# Fargher Lake Grocery Groundwater Monitoring Results, April and July 2019: Data Summary Report



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# Abstract

Fargher Lake Grocery is a gasoline station and convenience store near Yacolt, Washington, in the foothills of the Cascade Mountains. In 1987, the domestic water supply well for the store was found to be contaminated with petroleum products. Site investigations indicated that the source of the contamination was one or more leaking underground storage tanks.

Between 1989 and 1993, the Washington State Department of Ecology (Ecology) removed six tanks and excavated nearly 600 tons of gasoline-contaminated soil. Groundwater samples collected in 1992 and 1993 documented petroleum contamination of groundwater in excess of Model Toxics Control Act (MTCA) Method A cleanup levels. The total extent of the contaminant plume or the direction of groundwater flow was not characterized during the work conducted in the late 1980s and early 1990s. Groundwater monitoring and cleanup activity at the site has been limited since the mid-1990s.

In 2019, Ecology sampled two wells at Fargher Lake Grocery. Sample results from a monitoring well located in the backfilled excavated area indicate that benzene is still present in excess of MTCA Method A cleanup levels. A sample from a domestic well completed around a depth of 300 feet did not have detectable levels of BTEX compounds, petroleum hydrocarbons, or lead.

### **Publication Information**

This report is available on the Department of Ecology's website at: <u>https://apps.ecology.wa.gov/publications/SummaryPages/2103006.html.</u>

Data for this project are available in Ecology's EIM Database. Study ID: FS1045.

The Activity Tracker Code for this study is 18-006.

### **Suggested Citation:**

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The Water Resource Inventory Area (WRIA) for the study area is 27.

### **Contact Information**

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This report was prepared under the supervision of a licensed hydrogeologist. A signed and stamped copy of the report is available upon request.

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## **Table of Contents**

Background	4
Methods and Results	6
Conclusions	8
References	9
Appendix A. Chain of Custody Documentation	10
Appendix B. Analytical Laboratory Reports, April 2019	15
Appendix C. Analytical Laboratory Reports, July 2019	76

# Background

Fargher Lake Grocery is a gasoline station and convenience store near Yacolt, Washington, located at the intersection of NW Fargher Lake Hwy (SR 503) and NE 156th Ave. (Figure 1). The site is in the foothills of the Cascade Mountains at an approximate elevation of 660 feet above mean sea level. Fargher Lake Grocery is adjacent to Rock Creek, which flows south to the East Fork of the Lewis River (WRIA 27).

The Lewis River Watershed stretches from the western flank of the Cascade Mountains to the Columbia River. The watershed consists of the Lewis River proper and many tributary creeks and streams.

The annual precipitation in the watershed ranges from 40 inches to over 150 inches per year. Most of the precipitation occurs during the winter months. (Ecology, 2016).

Site deposits are characteristic of glacial till and consist of unstratified clay, silt, sand, gravel, cobbles, and boulders. These glacial till and outwash deposits appear to extend to a depth of about 100 feet below ground surface (bgs). Site soil borings advanced to about 30 feet revealed deposits composed primarily of sandy silt with some gravel. A clayey silt and sand layer that averaged about eight feet in thickness was encountered at 15 feet bgs. Groundwater was encountered at about 13 feet bgs, perched in an overlying gravelly clay layer (Ecology & Environment, 1992). In 1987, the domestic water supply well for the store was found to be contaminated with petroleum products. The source of the contamination was thought to be a spill that originated from a faulty coupling on a leaded gasoline retail pump. Later investigations indicated that one or more of the underground storage tanks were leaking.

In November 1989, Ecology had six tanks removed and nearly 300 tons of gasolinecontaminated soil were excavated and sent for treatment and disposal (Figure 1). Riedel Environment (1990) collected soil samples from the excavation following the tank removal. Results from that sampling indicated the presence of residual soil contamination not meeting (exceeding) MTCA Method A cleanup levels (CULs). The CULs are intended to protect human health and the environment.

The remedial investigation completed by Ecology & Environment (1992) confirmed the presence of contaminated soil east and north of the 1989 excavation site. During June and October of 1991, Ecology & Environment sampled three domestic wells and one monitoring well for this remedial investigation. Those sampling efforts failed to assess the full extent of contamination. A sample from the Fargher Lake Grocery domestic well (DW-1) exceeded the MTCA Method A CULs for BTEX compounds and gasoline in both sampling events.



Figure 1. Location of Fargher Lake Grocery and wells sampled in 2019.

In March 1993, Ecology implemented a cleanup action plan to remove additional petroleum-contaminated soils and address contaminated groundwater. About 293 additional tons of soil was excavated, but due to structural confinements, not all of the contaminated soil could be removed from the site. The drinking water well (DW-1) serving Fargher Lake Grocery and a monitoring well (MW-1) north of the site were properly abandoned. A monitoring well (FLG-MW) was installed in the backfilled, excavated area.

Groundwater samples collected from FLG-MW had gasoline-range petroleum hydrocarbons exceeding their respective CULs (Enviros, 1993). Concentrations were reported as 7,100  $\mu$ g/L TPH-G, 900  $\mu$ g/L benzene, 640  $\mu$ g/L toluene, 110  $\mu$ g/L ethylbenzene, and 1,100  $\mu$ g/L total xylene. The total extent of the contaminant plume or the direction of groundwater flow was not characterized. Activity at the site has been limited since the mid-1990s.

# **Methods and Results**

In preparation for groundwater sampling at the Fargher Lake Grocery site, Ecology performed preliminary field work in the spring of 2018. Because monitoring well FLG-MW sat dormant for a long period of time, Ecology re-developed the well by surging and pumping.

In April 2019, Ecology sampled groundwater from the monitoring well (FLG-MW). The tap closest to the domestic water supply well (FLG-WT) was not functioning; therefore, a sample was grabbed from a faucet on the west end of the Fargher Lake Grocery building facing the fuel island. Because diesel and lead were detected at concentrations near their respective reporting limits from the domestic well, Ecology returned in July 2019 to resample the well. The wells were sampled in accordance with the site-specific Quality Assurance Project Plan (Marti, 2019) and applicable standard operating procedures (SOPs). The field crew followed Ecology's SOPs EAP052 (Marti, 2016a) and EAP078 (Marti, 2016b) when sampling the monitoring well, and SOP EAP077 (Marti, 2016c) when sampling the water supply well.

Ecology sampled the monitoring well with a peristaltic pump using industry-standard, low-flow sampling techniques. The well was purged at a rate of 0.5-liter/minute or less. The pump tubing intake was placed at the mid-well screen. Prior to sampling, the well was purged through a continuous flow cell until field parameters (pH, temperature, specific conductance, dissolved oxygen, and oxidation reduction potential) stabilized as specified in SOP EAP078 (Marti, 2016b).

In July 2019, the domestic supply well was sampled at the tap closest to the wellhead. Upon arriving at the site, the well was in use and the well pump was operating. The tap configuration could not accommodate the flow cell for field parameter measurements. Since the well was in use, the tap line was purged for 15 minutes prior to sampling.

Samples were collected in clean laboratorysupplied bottles and submitted for analysis of benzene, toluene, ethylbenzene, and xylene (BTEX), total petroleum hydrocarbons as gasoline and diesel (TPH-G and TPH-D), and total lead. All samples were analyzed by Ecology's Manchester Environmental Laboratory. Copies of the chain-of-custody forms are included in Appendix A.

Field measurements of purged water collected immediately before sampling the monitoring well are presented in Table 1. Tables 2 and 3 summarize analytical results. Copies of the analytical lab reports for the April 2019 sampling are included in Appendix B. Copies of the analytical lab reports for the July 2019 sampling are included in Appendix C.

Field duplicate samples were collected from both wells. The relative percent difference<sup>1</sup> calculated for the duplicate results ranged from 0% to 5%, meeting the data quality objectives established in the QAPP (Marti, 2019). In well FLG-MW, benzene was detected at a concentration of 48.3  $\mu$ g/L, above the CUL of 5  $\mu$ g/L. The other BTEX compounds were identified in FLG-MW at concentrations below the CULs. The TPH-D analyses yielded results above the reporting limit, but the chromatograms did not match the standard diesel pattern. TPH-G and lead were not identified in FLG-MW. No contaminants of concern were present in the July 2019 sample from the domestic well (FLG-WT).

