KWG1602648	*
Carbazole	ND	U	0.020	0.0045	1	04/06/16	04/11/16	KWG1602648	
Fluoranthene	ND	U	0.020	0.010	1	04/06/16	04/11/16	KWG1602648	*
Pyrene	ND	U	0.020	0.0053	1	04/06/16	04/11/16	KWG1602648	*
Benz(a)anthracene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Chrysene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	*
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	04/06/16	04/11/16	KWG1602648	*
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	04/06/16	04/11/16	KWG1602648	*
Benzo(a)pyrene	ND	U	0.020	0.0043	1	04/06/16	04/11/16	KWG1602648	*
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	04/06/16	04/11/16	KWG1602648	*
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	04/06/16	04/11/16	KWG1602648	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	96	42-131	04/11/16	Acceptable
Fluoranthene-d10	104	42-133	04/11/16	Acceptable
Terphenyl-d14	94	32-129	04/11/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603215

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
DUP-040116	K1603215-001	91	101	93
MW-2	K1603215-002	89	104	95
MW-3	K1603215-003	97	110	101
Method Blank	KWG1602648-3	96	104	94
Lab Control Sample	KWG1602648-1	105	116	101
Duplicate Lab Control Sample	KWG1602648-2	101	97	76

Surrogate Recovery Control Limits (%)

Sur1 = Fluorene-d10	42-131
Sur2 = Fluoranthene-d10	42-133
Sur3 = Terphenyl-d14	32-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1603215
Date Extracted: 04/06/2016
Date Analyzed: 04/12/2016

Lab Control Spike/Duplicate Lab Control Spike Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1602648

Analyte Name	Lab Control Sample KWG1602648-1 Lab Control Spike			Duplicate Lab Control Sample KWG1602648-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Naphthalene	2.04	2.50	82	2.09	2.50	84	52-115	2	30
2-Methylnaphthalene	1.83	2.50	73	1.81	2.50	72	48-120	1	30
1-Methylnaphthalene	1.86	2.50	74	1.84	2.50	73	47-119	1	30
Acenaphthylene	1.92	2.50	77	1.91	2.50	76	58-124	1	30
Acenaphthene	1.88	2.50	75	1.82	2.50	73	63-121	3	30
Fluorene	1.88	2.50	75	1.80	2.50	72	68-121	4	30
Phenanthrene	1.82	2.50	73	1.68	2.50	67	64-126	8	30
Anthracene	1.71	2.50	68	1.59	2.50	63 *	68-127	7	30
Carbazole	2.10	2.50	84	2.02	2.50	81	68-135	4	30
Fluoranthene	1.91	2.50	76	1.69	2.50	68 *	70-127	12	30
Pyrene	1.61	2.50	64 *	1.43	2.50	57 *	72-127	12	30
Benz(a)anthracene	1.61	2.50	64 *	1.39	2.50	56 *	74-124	15	30
Chrysene	1.82	2.50	73 *	1.58	2.50	63 *	74-132	14	30
Benzo(b)fluoranthene	1.73	2.50	69 *	1.48	2.50	59 *	73-136	16	30
Benzo(k)fluoranthene	1.87	2.50	75	1.58	2.50	63 *	74-134	17	30
Benzo(a)pyrene	1.64	2.50	66 *	1.40	2.50	56 *	75-131	16	30
Indeno(1,2,3-cd)pyrene	1.61	2.50	64	1.34	2.50	54 *	63-136	18	30
Dibenz(a,h)anthracene	1.56	2.50	62	1.35	2.50	54 *	59-135	15	30
Benzo(g,h,i)perylene	1.62	2.50	65	1.39	2.50	56 *	63-127	15	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ATTACHMENT D
REVISED LABORATORY ANALYTICAL REPORTS AND CHAIN OF CUSTODY RECORDS
DECEMBER 2015 SAMPLING EVENT



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January 14, 2016

Analytical Report for Service Request No: K1514460

Dr. Rob Tisdale
Tetra Tech EM, Incorporated
216 16th St , Suite 1500
Denver, CO 80202

RE: CenturyLink Longview WA / 103P3080177

Dear Dr.Tisdale,

Enclosed are the results of the sample(s) submitted to our laboratory December 17, 2015
For your reference, these analyses have been assigned our service request number **K1514460**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at gregory.salata@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Client Services
Manager



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Table of Contents

Acronyms

Qualifiers

State Certifications, Accreditations, And Licenses

Case Narrative

Chain of Custody

Diesel and Residual Range Organics

Polynuclear Aromatic Hydrocarbons

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
ISO 17025	http://www.pjllabs.com/	L14-50
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS ENVIRONMENTAL

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/ 103P3080177
Sample Matrix: Ground Water

Service Request No.: K1514460
Date Received: 12/17/15-12/18/15

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Control Sample (LCS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Six ground water samples were received for analysis at ALS Environmental between 12/17/15 and 12/18/15. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Diesel Range Organics by Method NWTPH-Dx

Relative Percent Difference Exceptions:

The Relative Percent Difference (RPD) criterion for the replicate analysis of Diesel Range Organics (DRO) and Residual Range Organics (RRO) in sample Batch QC was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

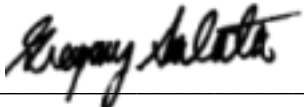
No other anomalies associated with the analysis of these samples were observed.

Polynuclear Aromatic Hydrocarbons by EPA Method 8270

Holding Time Exceptions:

All field samples were extracted past the recommended holding time due to a laboratory error. The samples were originally extracted within hold time however were not filtered as requested by the client. The re-extraction and re-analysis was performed as soon as possible after the error was discovered by the laboratory. The data was flagged to indicate the holding time violation. Both data sets are included in this report.

No other anomalies associated with the analysis of these samples were observed.