### Table 1. Field measurements collected prior to sampling, April 2019.

Well ID	Well Depth (feet, bgs)	Ground- water Level (feet, bgs)	pH (standard units)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)
FLG-MW	15.2	5.79	6.1	362	0.5	-5.2

bgs: below ground surface

Well ID	Benzene (µg/L)	Toluene (μg/L)	Ethyl Benzene (µg/L)	m,p-Xylene (μg/L)	o-Xylene (µg/L)
FLG-MW	<u>48.3</u>	5.04	32.6	16.3	1.55
FLG-MW Duplicate	<u>47.6</u>	5.22	35.0	17.3	1.59
FLG-WT	1U	1U	1U	2U	1U
FLG-WT Duplicate	1U	1U	1U	2U	1U
MTCA Cleanup Level	5	1000	700	1000ª	1000ª

### Table 2. Analytical results for BTEX compounds, April and July 2019.

" The cleanup level is 1000 µg/L total xylenes (m,p-Xylene + o-Xylene).

U: Analyte was not detected at or above the reported value.

Bold: Analyte was positively detected.

<u>Underlined/bold</u>: Analyte was positively detected above the MTCA Method A cleanup level.

Precision estimates are influenced by the random error introduced by collection and measurement procedures, and by the natural variability of the concentrations in the media being sampled.

<sup>&</sup>lt;sup>1</sup> Relative percent difference is the difference between replicate sample results, divided by the replicate mean, expressed as a percentage. This calculation provides a measure of the overall sampling and analytical precision.

# Table 3. Analytical results for total petroleum hydrocarbons and lead, April and July 2019.

Well ID	TPH-G (μg/L)	TPH-D (μg/L)	Total Lead (μg/L)
FLG-MW	70U	<b>280</b> <sup><i>a</i></sup>	0.1U
FLG-MW Duplicate	70U	310 <sup>a</sup>	0.1U
FLG-WT	70U	150U	0.1U
FLG-WT Duplicate	70U	140U	0.1U
MTCA Cleanup Level	800-1000 <sup>b</sup>	500	15

<sup>a</sup> TPH-D results for the April 2019 sampling exhibited chromatograms that did not match the diesel standard.
 <sup>b</sup> MTCA Method A Cleanup Level for Gasoline is 800 μg/L if benzene is present in groundwater and 1000 μg/L if benzene

is not detectable in groundwater.

U: Analyte was not detected at or above the reported value. **Bold:** Analyte was positively detected.

# Conclusions

Water quality results from the 2019 monitoring confirms that BTEX contamination persists in the shallow groundwater in the backfilled, excavated area at the Fargher Lake Grocery site. Although BTEX concentrations in monitoring well FLG-MW have decreased since the last sampling event in 1993, the 2019 benzene concentrations still exceed CULs. Toluene, ethylbenzene, and xylene are present in the backfilled, excavated area below the CUL. TPH-D was detected in FLG-MW at a concentration below the cleanup limit. However, the chromatogram pattern from this sample did not match that of the diesel standard. TPH-G and lead were not detected in FLG-MW.

Contaminated soils left in place during the 1993 cleanup action are a likely source of continued dissolved-phase petroleum hydrocarbons in shallow groundwater beneath this area of the site.

The water supply well, FLG-WT, did not have detectable levels of BTEX compounds, petroleum hydrocarbons, or lead.

### References

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- Marti, P. 2016c. Standard Operating Procedure for Purging and Sampling Water Supply Wells plus Guidance on Collecting Samples for Volatiles and other Organic Compounds. Washington State Department of Ecology, Environmental Assessment Program, EAP077, Version 2.0. <u>www.ecology.wa.gov/programs/eap/quality.html</u>
- Riedel Environmental Services. 1990. Final Report for Fargher Lake Spill Response. Prepared for Washington State Department of Ecology, March 16, 1990.

### **Appendix A. Chain of Custody Documentation**

Chain of custody forms for the 2019 sampling that included the Fargher Lake Grocery groundwater samples, as well as groundwater samples from a separate site.



Publication 21-03-006

	hester Environmental Laboratory			
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Project Name: McKenzie / Forgher				
WO#: 1904040	# of coolers:	2		
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or ≤10°C for microbiology samples, only.)	Did cooler(s) arrive at the proper	(Yes)	No	N
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Washington State Department of Ecology Manchester Environmental Laboratory Cooler Receipt and Preservation Form

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Publication 21-03-006

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1b. If so, are Custody Seal(s) Intact?	(Tes)	No	
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3. Was chain-of-custody section properly filled out (complete, in ink, signed, etc.)?	(Yes)	No	-
4. Did all bottles arrive in good condition (unbroken, no leakage)?	(Yes)	No	_
5. Do sample tags on bottles match the LAR paperwork?	(Yes)	No	
6. Were all sample labels complete (i.e.: analysis, sample date, etc.)?	(Yes)	No	
7. Were the samples in correct container for analysis?	(Yes)	No	
8. Were the samples preserved to the proper pH?	(Yes)	No	NA
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# Appendix B. Analytical Laboratory Reports, April 2019

Analytical laboratory reports from Manchester Environmental Laboratory on the results of the April 2019 groundwater sampling at Fargher Lake Grocery, and at a separate site.

#### DEPARTMENT OF ECOLOGY Manchester Environmental Laboratory 7411 Beach Drive East • Port Orchard, Washington 98366-8204

#### **Case Narrative**

#### April 22, 2019

To: Marti, Pam

Project: Mckenzie Auto & Fargher Lake Grocery

Work Order: 1904040

Subject: Volatile Petroleum Products

From: Dolores Montgomery

#### Sample Receipt

Enclosed are the TPHG results for the samples received by MEL on April 17, 2019. All samples were received in acceptable condition unless noted in Analyst Comments. All samples were prepared and analyzed within holding times unless noted in Analyst Comments.

#### Analytical Methods

These samples were prepared, analyzed, and verified by MEL according to the submitted chain-of-custody and MEL's procedures. A Sample Correlation Table with batch summary is located in Appendix A. The samples were:

- extracted following a modification of method SW5030B.
- · analyzed following a modification of method NWTPH-GX.

#### **Analyst Comments**

None noted.

#### Sample Qualification

The samples were qualified according to MEL's procedures. The table in Appendix B summarizes the manual qualifiers added by MEL. All results reported below the method reporting limit (RL) were automatically qualified as estimates, but not included in Appendix B. The qualifiers are defined in Appendix C.

#### Sample Verification

All analyses met QC acceptance criteria except as noted in Appendix D. All analytes met linearity requirements unless noted in Appendix E.