Approved by  _____



Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com



Part of the ALS Group A Campbell Brothers Limited Company

W1514460

[illegible]



Part of the ALS Group A Campbell Brothers Limited Company

HL514460

[illegible]

PC Reg

Cooler Receipt and Preservation Form

Client / Project: Terran Terra Service Request K15 144100
Received: 12/17/15 Opened: 12/17/15 By: [Signature] Unloaded: 12/17/15 By: [Signature]

1. Samples were received via? Mail Fed Ex UPS DHL PDX Courier Hand Delivered
2. Samples were received in: (circle) Cooler Box Envelope Other NA
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID	Tracking Number	NA	Filed
4.0	4.3	5.6	5.9	0.3	361	NA		NA	

4. Packing material: Inserts Baggies Bubble Wrap Get Packs Wet Ice Dry Ice Sleeves _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head- space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____



Cooler Receipt and Preservation Form

PC greg

Client / Project: TETRA TECH Service Request K15 14460

Received: 12/18/15 Opened: 12/18/15 By: [signature] Unloaded: 12/18/15 By: [signature]

1. Samples were received via? Mail Fed Ex UPS DHL PDX Courier Hand Delivered
2. Samples were received in: (circle) Cooler Box Envelope Other NA
3. Were custody seals on coolers? NA Y N If yes, how many and where? 1 F
- If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID	Tracking Number	NA	Filed
4.6	4.9	10.3	10.6	0.3	356			NA	

4. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head- space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____



Diesel and Residual Range Organics

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460
Date Collected: 12/17/2015
Date Received: 12/17/2015

Diesel and Residual Range Organics

Sample Name: MW-5
Lab Code: K1514460-001
Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	120	J	260	12	1	12/22/15	12/29/15	KWG1512424	
Residual Range Organics (RRO)	82	J	520	20	1	12/22/15	12/29/15	KWG1512424	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	86	50-150	12/29/15	Acceptable
n-Triacontane	92	50-150	12/29/15	Acceptable

Comments: _____

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460
Date Collected: 12/17/2015
Date Received: 12/17/2015

Diesel and Residual Range Organics

Sample Name: MW-4
Lab Code: K1514460-002
Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	96	J	260	12	1	12/22/15	12/29/15	KWG1512424	
Residual Range Organics (RRO)	81	J	520	20	1	12/22/15	12/29/15	KWG1512424	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	86	50-150	12/29/15	Acceptable
n-Triacontane	91	50-150	12/29/15	Acceptable

Comments: _____

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460
Date Collected: 12/17/2015
Date Received: 12/17/2015

Diesel and Residual Range Organics

Sample Name: MW-3
Lab Code: K1514460-003
Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	46	J	260	12	1	12/22/15	12/30/15	KWG1512424	
Residual Range Organics (RRO)	81	J	520	20	1	12/22/15	12/30/15	KWG1512424	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	93	50-150	12/30/15	Acceptable
n-Triacontane	99	50-150	12/30/15	Acceptable

Comments: _____

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460
Date Collected: 12/18/2015
Date Received: 12/18/2015

Diesel and Residual Range Organics

Sample Name: MW-1
Lab Code: K1514460-004
Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	38	J	260	12	1	12/22/15	12/30/15	KWG1512424	
Residual Range Organics (RRO)	84	J	520	20	1	12/22/15	12/30/15	KWG1512424	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	92	50-150	12/30/15	Acceptable
n-Triacontane	95	50-150	12/30/15	Acceptable

Comments: _____

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460
Date Collected: 12/18/2015
Date Received: 12/18/2015

Diesel and Residual Range Organics

Sample Name: MW-2
Lab Code: K1514460-005
Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	83	J	260	12	1	12/22/15	12/30/15	KWG1512424	
Residual Range Organics (RRO)	160	J	520	20	1	12/22/15	12/30/15	KWG1512424	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	77	50-150	12/30/15	Acceptable
n-Triacontane	82	50-150	12/30/15	Acceptable

Comments: _____

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460
Date Collected: 12/18/2015
Date Received: 12/18/2015

Diesel and Residual Range Organics

Sample Name: DUP-121815
Lab Code: K1514460-006
Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	38	J	260	12	1	12/22/15	12/30/15	KWG1512424	
Residual Range Organics (RRO)	78	J	520	20	1	12/22/15	12/30/15	KWG1512424	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	88	50-150	12/30/15	Acceptable
n-Triacontane	92	50-150	12/30/15	Acceptable

Comments: _____

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460
Date Collected: NA
Date Received: NA

Diesel and Residual Range Organics

Sample Name: Method Blank
Lab Code: KWG1512424-5
Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	240	11	1	12/22/15	12/23/15	KWG1512424	
Residual Range Organics (RRO)	23	J	480	19	1	12/22/15	12/23/15	KWG1512424	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	83	50-150	12/23/15	Acceptable
n-Triacontane	83	50-150	12/23/15	Acceptable

Comments: _____

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1514460

**Surrogate Recovery Summary
Diesel and Residual Range Organics**

Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
Batch QC	K1514195-001	83 D	106 D
Batch QC	K1514358-003	83	82
MW-5	K1514460-001	86	92
MW-4	K1514460-002	86	91
MW-3	K1514460-003	93	99
MW-1	K1514460-004	92	95
MW-2	K1514460-005	77	82
DUP-121815	K1514460-006	88	92
Batch QCDUP	KWG1512424-1	86	86
Batch QCDUP	KWG1512424-6	69 D	88 D
Method Blank	KWG1512424-5	83	83
Lab Control Sample	KWG1512424-4	90	91

Surrogate Recovery Control Limits (%)

Sur1 = o-Terphenyl	50-150
Sur2 = n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460
Date Extracted: 12/22/2015
Date Analyzed: 12/23/2015