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Dunctor 4 - Da	Manc	ngton State De hester Enviror Final Re Volatile Petrol	nmental port fo eum Pr	Laborat r		2 117	1.1.1	TD- 14	- FWW - 4
Vork Order: 1 Project Officer: Initial Vol: 5 m Final Vol: 5 m	Marti, Pam L	Lab ID #: 190404 Collected: 4/16/20 Prep Method: SV Analysis Method:	0-04 19 V5030B	GX		F Batch ID: Prepared: Analyzed: Matrix: V Units: mg	B191 4/17 4/17 Vater	/2019	.w-4
CAS#	Analyte	4		Result	Qı	alifier	RL	MI	)L
86290-81-5	Gasoline			0.070		U	0.070		
Surrogate Recov CAS#	ery: Analyte			Result	Spike Level	% R	90	% Rec. Limits	
540-36-3	1,4-Difluorobenzene	na gargan ga kanan kan kan kan kan kan kan kan kan		22.4	24.0	93		70-130	BR507-624-PD-044
615-59-8	Benzene, 1,4-dibromo-2-met	hyl		51.5	56.0	92		70-130	
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Project: N		Volati	r Environ Final Re ile Petrole	menta port fo eum Pi	l Labor: r		Field I	<b>D: MW-</b> 44
Work Order: Project Office Initial Vol: 5 Final Vol: 5 n	er: Marti, Pam mL	Collec Prep 1	D #: 1904040 cted: 4/16/203 Method: SW vsis Method:	19 /5030B	-GX	Pr Ar M	tch ID: B19 epared: 4/17 nalyzed: 4/17 atrix: Water nits: mg/L	7/2019 7/2019
CAS#	Analyte				Rest	ult Qua	lifier RL	MDL
86290-81-5	Gasoline				0.07	70 U	J 0.070	
<u>Surrogate Rec</u> CAS#	overy: Analyte		8		Result	Spike Level	% Rec.	% Rec. Limits
540-36-3 615-59-8	1,4-Difluorobenzene Benzene, 1,4-dibromo	-2-methyl			22.2 50.7	24.0 56.0	93 90	70-130 70-130
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Project: N	Ickenzie Auto &	Fargher Lake G	Frocery			Field ID	: FLG-M	IW
Work Order:	1904040 r: Marti, Pam mL	Lab ID #: 190 Collected: 4/16 Prep Method:	4040-06 /2019	x	Pre An Ma	tch ID: B19 pared: 4/1' alyzed: 4/1 trix: Water its: mg/L	7/2019 7/2019	
CAS#	Analyte			Result	Quali	fier RL	MDL	
86290-81-5	Gasoline			0.070	U	0.070	)	
Surrogate Reco CAS#	<u>overy:</u> Analyte		R	esult	Spike Level	% Rec.	% Rec. Limits	
540-36-3	1,4-Difluorobenzene			25.7	24.0	107	70-130	
615-59-8	Benzene, 1,4-dibromo	-2-methyl		58.3	56.0	104	70-130	
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Project: I	Mckenzie Auto &	z Fargher Lake Gro	ocery	Fi	eld ID:	FLG-MW	4
Work Order:	1904040 er: Marti, Pam mL	Lab ID #: 190404 Collected: 4/16/20 Prep Method: SV Analysis Method:	10-07 119 V5030B	Pre Ana Ma	ch ID: B19 pared: 4/1 lyzed: 4/1 rix: Wate ts: mg/L	7/2019 7/2019	
CAS#	Analyte		Result	Quali	ier RL	MDL	
86290-81-5	Gasoline		0.070	U	0.070	)	
Surrogate Rec CAS#	<u>covery:</u> Analyte		Result	Spike Level	% Rec.	% Rec. Limits	
540-36-3	1,4-Difluorobenzene		25.4 58.7	24.0 56.0	106 105	70-130 70-130	
615-59-8	Benzene, 1,4-dibrom	io-2-metnyi	.10.1		105	10 150	
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Project: N	Ackenzie Auto &	Fargher Lake Grocery	Y	QCT	Type : Me	thod Blank
Work Order: Project Office Initial Vol: 5 Final Vol: 5 r	er: Marti, Pam mL	Lab ID #: B19D116-B1 Prep Method: SW5030 Analysis Method: NW Source Field ID: B19D	B FPH-GX	Pr Ar M	epared: 4/17 alyzed: 4/17 atrix: Water atris: mg/L	/2019 //2019
CAS#	Analyte		Resul	t Qua	lifier RL	MDL
86290-81-5	Gasoline		0.070	ι	J 0.070	5
Surrogate Rec CAS#	overy: Analyte		Result	Spike Level	% Rec.	% Rec. Limits
540-36-3 615-59-8	1,4-Difluorobenzene Benzene, 1,4-dibromo	2-methyl	22.6 51.4	24.0 56.0	94 92	70-130 70-130
010-09-0	Denzone, 1,4-01010111	montage			-1.	enge anner:
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Project: ]		Volatile	Invironmen inal Report Petroleum	tal Labor: for		(	QC Typ	be : LC	S
Work Order Project Offic Initial Vol: 5 Final Vol: 5	er: Marti, Pam 5 mL	Prep Me Analysis	t: B19D116-BS1 thod: SW5030E Method: NWT 'ield ID; B19D1	PH-GX	F A N	Batch ID: Prepared: Analyzed: Aatrix: V Jnits: %	4/17/201 4/17/201	9	1.42
Analyte				Result	Spike Level	RL	%Rec	%Rec Limits	
Gasoline			an a	0.661	0,750	0.070	88	70-130	red al
Surrogate Re CAS#	covery: Analyte			Result	Spike Level	% R		Rec. nits	
540-36-3 615-59-8	1,4-Difluorobenzene Benzene, 1,4-dibromo	o-2-methyl	1993 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	24.1 55.4	24.0 56.0	100 99		130 130	
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	Man	chester ] Volatil	Enviror Final Re e Petrol	imental port for eum Pr	-		QC Ty	م • T C	S Due	
Project: Mckenzie Work Order: Batch QC Project Officer: Marti, P. Initial Vol: 5 mL Final Vol: 5 mL	10 10	Lab ID Prep M Analys	ake Gro #: B19D1 lethod: SV is Method: Field ID:	16-BSD1 V5030B NWTPH-		P A N	atch ID: B repared: 4 nalyzed: 4 Iatrix: Wa nits: %	19D116 /17/2019 /17/2019	<u>s pu</u>	_
analyte			ä.	Sample Result	Spike Level	%Rec	RPD	%Rec Limits	RPD Limit	
Jasoline				0.681	0,750	91	3	70-130	40	
<u>Surrogate Recovery:</u> CAS# Analyte	e				Result	Spike Level	% Rec	% Re . Limit		
540-36-3 1.4-Diflu	orobenzene 1,4-dibromo-2-m			*****	24.2 53.2	24.0 56.0	101 95	70-13 70-13		-
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Project. N		anchester ] Volatil	State Depar Environme Final Repor e Petroleur ake Grocer	ntal Labor t for n Products	atory	Type	: Matr	ix Spik	e
Work Order:	Batch QC er: Marti, Pam mL	Lab III Prep M Analys Source	#: B19D116-M lethod: SW503 is Method: NW Field ID: B191 Lab ID #: 190	IS1 0B 7TPH-GX 0116-MS1	1	Batch ID: Prepared: Analyzed: Vlatrix: V Units: %	B19D116 4/17/201 4/17/201	5 9	
Analyte				Result	Spike Level	Source Result	%Rec	%Rec Limits	
Gasoline				0.648	0,750	0.00	86	70-130	-
Surrogate Rec				Result	Spike Level	% R		Rec. nits	
CAS# 540-36-3 615-59-8	Analyte 1,4-Difluorobenzene Benzene, 1,4-dibromo	-2-methyl		22,5 50,9	24.0 56.0	94 91	70-	130 130	
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Project:	Mckenzie Auto & I				loudets	QC Typ	e : Matr	ix Spik	e Dup
Work Order	: Batch QC er: Marti, Pam 5 mL	Lab D Prep I Analy Sourc	D #: B19D1 Method: SV sis Method: e Field ID: e Lab ID #:	16-MSD1 V5030B NWTPE B19D116-	I-GX -MSD1	P. A N	atch ID: B repared: 4 nalyzed: 4 Iatrix: Wa Inits: %	/17/2019 /17/2019	99198
Analyte		248	Sample Result	Spike Level	Source Result	%Rec	RPD	%Rec Limits	RPD Limit
Gasoline			0.639	0.750	0.00	85	1	70-130	40
Surrogate Re CAS#	<u>covery:</u> Analyte				Result	Spike Level	% Rec	% Rec Limits	
540-36-3 615-59-8	1,4-Difluorobenzene Benzene, 1,4-dibromo-2	2-methyl		Parties de la la constante	22.9 51.6	24.0 56.0	95 92	70-130 70-130	
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Batch ID: B19D116	Prep Method: SW5030B
Prepared: 4/17/2019	Analysis Method: NWTPH-GX
	MEL ID
FLG-DW	1904040-01
MW-1	1904040-02
MW-2	1904040-03
MW-4	1904040-04
MW-4A	1904040-05
FLG-MW	1904040-06
FLG-MWA	1904040-07
Blank	B19D116-BLK1
LCS	B19D116-BS1
LCS Dup	B19D116-BSD1
Matrix Spike (MW-4)	B19D116-MS1
Matrix Spike Dup (MW-4)	B19D116-MSD1

### Appendix A Sample Correlation Table

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### Appendix B Manual Qualification Table

Analysis: TPHG

WO: 1904040

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#### Appendix C Data Qualifier Definitions

#### Code Definition

- E Reported result is an estimate because it exceeds the calibration range.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- N The analysis indicates the present of an analyte for which there is presumptive evidence to make a "tentative identification".
- NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
- NAF Not analyzed for.
- NC Not calculated.
- REJ The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.
- U The analyte was not detected at or above the reported sample quantitation limit.
- UJ The analyte was not detected at or above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately measure the analyte in the sample.
- **bold** The analyte was present in the sample, (Visual aid to locate detected compounds on the analytical report.)

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Appendix D QC Exceptions Report

Lab ID	Analyte	Exception
No QC excep	tions reported.	

QC Exceptions determined using unrounded QC results but are reported as integers throughout this analytical report. C:\PROGRAM FILES (X86)\PROMIUM\ELEMENT\FORMAT\MEL CASENARRATIVECLP PDF V3.3,0,RPT

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### Appendix E Initial Calibration Exceptions Report

Calibration ID	: B8C2801	Analysis: TPHG	
LabNumber	Analyte	QC Exception	2

No ICAL exceptions.

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### DEPARTMENT OF ECOLOGY

Manchester Environmental Laboratory 7411 Beach Drive East 

Port Orchard, Washington 98366-8204

#### **Case Narrative**

#### April 30, 2019

To: Marti, Pam

Project: Mckenzie Auto & Fargher Lake Grocery

Work Order: 1904040

Subject: Semivolatile Petroleum Products

From: Karin Bailey

#### Sample Receipt

Enclosed are the TPHD results for the samples received by MEL on April 17, 2019. All samples were received in acceptable condition unless noted in Analyst Comments. All samples were prepared and analyzed within holding times unless noted in Analyst Comments.