Duplicate Sample Summary
Diesel and Residual Range Organics

Sample Name: Batch QC
Lab Code: K1514358-003
Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1512424

Analyte Name	MRL	MDL	Sample Result	Batch QCDUP KWG1512424-1 Duplicate Sample		Relative Percent Difference	RPD Limit
				Result	Average		
Diesel Range Organics (DRO)	240	11	21	21	21	2 #	30
Residual Range Organics (RRO)	480	19	36	37	36	3 #	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1514460
Date Extracted: 12/22/2015
Date Analyzed: 12/23/2015

Duplicate Sample Summary
Diesel and Residual Range Organics

Sample Name: Batch QC
Lab Code: K1514195-001
Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1512424

Analyte Name	MRL	MDL	Sample Result	Batch QCDUP KWG1512424-6 Duplicate Sample		Relative Percent Difference	RPD Limit
				Result	Average		
Diesel Range Organics (DRO)	2500	110	1300	1200	1300	8 #	30
Residual Range Organics (RRO)	5000	190	8600	7900	8300	8 #	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460
Date Extracted: 12/22/2015
Date Analyzed: 12/23/2015

Lab Control Spike Summary
Diesel and Residual Range Organics

Extraction Method: METHOD
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1512424

Lab Control Sample
KWG1512424-4
Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
Diesel Range Organics (DRO)	1440	1600	90	46-140
Residual Range Organics (RRO)	834	800	104	45-159

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



Polynuclear Aromatic Hydrocarbons

ALS Environmental—Kelso Laboratory
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Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460
Date Collected: 12/17/2015
Date Received: 12/17/2015

Polynuclear Aromatic Hydrocarbons

Sample Name: MW-5
Lab Code: K1514460-001
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	0.059		0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
2-Methylnaphthalene	ND	U	0.019	0.0023	1	12/21/15	12/30/15	KWG1512383	
1-Methylnaphthalene	0.013	J	0.019	0.0035	1	12/21/15	12/30/15	KWG1512383	
Acenaphthylene	0.041		0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Acenaphthene	5.7		0.019	0.0044	1	12/21/15	12/30/15	KWG1512383	
Fluorene	0.20		0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
Phenanthrene	0.027		0.019	0.0050	1	12/21/15	12/30/15	KWG1512383	
Anthracene	0.84		0.019	0.0036	1	12/21/15	12/30/15	KWG1512383	
Carbazole	0.019		0.019	0.0045	1	12/21/15	12/30/15	KWG1512383	
Fluoranthene	0.96		0.019	0.010	1	12/21/15	12/30/15	KWG1512383	
Pyrene	0.60		0.019	0.0053	1	12/21/15	12/30/15	KWG1512383	
Benz(a)anthracene	0.0039	J	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Chrysene	ND	U	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Benzo(b)fluoranthene†	ND	U	0.019	0.0041	1	12/21/15	12/30/15	KWG1512383	
Benzo(k)fluoranthene	ND	U	0.019	0.0030	1	12/21/15	12/30/15	KWG1512383	
Benzo(a)pyrene	ND	U	0.019	0.0043	1	12/21/15	12/30/15	KWG1512383	
Indeno(1,2,3-cd)pyrene	ND	U	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Dibenz(a,h)anthracene	ND	U	0.019	0.0025	1	12/21/15	12/30/15	KWG1512383	
Benzo(g,h,i)perylene	ND	U	0.019	0.0029	1	12/21/15	12/30/15	KWG1512383	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	85	42-131	12/30/15	Acceptable
Fluoranthene-d10	106	42-133	12/30/15	Acceptable
Terphenyl-d14	103	32-129	12/30/15	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460
Date Collected: 12/17/2015
Date Received: 12/17/2015

Polynuclear Aromatic Hydrocarbons

Sample Name: MW-4
Lab Code: K1514460-002
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	0.11		0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
2-Methylnaphthalene	0.0080	J	0.019	0.0023	1	12/21/15	12/30/15	KWG1512383	
1-Methylnaphthalene	0.15		0.019	0.0035	1	12/21/15	12/30/15	KWG1512383	
Acenaphthylene	0.070		0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Acenaphthene	5.7		0.019	0.0044	1	12/21/15	12/30/15	KWG1512383	
Fluorene	1.7		0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
Phenanthrene	0.41		0.019	0.0050	1	12/21/15	12/30/15	KWG1512383	
Anthracene	0.17		0.019	0.0036	1	12/21/15	12/30/15	KWG1512383	
Carbazole	1.0		0.019	0.0045	1	12/21/15	12/30/15	KWG1512383	
Fluoranthene	0.013	J	0.019	0.010	1	12/21/15	12/30/15	KWG1512383	
Pyrene	0.37		0.019	0.0053	1	12/21/15	12/30/15	KWG1512383	
Benz(a)anthracene	0.0050	J	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Chrysene	ND	U	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Benzo(b)fluoranthene†	ND	U	0.019	0.0041	1	12/21/15	12/30/15	KWG1512383	
Benzo(k)fluoranthene	ND	U	0.019	0.0030	1	12/21/15	12/30/15	KWG1512383	
Benzo(a)pyrene	ND	U	0.019	0.0043	1	12/21/15	12/30/15	KWG1512383	
Indeno(1,2,3-cd)pyrene	ND	U	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Dibenz(a,h)anthracene	ND	U	0.019	0.0025	1	12/21/15	12/30/15	KWG1512383	
Benzo(g,h,i)perylene	ND	U	0.019	0.0029	1	12/21/15	12/30/15	KWG1512383	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	92	42-131	12/30/15	Acceptable
Fluoranthene-d10	108	42-133	12/30/15	Acceptable
Terphenyl-d14	108	32-129	12/30/15	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460
Date Collected: 12/17/2015
Date Received: 12/17/2015