#### **Analytical Methods**

These samples were prepared, analyzed, and verified by MEL according to the submitted chain-of-custody and MEL's procedures. A Sample Correlation Table with batch summary is located in Appendix A. The samples were:

- extracted following a modification of method SW3535A.
- analyzed following a modification of method NWTPH-DX.

#### Analyst Comments

<u>TPHD by GCFID</u>. Samples 1904040-01, -06, -07 had results for Diesel above the reporting limit, but the sample chromatograms didn't match the chromatogram of the Diesel standard.

#### Sample Qualification

The samples were qualified according to MEL's procedures. The table in Appendix B summarizes the manual qualifiers added by MEL. All results reported below the method

reporting limit (RL) were automatically qualified as estimates, but not included in Appendix B. The qualifiers are defined in Appendix C.

#### Sample Verification

All analyses met QC acceptance criteria except as noted in Appendix D. All analytes met linearity requirements unless noted in Appendix E.

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Project Officer: Marti, Pam Collected: 4 Initial Vol: 1010 mL Prep Metho			1904040-01			: FLG-DW D136 /2019 /2019
CAS#	Analyte		Result	Quali	fier RL	MDL
68476-34-6 NULL	#2 Diesel Lube Oil		<b>0.15</b> 0.37	U	<b>0.15</b> 0.37	
Surrogate Reco			Result	Spike Level	% Rec.	% Rec. Limits
CAS# 629-99-2	Analyte Pentacosane		0.203	0.218	93	50-150
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Duciente N	Tokonzia Ant				louucis		Field	ID: MW-	
Project: Mckenzie Au Work Order: 1904040 Project Officer: Marti, Pam Initial Vol: 995 mL Final Vol: 3 mL		Lab ID #: 1904040-02 Collected: 4/16/2019 Prep Method: SW3535A Analysis Method: NWTPH-DX			УX	Batch ID: B19D136 Prepared: 4/17/2019 Analyzed: 4/24/2019 Matrix: Water Units: mg/L			
CAS#	Analyte				Result	Qual	ifier RL	MDL	
68476-34-6 NULL	#2 Diesel Lube Oil				0.15 0.38	บ บ			
Surrogate Rec			6			Spike	0/ Dag	% Rec.	
CAS#	Analyte	and the second secon	ti ana ang kana ang k		Lesult 0.218	Level 0.221	% Rec. 99	Limits	
629 <b>-</b> 99-2	Pentacosane					James 1			
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Project: I	Ackenzie Auto &	Semivolatile Petroleu & Fargher Lake Grocery	m Products		Field	ID: MW-2
Work Order: Project Office Initial Vol: 10 Final Vol: 3 1	er: Marti, Pam 100 mL	Lab ID #: 1904040-03 Collected: 4/16/2019 Prep Method: SW3535A Analysis Method: NWT		Prepa Analy Matri	ID: B19 red: 4/17 zed: 4/24 x: Water : mg/L	/2019 /2019
CAS#	Analyte		Result	un anoveral investores and		MDL
68476-34-6 NULL	#2 Diesel Lube Oil		0.15 0.38	U U	0.15 0.38	
Surrogate Rec CAS#	<u>covery:</u> Analyte		Result	Spike Level	% Rec.	% Rec. Limits
629-99-2	Pentacosane		0.234	0.220	106	50-150
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Project: N	Ackenzie Aut	o & Far	gher Lake G	rocery			Field	ID: MW-4
Work Order:	1904040 er: Marti, Pam 010 mL		Lab ID #: 1904 Collected: 4/16 Prep Method: Analysis Metho	1040-04 /2019 SW3535A	I-DX	Pr Ar M	atch ID: B19 epared: 4/17 nalyzed: 4/2- atrix: Water nits: mg/L	//2019 4/2019
CAS#	Analyte				Resul	t Qua	lifier RL	MDL
58476-34-6 NULL	#2 Dicsel Lube Oil				0.15 0.37		J 0.15 J 0.37	
Surrogate Rec	:overy:					Spike	0/ Dan	% Rec. Limits
CAS#	Analyte	an allow a change and a state			Result 0.223	Level 0.218	% Rec. 102	50-150
529-99-2	Pentacosane		74 I	2	0.225	0.210		
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Semivolatile Petroleun         Project:       Mckenzie Auto & Fargher Lake Grocery         Work Order:       1904040         Project Officer:       Marti, Pam         Initial Vol:       1005 mL         Final Vol:       3 mL         CAS#       Analyte         68476-34-6       #2 Diesel         NULL       Lube Oil         Surrogate Recovery:       CAS#         CAS#       Analyte         629-99-2       Pentacosane	PH-DX Re C		Batch II Prepare Analyze Matrix: Units: 1 Qualifier U U U I e e d %	D: B19 ed: 4/17 ed: 4/24 : Water	//2019 //2019 MDL
Work Order: 1904040     Lab ID #: 1904040-05       Project Officer: Marti, Pam     Collected: 4/16/2019       Initial Vol: 1005 mL     Prep Method: SW3535A       Final Vol: 3 mL     Analysis Method: NWT1       CAS#     Analyte       68476-34-6     #2 Diesel       NULL     Lube Oil       Surrogate Recovery:     CAS#	PH-DX R ( C Result	).15 ).37 Spika Leve	Prepare Analyze Matrix: Units: 1 Qualifier U U U U U e e d M	ed: 4/17 ed: 4/24 : Water mg/L RL 0.15 0.37	//2019 //2019 MDL
68476-34-6 #2 Diesel NULL Lube Oil <u>Surrogate Recovery:</u> CAS# Analyte	. () Result	).15 ).37 Spika Leve	U U ! e	0.15 0.37	юm
68476-34-6 #2 Diesel NULL Lube Oil <u>Surrogate Recovery:</u> CAS# Analyte	Result	0.37 Spik Leve	U I El %	0.37	12 A/ D
CAS# Analyte	and a second	Leve	e 1 %	Rec.	07 D
	0.218	0.21	9		% Rec. Limits
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Work Order:	1904040 r: Marti, Pam 110 mL		Lab ID #: 1904040-06			: FLG-MW D136 //2019 //2019
CAS#	Analyte #2 Diesel		Result		0.15	MDL
NULL <u>Surrogate Rec</u>			0.37 Result	U Spike Level	, 0.37 % Rec.	% Rec. Limits
CAS# 629-99-2	Analyte Pentacosane		0.220	0.218	101	50-150
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Work Order:	1904040 er: Marti, Pam 000 mL	Lab ID #: 1904040 Collected: 4/16/201 Prep Method: SW	ab ID #: 1904040-07			Batch ID: B19D136 Prepared: 4/17/2019 Analyzed: 4/24/2019 Matrix: Water Units: mg/L		
CAS#	Analyte	а.		Result	Quali	fier RL	MDL	
68476-34-6 NULL	#2 Diesel Lube Oil	8	5	<b>0.31</b> 0.38	U	<b>0.15</b> 0.38		
Surrogate Rec		91 1			pike		% Rec.	
CAS# 629-99-2	Analyte Pentacosane		0.21		.220	% Rec. 99	Limits 50-150	
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Project: Mckenzie Aut Work Order: Batch QC Project Officer: Marti, Pam Initial Vol: 1000 mL Final Vol: 3 mL		Lab ID #: B19D136-BLK1 Prep Method: SW3535A Analysis Method: NWTPH-DX Source Field ID: B19D136-BLK1			QC Type : Method Blank Batch ID: B19D136 Prepared: 4/17/2019 Analyzed: 4/24/2019 Matrix: Water Units: mg/L			
CAS#	Analyte		Result	Qualifi	er RL	MDL		
68476-34-6 NULL	#2 Diesel Lube Oil	е <sup>се</sup> е 9	0.15	ບ ບ	0.15 0.38			
Surrogate Rec			D	Spike	% Rec.	% Rec. Limits		
CAS# 629-99-2	Analyte Pentacosane		Result 0.218	Level 0.220	99	50-150		
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Project: N	Ackenzie Auto	& Farg	her Lake G	Frocery	5	QC Type : LCS				
Work Order: Project Office Initial Vol: 10 Final Vol: 3 n	r: Marti, Pam 100 mL		Lab ID #: B19 Prep Method: Analysis Meth Source Field D	SW3535A od: NWTI	PH-DX 6-BS1	P A N	atch ID: ] repared: nalyzed: fatrix: W: nits: %	4/17/201 4/24/201	9	
Analyte					Result	Spike Level	RL	%Rec	%Rec Limits	
#2 Diesel				and the second	2.54	3.00	0.15	85	70-130	
Surrogate Rec	overy:					Spike			Rec.	
CAS#	Analyte		and the second secon	а 	Result	0.220	% Re 98	and the shadow of the state	nits 150	
629-99-2	Pentacosane			÷	0.215	0.220	98	50-	.100	
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Work Order:	r: Marti, Pam 00 mL	rgher Lake G Lab ID #: B191 Prep Method: S Analysis Metho Source Field ID	0136-BSD1 SW3535A d: NWTPH	-DX BSD1	B: Pi A M	QC Ty atch ID: E repared: 4 nalyzed: 4 (atrix: Wa nits: %	19D136 //17/2019 //24/2019	S Dup
Analyte			Sample Result	Spike Level	%Rec	RPD	%Rec Limits	RPD Limit
#2 Diesel	and a second	ii	2.67	3.00	89	5	70-130	40
Surrogate Rec				Result	Spike Level	% Rec	% Re	
CAS# 629-99-2	Analyte Pentacosane			0.209	0.220	95	50-15	and the second product of the second s
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					ise Date:	4	1-7	40