Polynuclear Aromatic Hydrocarbons

Sample Name: MW-3
Lab Code: K1514460-003
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
2-Methylnaphthalene	ND	U	0.019	0.0023	1	12/21/15	12/30/15	KWG1512383	
1-Methylnaphthalene	ND	U	0.019	0.0035	1	12/21/15	12/30/15	KWG1512383	
Acenaphthylene	ND	U	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Acenaphthene	ND	U	0.019	0.0044	1	12/21/15	12/30/15	KWG1512383	
Fluorene	ND	U	0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
Phenanthrene	ND	U	0.019	0.0050	1	12/21/15	12/30/15	KWG1512383	
Anthracene	ND	U	0.019	0.0036	1	12/21/15	12/30/15	KWG1512383	
Carbazole	ND	U	0.019	0.0045	1	12/21/15	12/30/15	KWG1512383	
Fluoranthene	ND	U	0.019	0.010	1	12/21/15	12/30/15	KWG1512383	
Pyrene	ND	U	0.019	0.0053	1	12/21/15	12/30/15	KWG1512383	
Benz(a)anthracene	ND	U	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Chrysene	ND	U	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Benzo(b)fluoranthene†	ND	U	0.019	0.0041	1	12/21/15	12/30/15	KWG1512383	
Benzo(k)fluoranthene	ND	U	0.019	0.0030	1	12/21/15	12/30/15	KWG1512383	
Benzo(a)pyrene	ND	U	0.019	0.0043	1	12/21/15	12/30/15	KWG1512383	
Indeno(1,2,3-cd)pyrene	ND	U	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Dibenz(a,h)anthracene	ND	U	0.019	0.0025	1	12/21/15	12/30/15	KWG1512383	
Benzo(g,h,i)perylene	ND	U	0.019	0.0029	1	12/21/15	12/30/15	KWG1512383	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	90	42-131	12/30/15	Acceptable
Fluoranthene-d10	102	42-133	12/30/15	Acceptable
Terphenyl-d14	107	32-129	12/30/15	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460
Date Collected: 12/18/2015
Date Received: 12/18/2015

Polynuclear Aromatic Hydrocarbons

Sample Name: MW-1
Lab Code: K1514460-004
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
2-Methylnaphthalene	ND	U	0.019	0.0023	1	12/21/15	12/30/15	KWG1512383	
1-Methylnaphthalene	ND	U	0.019	0.0035	1	12/21/15	12/30/15	KWG1512383	
Acenaphthylene	ND	U	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Acenaphthene	ND	U	0.019	0.0044	1	12/21/15	12/30/15	KWG1512383	
Fluorene	ND	U	0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
Phenanthrene	ND	U	0.019	0.0050	1	12/21/15	12/30/15	KWG1512383	
Anthracene	ND	U	0.019	0.0036	1	12/21/15	12/30/15	KWG1512383	
Carbazole	ND	U	0.019	0.0045	1	12/21/15	12/30/15	KWG1512383	
Fluoranthene	ND	U	0.019	0.010	1	12/21/15	12/30/15	KWG1512383	
Pyrene	0.0074	J	0.019	0.0053	1	12/21/15	12/30/15	KWG1512383	
Benz(a)anthracene	0.0056	J	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Chrysene	0.0047	J	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Benzo(b)fluoranthene†	0.0071	J	0.019	0.0041	1	12/21/15	12/30/15	KWG1512383	
Benzo(k)fluoranthene	ND	U	0.019	0.0030	1	12/21/15	12/30/15	KWG1512383	
Benzo(a)pyrene	0.0047	J	0.019	0.0043	1	12/21/15	12/30/15	KWG1512383	
Indeno(1,2,3-cd)pyrene	0.0050	J	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Dibenz(a,h)anthracene	ND	U	0.019	0.0025	1	12/21/15	12/30/15	KWG1512383	
Benzo(g,h,i)perylene	0.0043	J	0.019	0.0029	1	12/21/15	12/30/15	KWG1512383	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	87	42-131	12/30/15	Acceptable
Fluoranthene-d10	103	42-133	12/30/15	Acceptable
Terphenyl-d14	106	32-129	12/30/15	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460
Date Collected: 12/18/2015
Date Received: 12/18/2015

Polynuclear Aromatic Hydrocarbons

Sample Name: MW-2
Lab Code: K1514460-005
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	1.7		0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
2-Methylnaphthalene	ND	U	0.019	0.0023	1	12/21/15	12/30/15	KWG1512383	
1-Methylnaphthalene	0.057		0.019	0.0035	1	12/21/15	12/30/15	KWG1512383	
Acenaphthylene	ND	U	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Acenaphthene	0.053		0.019	0.0044	1	12/21/15	12/30/15	KWG1512383	
Fluorene	ND	U	0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
Phenanthrene	ND	U	0.019	0.0050	1	12/21/15	12/30/15	KWG1512383	
Anthracene	0.0039	J	0.019	0.0036	1	12/21/15	12/30/15	KWG1512383	
Carbazole	0.017	J	0.019	0.0045	1	12/21/15	12/30/15	KWG1512383	
Fluoranthene	0.012	J	0.019	0.010	1	12/21/15	12/30/15	KWG1512383	
Pyrene	0.046		0.019	0.0053	1	12/21/15	12/30/15	KWG1512383	
Benz(a)anthracene	0.0029	J	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Chrysene	ND	U	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Benzo(b)fluoranthene†	ND	U	0.019	0.0041	1	12/21/15	12/30/15	KWG1512383	
Benzo(k)fluoranthene	ND	U	0.019	0.0030	1	12/21/15	12/30/15	KWG1512383	
Benzo(a)pyrene	ND	U	0.019	0.0043	1	12/21/15	12/30/15	KWG1512383	
Indeno(1,2,3-cd)pyrene	ND	U	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Dibenz(a,h)anthracene	ND	U	0.019	0.0025	1	12/21/15	12/30/15	KWG1512383	
Benzo(g,h,i)perylene	ND	U	0.019	0.0029	1	12/21/15	12/30/15	KWG1512383	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	96	42-131	12/30/15	Acceptable
Fluoranthene-d10	112	42-133	12/30/15	Acceptable
Terphenyl-d14	114	32-129	12/30/15	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460
Date Collected: 12/18/2015
Date Received: 12/18/2015

Polynuclear Aromatic Hydrocarbons

Sample Name: DUP-121815
Lab Code: K1514460-006
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
2-Methylnaphthalene	ND	U	0.019	0.0023	1	12/21/15	12/30/15	KWG1512383	
1-Methylnaphthalene	ND	U	0.019	0.0035	1	12/21/15	12/30/15	KWG1512383	
Acenaphthylene	ND	U	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Acenaphthene	ND	U	0.019	0.0044	1	12/21/15	12/30/15	KWG1512383	
Fluorene	ND	U	0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
Phenanthrene	ND	U	0.019	0.0050	1	12/21/15	12/30/15	KWG1512383	
Anthracene	ND	U	0.019	0.0036	1	12/21/15	12/30/15	KWG1512383	
Carbazole	ND	U	0.019	0.0045	1	12/21/15	12/30/15	KWG1512383	
Fluoranthene	ND	U	0.019	0.010	1	12/21/15	12/30/15	KWG1512383	
Pyrene	0.0057	J	0.019	0.0053	1	12/21/15	12/30/15	KWG1512383	
Benz(a)anthracene	0.0050	J	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Chrysene	0.0036	J	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Benzo(b)fluoranthene†	0.0053	J	0.019	0.0041	1	12/21/15	12/30/15	KWG1512383	
Benzo(k)fluoranthene	ND	U	0.019	0.0030	1	12/21/15	12/30/15	KWG1512383	
Benzo(a)pyrene	ND	U	0.019	0.0043	1	12/21/15	12/30/15	KWG1512383	
Indeno(1,2,3-cd)pyrene	ND	U	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Dibenz(a,h)anthracene	ND	U	0.019	0.0025	1	12/21/15	12/30/15	KWG1512383	
Benzo(g,h,i)perylene	0.0036	J	0.019	0.0029	1	12/21/15	12/30/15	KWG1512383	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	89	42-131	12/30/15	Acceptable
Fluoranthene-d10	105	42-133	12/30/15	Acceptable
Terphenyl-d14	108	32-129	12/30/15	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1514460
Date Collected: NA
Date Received: NA

Polynuclear Aromatic Hydrocarbons

Sample Name: Method Blank
Lab Code: KWG1512383-3
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
2-Methylnaphthalene	ND	U	0.019	0.0023	1	12/21/15	12/30/15	KWG1512383	
1-Methylnaphthalene	ND	U	0.019	0.0035	1	12/21/15	12/30/15	KWG1512383	
Acenaphthylene	ND	U	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Acenaphthene	ND	U	0.019	0.0044	1	12/21/15	12/30/15	KWG1512383	
Fluorene	ND	U	0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
Phenanthrene	ND	U	0.019	0.0050	1	12/21/15	12/30/15	KWG1512383	
Anthracene	ND	U	0.019	0.0036	1	12/21/15	12/30/15	KWG1512383	
Carbazole	ND	U	0.019	0.0045	1	12/21/15	12/30/15	KWG1512383	
Fluoranthene	ND	U	0.019	0.010	1	12/21/15	12/30/15	KWG1512383	
Pyrene	ND	U	0.019	0.0053	1	12/21/15	12/30/15	KWG1512383	
Benz(a)anthracene	ND	U	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Chrysene	ND	U	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Benzo(b)fluoranthene†	ND	U	0.019	0.0041	1	12/21/15	12/30/15	KWG1512383	
Benzo(k)fluoranthene	ND	U	0.019	0.0030	1	12/21/15	12/30/15	KWG1512383	
Benzo(a)pyrene	ND	U	0.019	0.0043	1	12/21/15	12/30/15	KWG1512383	
Indeno(1,2,3-cd)pyrene	ND	U	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Dibenz(a,h)anthracene	ND	U	0.019	0.0025	1	12/21/15	12/30/15	KWG1512383	
Benzo(g,h,i)perylene	ND	U	0.019	0.0029	1	12/21/15	12/30/15	KWG1512383	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	98	42-131	12/30/15	Acceptable
Fluoranthene-d10	100	42-133	12/30/15	Acceptable
Terphenyl-d14	109	32-129	12/30/15	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
MW-5	K1514460-001	85	106	103
MW-4	K1514460-002	92	108	108
MW-3	K1514460-003	90	102	107
MW-1	K1514460-004	87	103	106
MW-2	K1514460-005	96	112	114
DUP-121815	K1514460-006	89	105	108
Method Blank	KWG1512383-3	98	100	109
Lab Control Sample	KWG1512383-1	97	103	103
Duplicate Lab Control Sample	KWG1512383-2	104	110	109

Surrogate Recovery Control Limits (%)

Sur1 = Fluorene-d10	42-131
Sur2 = Fluoranthene-d10	42-133
Sur3 = Terphenyl-d14	32-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Water

Service Request: K1514460
Date Extracted: 12/21/2015
Date Analyzed: 12/30/2015

Lab Control Spike/Duplicate Lab Control Spike Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1512383