Batch ID: B19D136	Prep Method: SW3535A
Prepared: 4/17/2019	Analysis Method: NWTPH-DX
Field ID	MELID
FLG-DW	1904040-01
MW-1	1904040-02
MW-2	1904040-03
MW-4	1904040-04
MW-4A	1904040-05
FLG-MW	1904040-06
FLG-MWA	1904040-07
Blank	B19D136-BLK1
LCS	B19D136-BS1
LCS Dup	B19D136-BSD1

# Appendix A Sample Correlation Table

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# Appendix B Manual Qualification Table

WO.	1904040	Analysis: TPHD
WO:	1904040	Analysis. IIIID

No manual qualifiers were added to the samples or batch QC.

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# Appendix C Data Qualifier Definitions

### Definition Code Reported result is an estimate because it exceeds the calibration range. E The analyte was positively identified; the associated numerical value is the approximate J concentration of the analyte in the sample. The analysis indicates the present of an analyte for which there is presumptive evidence N to make a "tentative identification". The analysis indicates the presence of an analyte that has been "tentatively identified" and NJ the associated numerical value represents its approximate concentration. NAF Not analyzed for. Not calculated. NC The sample results are rejected due to serious deficiencies in the ability to analyze the REJ sample and meet quality control criteria. The presence or absence of the analyte cannot be verified. The analyte was not detected at or above the reported sample quantitation limit. U The analyte was not detected at or above the reported sample quantitation limit. However, UJ the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately measure the analyte in the sample. The analyte was present in the sample. (Visual aid to locate detected compounds on the bold analytical report.)

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# Appendix D QC Exceptions Report

Lab ID	Analyte	Exception
No QC except	tions reported.	

QC Exceptions determined using unrounded QC results but are reported as integers throughout this analytical report. CAPROGRAM FILES (X86)/PROMUM/ELEMENT/FORMAT/MEL CASENARRATIVECLP PDF V3.3.0.RPT

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# Appendix E Initial Calibration Exceptions Report

Calibration ID: B9D0402	Analysis: TPHD
LabNumber Analyte	QC Exception
No ICAL exceptions.	

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#### DEPARTMENT OF ECOLOGY Manchester Environmental Laboratory 7411 Beach Drive East • Port Orchard, Washington 98366-8204

#### **Case Narrative**

### April 22, 2019

To: Marti, Pam

Project: Mckenzie Auto & Fargher Lake Grocery

Work Order: 1904040

Subject: BTEX

From: Dolores Montgomery  $\beta \xi$ 

# Sample Receipt

Enclosed are the BTEX results for the samples received by MEL on April 17, 2019. All samples were received in acceptable condition unless noted in Analyst Comments. All samples were prepared and analyzed within holding times unless noted in Analyst Comments.

#### Analytical Methods

These samples were prepared, analyzed, and verified by MEL according to the submitted chain-of-custody and MEL's procedures. A Sample Correlation Table with batch summary is located in Appendix A. The samples were:

• extracted following a modification of method SW5030B.

• analyzed following a modification of method SW8021B.

#### **Analyst Comments**

None noted.

#### **Sample Qualification**

The samples were qualified according to MEL's procedures. The table in Appendix B summarizes the manual qualifiers added by MEL. All results reported below the method reporting limit (RL) were automatically qualified as estimates, but not included in Appendix B. The qualifiers are defined in Appendix C.

# Sample Verification

All analyses met QC acceptance criteria except as noted in Appendix D. All analytes met linearity requirements unless noted in Appendix E.

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Project: M	ckenzie Auto &	Fargher L	ake Grocery	r		Field II	: FLG-DV
Work Order: 1904040 Project Officer: Marti, Pam Initial Vol: 5 mL Final Vol: 5 mL		Collect Prep N	9 #: 1904040-01 ed: 4/16/2019 Iethod: SW50301 is Method: SW8		Pr Ar Ma	tch ID: B19 epared: 4/1 alyzed: 4/1 atrix: Water atrix: ug/L	8/2019 8/2019
CAS#	Analyte			Resu	lt Qual	ifier RL	MDL
71-43-2 100-41-4 179601-23-1 95-47-6 108-88-3	Benzene Ethylbenzene m.p-Xylene o-Xylene Toluene			1.00 1.00 2.00 1.00 1.00	) t ) t ) t	J 1.00 J 1.00 J 2.00 J 1.00	0.258 0.106 0.240 0.177
Surrogate Reco				Result	Spike	% Rec.	% Rec. Limits
CAS# 540-36-3	Analyte 1,4-Difluorobenzene	المراد المراجع المراجع المراجع المراجع المراجع	nammariaejadinikisti dikabinasti/ht	24.0	24.0	100	70-130
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Duplosts B4	Ma	hington State Departr nchester Environment Final Report BTEX argher Lake Grocery	tal Labora		Field	ID: MW-1
Work Order: Project Officer Initial Vol: 5 m Final Vol: 5 m	1904040 1: Marti, Pam nL	Lab ID #: 1904040-02 Collected: 4/16/2019 Prep Method: SW5030B Analysis Method: SW80		Pre An: Ma	ch ID: B19 pared: 4/18 alyzed: 4/18 trix: Water its: ug/L	D139 /2019 //2019
CAS#	Analyte		Resu	it Quali	fier RL	MDL
71-43-2 100-41-4 179601-23-1 95-47-6 108-88-3	Benzene Ethylbenzene m,p-Xylene o-Xylene Toluene		1.00 1.00 2.00 1.00 1.00	บ บ บ	1,00 2,00 1.00	0.258 0.106 0.240 0.177 0.145
Surrogate Reco CAS#	overy: Analyte		Result	Spike Level	% Rec.	% Rec. Limits
540-36-3 615-59-8	1,4-Difluorobenzene Benzene, 1,4-dibromo-2-	methyl	24.2 58.4	24.0 56.0	101 104	70-130 70-130
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Project: M	ckenzie Auto & Fa	rgher Lake Grocery		un and deployed by data by different of	Field	ID: MW-2			
Work Order: 1904040 Project Officer: Marti, Pam Initial Vol: 5 mL Final Vol: 5 mL CAS# Analyte 71-43-2 Benzene 100-41-4 Ethylbenzene 179601-23-1 m.p-Xylene 95-47-6 o-Xylene		Lab ID #: 1904040-03 Collected: 4/16/2019 Prep Method: SW5030B Analysis Method: SW802	1B	Batch ID: B19D139 Prepared: 4/18/2019 Analyzed: 4/18/2019 Matrix: Water Units: ug/L					
CAS#	Analyte		Resu	lt Qual	lifier RL	MDL			
71-43-2 100-41-4 179601-23-1 95-47-6 108-88-3	Benzene Ethylbenzene m,p-Xylene	× .	1.00 1.00 2.00 1.00 1.00	) T ) T ) T	J 1.00 J 1.00	0.258 0.106 0.240 0.177 0.145			
Surrogate Recov			Docult	Spike Level	% Rec.	% Rec. Limits			
CAS# 540-36-3	Analyte 1.4-Difluorobenzene		Result 23.9	24.0	100	70-130			
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Project M		ichester En Fin:	e Departme vironmental al Report fo BTEX Grocery	l Laborat		ı	hlaf7	ID: MW-4	1
Work Order: 1 Project Officer Initial Vol: 5 m Final Vol: 5 m	1904040 : Marti, Pam L	Lab ID #: 1 Collected: 4 Prep Metho	904040-04	B		Batch ID Prepared Analyzed Matrix: Units: up	: B191 : 4/18, : 4/18, Water	D139 /2019 /2019	<b>-</b>
CAS# 71-43-2 100-41-4 179601-23-1 95-47-6 108-88-3	Analyte Benzene Ethylbenzene m.p-Xylene o-Xylene Toluene			Result 1.00 2.00 1.00 1.00	t Qi	U U U U U U U	RL 1.00 1.00 2.00 1.00 1.00	MDL 0.258 0.106 0.240 0.177 0.145	
Surrogate Reco CAS#			÷	Result	Spike Level	% 1		% Rec. Limits	
540-36-3 615-59-8	1,4-Difluorobenzene Benzene, 1,4-dibromo-2-	methyl		23.7 56.9	24,0 56.0		9 )2	70-130 70-130	
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Project: M	ckenzie Auto & Fai	rgher Lake Grocery		an de anna de la constata de anna	Field I	D: MW-4	A
Work Order: 1 Project Officer: Initial Vol: 5 m Final Vol; 5 ml	Marti, Pam L	Lab ID #: 1904040-05 Collected: 4/16/2019 Prep Method: SW5030B Analysis Method: SW802	В	Pr An Ma	tch ID: B19 epared: 4/18 alyzed: 4/18 atrix: Water atris: ug/L	3/2019 3/2019	
CAS#	Analyte		Resu	lt Qual	ifier RL	MDL	
71-43-2 100-41-4 179601-23-1 95-47-6 108-88-3	Benzene Ethylbenzene m,p-Xylene o-Xylene Toluene		1.00 1.00 2.00 1.00 1.00	և Ն Ն	J 1.00 J 1.00 J 2.00 J 1.00	0.258 0,106 0.240 0.177 0,145	
Surrogate Reco	very:			Spike		% Rec.	
CAS#	Analyte		Result	Level	% Rec.	Limits 70-130	
540-36-3 615-59-8	1,4-Difluorobenzene Benzene, 1,4-dibromo-2-m	ethyl	24,2 57.6	24.0 56.0	101 103	70-130	
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Project: M	ckenzie Auto & F	argher Lake Gro	cery		Field ID:	FLG-MW
Work Order: 1904040 Project Officer: Marti, Pam Initial Vol: 5 mL Final Vol: 5 mL		Lab ID #: 1904040 Collected: 4/16/201 Prep Method: SW Analysis Method:	9 5030B	Pro An Ma	tch ID: B191 epared: 4/18 alyzed: 4/18 atrix: Water its: ug/L	/2019 /2019
CAS#	Analyte		Res	ult Qual	ifier RL	MDL
71-43-2 100-41-4 179601-23-1 95-47-6 108-88-3	Benzene Ethylbenzene m,p-Xylene o-Xylene Toluene	5	48. 32. 16. 1.5 5.0	6 3 5	1,00 1,00 2.00 1.00 1.00	0.258 0.106 0.240 0.177 0.145
Surrogate Recov CAS#			Result	Spike Level	% Rec.	% Rec. Limits
540-36-3	Analyte 1,4-Difluorobenzene	and a second	26.4	24.0	110	70-130
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Project: M	ckenzie Auto & Fa	rgher Lake	Grocery		I	field ID:	FLG-MV	VA
Work Order: 1 Project Officer Initial Vol: 5 m Final Vol: 5 m]	: Marti, Pam L	Collected: 4 Prep Metho	Lab ID #: 1904040-07 Collected: 4/16/2019 Prep Method: SW5030B Analysis Method: SW8021B			ntch ID: B19 repared: 4/18 nalyzed: 4/18 atrix: Water nits: ug/L	8/2019 8/2019	
CAS#	Analyte			Res	ult Qua	lifier RL	MDL	
71-43-2 100-41-4 179601-23-1 95-47-6 108-88-3	Benzene Ethylbenzene m,p-Xylene o-Xylene Toluene			47 35 17 1,5 5,2	.0 .3 59	1.00 1.00 2.00 1.00 1.00	0.106 0.240 0.177	
Surrogate Reco					Spike		% Rec.	1
CAS# 540-36-3	Analyte 1,4-Difluorobenzene	Anno 1404 Anno 1508 - 1646 - 1646 - 1666		Result 28.0	24.0	% Rec.	Limits 70-130	
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Work Order:	: Marti, Pam 1L	Lab ID #: 1904 Collected: 4/16 Prep Method: Analysis Metho	1040-08 /2019 SW5030B		Pi A M	Field repared: nalyzed: atrix: W nits: ug/	B19D 4/18/2 4/18/2 /ater	2019	M
CAS#	Analyte	-		Result		*	RL	MDL	
71-43-2 100-41-4 179601-23-1 95-47-6 108-88-3	Benzene Ethylbenzene m,p-Xylene o-Xylene Toluene			2.63 2.31 1.84 0.651 1.00		J	1.00 1.00 2.00 1.00 1.00	0.258 0.106 0.240 0.177 0.145	
<u>Surrogate Reco</u> CAS#			Rest		Spike Level	% R		% Rec. Limits	
540-36-3 615-59-8	Analyte 1,4-Difluorobenzene Benzene, 1,4-dibromo-2-		23. 64.	9	24.0 56.0	99 115		70-130 70-130	
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		nchester	State Departs Environmen Final Report BTEX	tal Labo				
Project: M	ckenzie Auto & F	argher L	ake Grocery	5		QCT	ype : M	ethod Blank
Work Order: Batch QC Project Officer: Marti, Pam Initial Vol: 5 mL Final Vol: 5 mL		Prep M Analysi	#: B19D139-BL lethod: SW5030F is Method: SW80 Field ID: B19D1	21B	3	Pre An: Ma	ch ID: B1 pared: 4/ alyzed: 4/ trix: Wat ts: ug/L	18/2019 18/2019
CAS#	Analyte			R	esult	Quali	fier RI	MDL
71-43-2 100-41-4 179601-23-1 95-47-6 108-88-3	Benzene Ethylbenzene m,p-Xylene o-Xylene Toluene				1.00 1.00 2.00 1.00 1.00	ט ט ט ט	1.0 2.0 1.0	0 0.106 0 0.240 0 0.177
Surrogate Recov	very:					Spike		% Rec.
CAS#	Analyte			Result		Level	% Rec.	Limits
540-36-3 615-59-8	1,4-Difluorobenzene Benzene, 1,4-dibromo-2-	-methyl		24.3 58.8		24.0 56.0	101 105	70-130 70-130
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Project: M	[ckenzie Auto & ]	Fargher L	ake Gro	cery			(	<b>QC</b> Тур	e : LCS	S
		Prep M Analys	Lab ID #: B19D139-BS1 Prep Method: SW5030B Analysis Method: SW8021B Source Field ID: B19D139-BS1			P A N	repared:	B19D139 4/18/201 4/18/201 Vater	9	
nalvta		a			Result	Spike Level	RL	%Rec	%Rec Limits	
Benzene Ethylbenzene m,p-Xylene p-Xylene	анан алан аран байнаан тайнаан тайнаан Т				10.0 9.6 18.3 9.3 9.8	10.0 10.0 20.0 10.0 10.0	1.00 1.00 2.00 1.00 1.00	100 96 91 93 98	70-130 70-130 70-130 70-130 70-130 70-130	
					Result	Spike Level	% R		Rec. aits	2
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Project: Mckenzie Auto & Fargher Lake Grocery QC Type : LCS Dup								
Work Order: Batch QC Project Officer: Marti, Pam Initial Vol: 5 mL Final Vol: 5 mL		Lab 1D #: B19D139-BSD1 Prep Method: SW5030B Analysis Method: SW8021B Source Field ID: B19D139-BSD1			Batch ID: B19D139 Prepared: 4/18/2019 Analyzed: 4/18/2019 Matrix: Water Units: %			
Analyte			Sample Result	Spike Level	%Rec	RPD	%Rec Limits	RPD Limit
Benzene Ethylbenzene n,p-Xylene o-Xylene Foluene			10,4 10,1 19,3 9,7 10,2	10.0 10.0 20.0 10.0 10.0	104 101 96 97 102	4 5 5 4 5	70-130 70-130 70-130 70-130 70-130 70-130	40 40 40 40 40
Surrogate Reco CAS#	very: Analyte			Result	Spike Level	% Rec.	% Rec Limits	
540-36-3 515-59-8	1,4-Difluorobenzene Benzene, 1,4-dibromo-2-1	methyl		24.4 58.2	24.0 56.0	102 104	70-130 70-130	
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#### Washington State Department of Ecology **Manchester Environmental Laboratory Final Report for** BTEX Project: Mckenzie Auto & Fargher Lake Grocery QC Type : Matrix Spike Batch ID: B19D139 Work Order: Batch QC Lab ID #: B19D139-MS1 Prepared: 4/18/2019 Analyzed: 4/18/2019 Prep Method: SW5030B Project Officer: Marti, Pam Initial Vol: 5 mL Analysis Method: SW8021B Final Vol: 5 mL Source Field ID: B19D139-MS1 Matrix: Water Units: % Source Lab ID #: 1904040-04 Spike Source %Rec %Rec Analyte Result Level Result Limits 104 70-130 Benzene 10.4 10.0 0.0 Ethylbenzene 9.9 10.0 0.0 99 70-130 m,p-Xylene o-Xylene 19.0 20.0 0.0 95 70-130 9.6 10.0 0.0 96 70-130 10.2 102 70-130 10.0 0.0 Toluene Surrogate Recovery: Spike % Rec. Result Level % Rec. Limits Analyte 540-36-3 1,4-Difluorobenzene 24.0 24.0 100 70-130 615-59-8 Benzene, 1,4-dibromo-2-methyl 56.6 56.0 101 70-130