Analyte Name	Lab Control Sample KWG1512383-1 Lab Control Spike			Duplicate Lab Control Sample KWG1512383-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Naphthalene	2.33	2.50	93	2.53	2.50	101	52-115	8	30
2-Methylnaphthalene	2.19	2.50	88	2.40	2.50	96	48-120	9	30
1-Methylnaphthalene	2.14	2.50	86	2.35	2.50	94	47-119	10	30
Acenaphthylene	2.51	2.50	100	2.73	2.50	109	58-124	8	30
Acenaphthene	2.38	2.50	95	2.61	2.50	104	63-121	9	30
Fluorene	2.45	2.50	98	2.70	2.50	108	68-121	10	30
Phenanthrene	2.43	2.50	97	2.61	2.50	104	64-126	7	30
Anthracene	2.54	2.50	102	2.57	2.50	103	68-127	1	30
Carbazole	2.55	2.50	102	2.76	2.50	110	68-135	8	30
Fluoranthene	2.54	2.50	101	2.71	2.50	108	70-127	7	30
Pyrene	2.62	2.50	105	2.81	2.50	112	72-127	7	30
Benz(a)anthracene	2.45	2.50	98	2.59	2.50	104	74-124	5	30
Chrysene	2.61	2.50	104	2.78	2.50	111	74-132	7	30
Benzo(b)fluoranthene	2.63	2.50	105	2.85	2.50	114	73-136	8	30
Benzo(k)fluoranthene	2.75	2.50	110	2.96	2.50	118	74-134	7	30
Benzo(a)pyrene	2.68	2.50	107	2.86	2.50	115	75-131	6	30
Indeno(1,2,3-cd)pyrene	2.43	2.50	97	2.58	2.50	103	63-136	6	30
Dibenz(a,h)anthracene	2.18	2.50	87	2.32	2.50	93	59-135	6	30
Benzo(g,h,i)perylene	2.56	2.50	102	2.73	2.50	109	63-127	7	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



Polynuclear Aromatic Hydrocarbons

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460
Date Collected: 12/17/2015
Date Received: 12/17/2015

Polynuclear Aromatic Hydrocarbons

Sample Name: MW-5
Lab Code: K1514460-001
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	0.044		0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	*
2-Methylnaphthalene	0.0038	J	0.020	0.0023	1	12/28/15	01/06/16	KWG1512601	*
1-Methylnaphthalene	0.023		0.020	0.0035	1	12/28/15	01/06/16	KWG1512601	*
Acenaphthylene	0.045		0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	*
Acenaphthene	4.7		0.020	0.0044	1	12/28/15	01/06/16	KWG1512601	*
Fluorene	0.16		0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	*
Phenanthrene	0.041		0.020	0.0050	1	12/28/15	01/06/16	KWG1512601	*
Anthracene	0.45		0.020	0.0036	1	12/28/15	01/06/16	KWG1512601	*
Carbazole	0.018	J	0.020	0.0045	1	12/28/15	01/06/16	KWG1512601	*
Fluoranthene	0.14		0.020	0.010	1	12/28/15	01/06/16	KWG1512601	*
Pyrene	0.046		0.020	0.0053	1	12/28/15	01/06/16	KWG1512601	*
Benz(a)anthracene	0.0040	J	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	*
Chrysene	ND	U	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	*
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	12/28/15	01/06/16	KWG1512601	*
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	12/28/15	01/06/16	KWG1512601	*
Benzo(a)pyrene	ND	U	0.020	0.0043	1	12/28/15	01/06/16	KWG1512601	*
Indeno(1,2,3-cd)pyrene	0.0030	J	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	*
Dibenz(a,h)anthracene	0.0050	J	0.020	0.0025	1	12/28/15	01/06/16	KWG1512601	*
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	12/28/15	01/06/16	KWG1512601	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	83	42-131	01/06/16	Acceptable
Fluoranthene-d10	91	42-133	01/06/16	Acceptable
Terphenyl-d14	85	32-129	01/06/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460
Date Collected: 12/17/2015
Date Received: 12/17/2015

Polynuclear Aromatic Hydrocarbons

Sample Name: MW-4
Lab Code: K1514460-002
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	0.080		0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	*
2-Methylnaphthalene	0.0063	J	0.020	0.0023	1	12/28/15	01/06/16	KWG1512601	*
1-Methylnaphthalene	0.12		0.020	0.0035	1	12/28/15	01/06/16	KWG1512601	*
Acenaphthylene	0.064		0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	*
Acenaphthene	4.5		0.020	0.0044	1	12/28/15	01/06/16	KWG1512601	*
Fluorene	1.3		0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	*
Phenanthrene	0.23		0.020	0.0050	1	12/28/15	01/06/16	KWG1512601	*
Anthracene	0.086		0.020	0.0036	1	12/28/15	01/06/16	KWG1512601	*
Carbazole	0.77		0.020	0.0045	1	12/28/15	01/06/16	KWG1512601	*
Fluoranthene	ND	U	0.020	0.010	1	12/28/15	01/06/16	KWG1512601	*
Pyrene	0.031		0.020	0.0053	1	12/28/15	01/06/16	KWG1512601	*
Benz(a)anthracene	ND	U	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	*
Chrysene	ND	U	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	*
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	12/28/15	01/06/16	KWG1512601	*
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	12/28/15	01/06/16	KWG1512601	*
Benzo(a)pyrene	ND	U	0.020	0.0043	1	12/28/15	01/06/16	KWG1512601	*
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	*
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	12/28/15	01/06/16	KWG1512601	*
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	12/28/15	01/06/16	KWG1512601	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	86	42-131	01/06/16	Acceptable
Fluoranthene-d10	96	42-133	01/06/16	Acceptable
Terphenyl-d14	96	32-129	01/06/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460
Date Collected: 12/17/2015
Date Received: 12/17/2015