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Authorized by:

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**Release Date:** 

Washington State Department of Ecology Manchester Environmental Laboratory Final Report for BTEX									
Project: Mckenzie Auto & Far Work Order: Batch QC Project Officer: Marti, Pam Initial Vol: 5 mL Final Vol: 5 mL		Lab D Prep I Analy Sourc	The second secon			QC Type : Matrix Spike Dup Batch ID: B19D139 Prepared: 4/18/2019 Analyzed: 4/18/2019 Matrix: Water Units: %			
Analyte			Sample Result	Spike Level	Source Result	%Rec	RPD	%Rec Limits	RPD Limit
Benzene Ethylbenzene m,p-Xylene o-Xylene Toluene		an a	10.7 10.2 19.6 9.9 10.5	10.0 10.0 20.0 10.0 10.0	0.0 0.0 0.0 0.0 0.0	107 102 98 99 105	3 3 3 3 3	70-130 70-130 70-130 70-130 70-130	50 50 50 50 50
Surrogate Reco						Spike Level	% Rec.	% Rec Limits	
CAS# 540-36-3 615-59-8	Analyte 1,4-Difluorobenzene Benzene, 1,4-dibromo-2	2-methyl			Result 24.1 59.4	24.0 56.0	100 106	70-130 70-130	)
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Publication 21-03-006

Batch ID: B19D139 Prepared: 4/18/2019		Prep Method: SW5030B		
		Analysis Method: SW8021B		
	Field ID	MEL ID		
8	FLG-DW	1904040-01		
	MW-1	1904040-02		
	MW-2	1904040-03		
	MW-4	1904040-04		
	MW-4A	1904040-05		
	FLG-MW	1904040-06		
	FLG-MWA	1904040-07		
	DRUM	1904040-08		
	Blank	B19D139-BLK1		
3	LCS	B19D139-BS1		
	LCS Dup	B19D139-BSD1		
	Matrix Spike (MW-4)	B19D139-MS1		
	atrix Spike Dup (MW-4)	B19D139-MSD1		

# Appendix A Sample Correlation Table

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# Appendix B Manual Qualification Table

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WO: 1904040	Analysis: BTEX
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No manual qualifiers were added to the samples or batch QC.

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# Appendix C Data Qualifier Definitions

### Code Definition

E

J

Reported result is an estimate because it exceeds the calibration range.

- The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- N The analysis indicates the present of an analyte for which there is presumptive evidence to make a "tentative identification".
- NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
- NAF Not analyzed for.
- NC Not calculated.
- REJ The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.
- U The analyte was not detected at or above the reported sample quantitation limit.
- UJ The analyte was not detected at or above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately measure the analyte in the sample.
- **bold** The analyte was present in the sample. (Visual aid to locate detected compounds on the analytical report.)

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# Appendix D QC Exceptions Report

Lab ID	Analyte	Exception
1904040-07	surr: Benzene, 1,4-dibromo-2-methyl-	Exceeds upper control limit

QC Exceptions determined using unrounded QC results but are reported as integers throughout this analytical report. C:\PROGRAM FILES (X86)\PROMIUM\ELEMENT\FORMAT\MEL CASENARRATIVECLP PDF V3.3.0.RPT

# Appendix E Initial Calibration Exceptions Report

LabNumber Analyte QC Exception	

No ICAL exceptions.

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03/25/2019 15:38

# Manchester Environmental Laboratory 7411 Beach Drive E, Port Orchard, Washington 98366

#### **Case Narrative - Metals**

# April 22, 2019

Project: Mckenzie Auto & Fargher Lake Grocery

Work Order: 1904040

Project Manager: Marti, Pam

By: Dean Momohara

Summary

The laboratory followed EPA 200.8 for the preparation and analysis of trace metals.

All analyses requested were evaluated by established regulatory quality assurance guidelines.

#### Sample Information

The samples were received at the Manchester Laboratory on 4/17/2019. The samples were received in good condition and were properly preserved. Seven samples were received and assigned laboratory identification numbers 01 to 07.

### **Holding** Times

The laboratory performed all analyses within their hold times.

#### Calibration

The instruments were calibrated following the appropriate methods. All initial and continuing calibration verification checks were within the acceptance limits. All initial and continuing calibration blank checks were within the acceptance limits. All standard residuals were within acceptance limits. All r-values were within acceptance limits. The instruments were calibrated with NIST traceable standards and verified to be in calibration with a second source NIST traceable standard.
# **Method Blanks**

No analytically significant levels of analyte were detected in the method blanks associated with these samples.

# Laboratory Control Samples

All laboratory control sample recoveries were within the acceptance limits.

#### Replicates

All associated duplicate relative percent differences of samples with concentrations greater than 5 times the reporting limit were within the acceptance limits.

# **Matrix Spikes**

All matrix spike recoveries were within the acceptance limits.

# **Internal Standards**

All internal standard recoveries were within the acceptance limits.

#### Other Quality Assurance Measures and Issues

U - The analyte was not detected at or above the reported result.

**bold** - The analyte was present in the sample. (Visual Aid to locate detected compounds on report sheet.)

Please call Dean Momohara at (360) 871-8808 to further discuss this project.

cc: Project File

# Washington State Department of Ecology Manchester Environmental Laboratory Final Analysis Report for

# Lead

# Project Name: Mckenzie Auto & Fargher Lake Grocery

Work Order: 19 Mork Order: 19 Analyte: Lead	Marti, Pam 204040	Prep Method: EPA200 Prepared: 04/18/19 Batch ID: B19D121	0.2		Mat	lysis Method: I rix: Water s: ug/L	SPA200.8
Sample #	Sample ID	Result	Qualifier	RL	MDL	Collected	Analyzed
1904040-01	FLG-DW	0.33		0.10	0.02	04/16/19	04/19/19
1904040-02	MW-1	0.10	U	0.10	0.02	04/16/19	04/19/19
1904040-03	MW-2	0.10	U	0.10	0.02	04/16/19	04/19/19
1904040-04	MW-4	0.67		0.10	0.02	04/16/19	04/19/19
1904040-05	MW-4A	0.70		0.10	0.02	04/16/19	04/19/19
1904040-06	FLG-MW	0.10	Ŭ	0.10	0.02	04/16/19	04/19/19
1904040-07	FLG-MWA	0.10	U	0.10	0.02	04/16/19	04/19/19

Method Blank	Sample ID				Result	Qualiter	KL KL	M.	UL
B19D121-BLK1	Blank				0.10	υ	0.10	0,	02
Sample #	QC Sample	Result	Spike Level	Source Sample	Source Result		%Rec Limits	RPD	RPD Limit
B19D121-BS1	LCS	25.3	25.0			101	85-115		
B19D121-BSD1	LCS Dup	25.1	25.0			100	85-115	0.9	20
B19D121-MS1	Matrix Spike	25.7	25.0	1904040-04	0.666	100	75-125		
B19D121-MSD1	Matrix Spike Dup	25.9	25.0	1904040-04	0.666	101	75-125	0.5	20



				ntal Labo eport for					
	Mckenzie Auto & Fa		rocery Method:			Anab	ysis Method:	EPA 200	.8
Project Officer: M Work Order: 1904 Analyte: Lead		Prepa	ored: 04/19/19 ID: B19D145			Matr	ix: Water : ug/L		
Sample #	Sample ID		Result	Qualifier	RL	MDL	Collected	Ana	lyzed
1904040-04 1904040-05	MW-4 MW-4A		0.020	บ บ	0.020 0.020	0.007 0.007	04/16/19 04/16/19		19/19 19/19
QC Results for Ba Method Blank	tch ID: B19D145 Sample ID	1			Result	Qua	lifer RL	M	DL
B19D145-BLK1	Blank		Spike	Source	0.020 Source		0.020 %Rec	0.0	07 RPD
Sample #	QC Sample	Result	Level	Sample	Result	%Rec	Limits	RPD	Limit
B19D145-BS1 B19D145-BSD1 B19D145-MS1 B19D145-MSD1	LCS LCS Dup Matrix Spike Matrix Spike Dup	9.81 9.84 19.4 19.5	10.0 10.0 20.0 20.0	1904040-04 1904040-04	0.020 1 0.020 1		85-115 85-115 75-125 75-125	0.3 0.7	20 20
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23									
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Authorized by:	Dr			Release Date:		4/22/1	0	Page 2	of 2

# Appendix C. Analytical Laboratory Reports, July 2019

Analytical laboratory reports from Manchester Environmental Laboratory on the results of the July 2019 groundwater sampling at Fargher Lake Grocery.