Polynuclear Aromatic Hydrocarbons

Sample Name: MW-3
Lab Code: K1514460-003
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	*
2-Methylnaphthalene	ND	U	0.020	0.0023	1	12/28/15	01/06/16	KWG1512601	*
1-Methylnaphthalene	ND	U	0.020	0.0035	1	12/28/15	01/06/16	KWG1512601	*
Acenaphthylene	ND	U	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	*
Acenaphthene	ND	U	0.020	0.0044	1	12/28/15	01/06/16	KWG1512601	*
Fluorene	ND	U	0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	*
Phenanthrene	ND	U	0.020	0.0050	1	12/28/15	01/06/16	KWG1512601	*
Anthracene	ND	U	0.020	0.0036	1	12/28/15	01/06/16	KWG1512601	*
Carbazole	ND	U	0.020	0.0045	1	12/28/15	01/06/16	KWG1512601	*
Fluoranthene	ND	U	0.020	0.010	1	12/28/15	01/06/16	KWG1512601	*
Pyrene	ND	U	0.020	0.0053	1	12/28/15	01/06/16	KWG1512601	*
Benz(a)anthracene	0.0027	J	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	*
Chrysene	ND	U	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	*
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	12/28/15	01/06/16	KWG1512601	*
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	12/28/15	01/06/16	KWG1512601	*
Benzo(a)pyrene	ND	U	0.020	0.0043	1	12/28/15	01/06/16	KWG1512601	*
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	*
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	12/28/15	01/06/16	KWG1512601	*
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	12/28/15	01/06/16	KWG1512601	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	77	42-131	01/06/16	Acceptable
Fluoranthene-d10	87	42-133	01/06/16	Acceptable
Terphenyl-d14	92	32-129	01/06/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460
Date Collected: 12/18/2015
Date Received: 12/18/2015

Polynuclear Aromatic Hydrocarbons

Sample Name: MW-1
Lab Code: K1514460-004
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	0.0039	J	0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	*
2-Methylnaphthalene	0.0035	J	0.020	0.0023	1	12/28/15	01/06/16	KWG1512601	*
1-Methylnaphthalene	0.0039	J	0.020	0.0035	1	12/28/15	01/06/16	KWG1512601	*
Acenaphthylene	ND	U	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	*
Acenaphthene	ND	U	0.020	0.0044	1	12/28/15	01/06/16	KWG1512601	*
Fluorene	0.0040	J	0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	*
Phenanthrene	ND	U	0.020	0.0050	1	12/28/15	01/06/16	KWG1512601	*
Anthracene	ND	U	0.020	0.0036	1	12/28/15	01/06/16	KWG1512601	*
Carbazole	ND	U	0.020	0.0045	1	12/28/15	01/06/16	KWG1512601	*
Fluoranthene	ND	U	0.020	0.010	1	12/28/15	01/06/16	KWG1512601	*
Pyrene	ND	U	0.020	0.0053	1	12/28/15	01/06/16	KWG1512601	*
Benz(a)anthracene	ND	U	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	*
Chrysene	ND	U	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	*
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	12/28/15	01/06/16	KWG1512601	*
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	12/28/15	01/06/16	KWG1512601	*
Benzo(a)pyrene	ND	U	0.020	0.0043	1	12/28/15	01/06/16	KWG1512601	*
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	*
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	12/28/15	01/06/16	KWG1512601	*
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	12/28/15	01/06/16	KWG1512601	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	78	42-131	01/06/16	Acceptable
Fluoranthene-d10	92	42-133	01/06/16	Acceptable
Terphenyl-d14	98	32-129	01/06/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460
Date Collected: 12/18/2015
Date Received: 12/18/2015

Polynuclear Aromatic Hydrocarbons

Sample Name: MW-2
Lab Code: K1514460-005
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	0.0047	J	0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	*
2-Methylnaphthalene	ND	U	0.020	0.0023	1	12/28/15	01/06/16	KWG1512601	*
1-Methylnaphthalene	ND	U	0.020	0.0035	1	12/28/15	01/06/16	KWG1512601	*
Acenaphthylene	0.0048	J	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	*
Acenaphthene	ND	U	0.020	0.0044	1	12/28/15	01/06/16	KWG1512601	*
Fluorene	ND	U	0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	*
Phenanthrene	ND	U	0.020	0.0050	1	12/28/15	01/06/16	KWG1512601	*
Anthracene	ND	U	0.020	0.0036	1	12/28/15	01/06/16	KWG1512601	*
Carbazole	ND	U	0.020	0.0045	1	12/28/15	01/06/16	KWG1512601	*
Fluoranthene	ND	U	0.020	0.010	1	12/28/15	01/06/16	KWG1512601	*
Pyrene	ND	U	0.020	0.0053	1	12/28/15	01/06/16	KWG1512601	*
Benz(a)anthracene	ND	U	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	*
Chrysene	ND	U	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	*
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	12/28/15	01/06/16	KWG1512601	*
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	12/28/15	01/06/16	KWG1512601	*
Benzo(a)pyrene	ND	U	0.020	0.0043	1	12/28/15	01/06/16	KWG1512601	*
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	*
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	12/28/15	01/06/16	KWG1512601	*
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	12/28/15	01/06/16	KWG1512601	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	77	42-131	01/06/16	Acceptable
Fluoranthene-d10	91	42-133	01/06/16	Acceptable
Terphenyl-d14	95	32-129	01/06/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460
Date Collected: 12/18/2015
Date Received: 12/18/2015

Polynuclear Aromatic Hydrocarbons

Sample Name: DUP-121815
Lab Code: K1514460-006
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	*
2-Methylnaphthalene	ND	U	0.020	0.0023	1	12/28/15	01/06/16	KWG1512601	*
1-Methylnaphthalene	ND	U	0.020	0.0035	1	12/28/15	01/06/16	KWG1512601	*
Acenaphthylene	ND	U	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	*
Acenaphthene	ND	U	0.020	0.0044	1	12/28/15	01/06/16	KWG1512601	*
Fluorene	ND	U	0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	*
Phenanthrene	ND	U	0.020	0.0050	1	12/28/15	01/06/16	KWG1512601	*
Anthracene	ND	U	0.020	0.0036	1	12/28/15	01/06/16	KWG1512601	*
Carbazole	ND	U	0.020	0.0045	1	12/28/15	01/06/16	KWG1512601	*
Fluoranthene	ND	U	0.020	0.010	1	12/28/15	01/06/16	KWG1512601	*
Pyrene	ND	U	0.020	0.0053	1	12/28/15	01/06/16	KWG1512601	*
Benz(a)anthracene	ND	U	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	*
Chrysene	ND	U	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	*
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	12/28/15	01/06/16	KWG1512601	*
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	12/28/15	01/06/16	KWG1512601	*
Benzo(a)pyrene	ND	U	0.020	0.0043	1	12/28/15	01/06/16	KWG1512601	*
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	*
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	12/28/15	01/06/16	KWG1512601	*
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	12/28/15	01/06/16	KWG1512601	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	77	42-131	01/06/16	Acceptable
Fluoranthene-d10	90	42-133	01/06/16	Acceptable
Terphenyl-d14	100	32-129	01/06/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460
Date Collected: NA
Date Received: NA

Polynuclear Aromatic Hydrocarbons

Sample Name: Method Blank
Lab Code: KWG1512601-4
Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	12/28/15	01/06/16	KWG1512601	
1-Methylnaphthalene	ND	U	0.020	0.0035	1	12/28/15	01/06/16	KWG1512601	
Acenaphthylene	ND	U	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	
Acenaphthene	ND	U	0.020	0.0044	1	12/28/15	01/06/16	KWG1512601	
Fluorene	ND	U	0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	
Phenanthrene	ND	U	0.020	0.0050	1	12/28/15	01/06/16	KWG1512601	
Anthracene	ND	U	0.020	0.0036	1	12/28/15	01/06/16	KWG1512601	
Carbazole	ND	U	0.020	0.0045	1	12/28/15	01/06/16	KWG1512601	
Fluoranthene	ND	U	0.020	0.010	1	12/28/15	01/06/16	KWG1512601	
Pyrene	ND	U	0.020	0.0053	1	12/28/15	01/06/16	KWG1512601	
Benz(a)anthracene	ND	U	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	
Chrysene	ND	U	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	12/28/15	01/06/16	KWG1512601	
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	12/28/15	01/06/16	KWG1512601	
Benzo(a)pyrene	ND	U	0.020	0.0043	1	12/28/15	01/06/16	KWG1512601	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	12/28/15	01/06/16	KWG1512601	
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	12/28/15	01/06/16	KWG1512601	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	74	42-131	01/06/16	Acceptable
Fluoranthene-d10	87	42-133	01/06/16	Acceptable
Terphenyl-d14	94	32-129	01/06/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
MW-5	K1514460-001	83	91	85
MW-4	K1514460-002	86	96	96
MW-3	K1514460-003	77	87	92
MW-1	K1514460-004	78	92	98
MW-2	K1514460-005	77	91	95
DUP-121815	K1514460-006	77	90	100
Method Blank	KWG1512601-4	74	87	94
Lab Control Sample	KWG1512601-1	78	86	78
Duplicate Lab Control Sample	KWG1512601-2	79	87	78

Surrogate Recovery Control Limits (%)

Sur1 = Fluorene-d10	42-131
Sur2 = Fluoranthene-d10	42-133
Sur3 = Terphenyl-d14	32-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: Tetra Tech EM, Incorporated
Project: CenturyLink Longview WA/103P3080177
Sample Matrix: Ground water

Service Request: K1514460
Date Extracted: 12/28/2015
Date Analyzed: 01/06/2016

Lab Control Spike/Duplicate Lab Control Spike Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1512601

Analyte Name	Lab Control Sample KWG1512601-1 Lab Control Spike			Duplicate Lab Control Sample KWG1512601-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Naphthalene	1.96	2.50	78	1.95	2.50	78	52-115	1	30
2-Methylnaphthalene	1.84	2.50	74	1.84	2.50	74	48-120	0	30
1-Methylnaphthalene	1.87	2.50	75	1.88	2.50	75	47-119	0	30
Acenaphthylene	2.14	2.50	85	2.12	2.50	85	58-124	1	30
Acenaphthene	2.03	2.50	81	2.02	2.50	81	63-121	1	30
Fluorene	2.07	2.50	83	2.08	2.50	83	68-121	0	30
Phenanthrene	2.02	2.50	81	2.10	2.50	84	64-126	4	30
Anthracene	2.06	2.50	82	2.16	2.50	87	68-127	5	30
Carbazole	2.26	2.50	91	2.25	2.50	90	68-135	1	30
Fluoranthene	2.20	2.50	88	2.27	2.50	91	70-127	3	30
Pyrene	2.13	2.50	85	2.17	2.50	87	72-127	2	30
Benz(a)anthracene	1.96	2.50	78	2.01	2.50	81	74-124	3	30
Chrysene	2.15	2.50	86	2.23	2.50	89	74-132	4	30
Benzo(b)fluoranthene	1.91	2.50	76	2.02	2.50	81	73-136	6	30
Benzo(k)fluoranthene	2.08	2.50	83	2.14	2.50	86	74-134	3	30
Benzo(a)pyrene	2.03	2.50	81	2.11	2.50	84	75-131	4	30
Indeno(1,2,3-cd)pyrene	1.63	2.50	65	1.76	2.50	70	63-136	7	30
Dibenz(a,h)anthracene	1.68	2.50	67	1.82	2.50	73	59-135	8	30
Benzo(g,h,i)perylene	1.74	2.50	70	1.90	2.50	76	63-127	8	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.