# DEPARTMENT OF ECOLOGY

Manchester Environmental Laboratory 7411 Beach Drive East • Port Orchard, Washington 98366-8204

# **Case Narrative**

# July 30, 2019

To: Marti, Pam

Project: Fargher Lake Grocery

Work Order: 1907069

Subject: Volatile Petroleum Products

From: Dolores Montgomery DE2-

# Sample Receipt

Enclosed are the TPHG results for the samples received by MEL on July 25, 2019. All samples were received in acceptable condition unless noted in Analyst Comments. All samples were prepared and analyzed within holding times unless noted in Analyst Comments.

#### Analytical Methods

These samples were prepared, analyzed, and verified by MEL according to the submitted chain-of-custody and MEL's procedures. A Sample Correlation Table with batch summary is located in Appendix A. The samples were:

- · extracted following a modification of method SW5030B.
- · analyzed following a modification of method NWTPH-GX.

# **Analyst Comments**

None noted.

# Sample Qualification

The samples were qualified according to MEL's procedures. The table in Appendix B summarizes the manual qualifiers added by MEL. All results reported below the method reporting limit (RL) were automatically qualified as estimates, but not included in Appendix B. The qualifiers are defined in Appendix C.

# Sample Verification

All analyses met QC acceptance criteria except as noted in Appendix D. All analytes met linearity requirements unless noted in Appendix E.

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07/30/2019 8:03

		anchester	State Depar Environme Final Report	ental Labo					
			e Petroleur						
Project: F	argher Lake Gro		e i en oleui	II I Touuce	,	E	ald ID	: FLG-	WT
riojeci. r	argher Lake Gro	cery				r.		rLG	·w I
Work Order: Project Office Initial Vol: 5 Final Vol: 5 n	r: Marti, Pam mL	Collecte Prep M	#: 1907069-01 ed: 7/24/2019 fethod: SW503 is Method: NW	0B		Prepar Analyz	ID: B19 red: 7/25 zed: 7/25 x: Water mg/L	5/2019 5/2019	
CAS#	Analyte			Re	sult	Qualifier	RL	MD	L
86290-81-5	Gasoline				070	U	0.070		
Surrogate Rec	overv:								
CAS#	Analyte			Result	Spik		6 Rec.	% Rec. Limits	
540-36-3	1,4-Difluorobenzene	0.823		21.8	24.0		91	70-130	
615-59-8	Benzene, 1,4-dibromo-2	2-methyl		52.0	56.0	2	93	70-130	
12									
		3							
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Authorized by	· pu			Rele	ase Date:	0	7/30	119	

		ashington State Der Ianchester Environ Final Rer	mental Labora			
		Volatile Petrole	eum Products			
Project: 1	Fargher Lake Gr	ocery			Field ID	: FLG-WT2
Work Order: Project Office Initial Vol: 5 Final Vol: 5 1	er: Marti, Pam mL	Lab ID #: 1907069 Collected: 7/24/201 Prep Method: SW Analysis Method:	9 5030B	Pi A M	atch ID: B1 repared: 7/ nalyzed: 7/ atrix: Wata nits: mg/L	25/2019 25/2019
CAS#	Analyte		Rest	alt Qua	lifier RI	MDL
86290-81-5	Gasoline		0.07	70 1	J 0.07	0
Surrogate Rec	covery:			Spike		% Rec.
CAS#	Analyte		Result	Level	% Rec.	Limits
540-36-3 615-59-8	1,4-Difluorobenzene Benzene, 1,4-dibromo	-2-methyl	21.8 49.9	24.0 56.0	91 89	70-130 70-130
						10
		(4)				
						2
Authorized b	n. 1981-		Dalaa	se Date:	07/30	119

		anchester	Environm Final Repo		atory		
n ·			le Petroleu	m Products			
Project: I	Fargher Lake Gro	cery	š		QC	Гуре : M	ethod Blank
Work Order: Project Office Initial Vol: 5 Final Vol: 5 r	er: Marti, Pam mL	Prep M Analys	D #: B19G150- Method: SW50 sis Method: N e Field ID: B19	30B WTPH-GX	Pi A M	atch ID: B1 repared: 7/2 nalyzed: 7/2 latrix: Wate nits: mg/L	5/2019 5/2019
CAS#	Analyte			Res	ult Oua	lifier RL	MDL
86290-81-5	Gasoline			0.0		U 0.07	
Surrogate Rec	overy:				Spike		% Rec.
CAS#	Analyte			Result	Level	% Rec.	Limits
540-36-3 615-59-8	1,4-Difluorobenzene Benzene, 1,4-dibromo-	2-methyl		21.6 53.0	24.0 56.0	90 95	70-130 70-130
	, , ,		1	0.000	A. 2.1.2		
					<u>85</u>		
	22						
	y: Dir				se Date:	-7/2	1,9

		/ashington State De Manchester Enviror Final Re	nmental Labor port for				
		Volatile Petrol	eum Products				
Project:	Fargher Lake Gr	ocery			(	QC Typ	pe : LCS
		Lab ID #: B19G1 Prep Method: SV Analysis Method: Source Field ID:	V5030B NWTPH-GX	F A N	Batch ID: Prepared: Analyzed: Matrix: W Jnits: %	7/25/201	9
Analyte			Desult	Spike	RL	%Rec	%Rec
Gasoline			Result 0.681	Level 0.750	0.070	91	Limits 70-130
Surrogate Re			0.001	0.750	0.070	21	/0-150
Surrogate Re CAS#	Analyte		Result	Spike Level	% R6		Rec. nits
540-36-3 615-59-8	1,4-Difluorobenzene Benzene, 1,4-dibrom		23.9 54.4	24.0 56.0	100 97	) 70-	130
	Denizene, i, i uloioni	o 2 monty.	0111	2010		10	150
Authorizad	912			D	~21	nulie	7
Authorized l	oy:		Releas	e Date:	01	2/11	1

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		shington State l anchester Envir	onmenta	l Labora				
2			Report fo					
		Volatile Petr	oleum Pr	oducts				
Project: ]	Fargher Lake Groo	cery				QC Ty	pe : LC	'S Dup
Work Order: Project Offic Initial Vol: 5 Final Vol: 5	er: Marti, Pam mL	Lab ID #: B19 Prep Method: Analysis Metho Source Field II	SW5030B od: NWTPH		P A N	atch ID: 1 (repared: 2 (nalyzed: 7 fatrix: Wa (nits: %	7/25/2019 7/25/2019	9
Analyte			Sample	Spike	%Rec	RPD	%Rec	RPD
Gasoline			Result 0.666	Level 0.750	70 Kec 89	2	Limits 70-130	Limit 40
Surrogate Re	coverv:					170		
CAS#	Analyte			Result	Spike Level	% Rec	% Re	
540-36-3	1,4-Difluorobenzene			24.1	24.0	100	70-13	
615-59-8	Benzene, 1,4-dibromo-2	-methyl		51.9	56.0	93	70-13	0
	- *							
Authorized b	Arv			1210	e Date:	-21	2.110	

			Enviro Final Ro	nmenta eport fo	l Laboı r	ratory			
		Volatil	e Petro	leum Pı	oducts				
Project: Farghe	er Lake Groce	ry				Q	С Туре	: Matr	ix Spike
Work Order: Batch Q Project Officer: Mart Initial Vol: 5 mL Final Vol: 5 mL	QC i, Pam	Prep M Analysi Source	Field ID:		MS1		Batch ID: Prepared: Analyzed: Matrix: W Units: %	7/25/201 7/25/201	9
Analyte					Doculé	Spike	Source Result	%Rec	%Rec Limits
Gasoline					Result 0.694	Level 0.750	0.00	93	70-130
urrogate Recovery:									
CAS# Ana	lyte				Result	Spike Level	% R		Rec. nits
	ifluorobenzene me, 1,4-dibromo-2-n	nethyl			23.6 55.5	24.0 56.0	98 99		130 130
							<i>21</i>		
Authorized by:	012-				Polo	ase Date:	0.7	1301	19

		iington State I Ichester Envir Final I Volatile Petr	onmenta Report f	al Labor or				
Work Order:	er: Marti, Pam mL	ry Lab ID #: B19 Prep Method: Analysis Metho Source Field ID Source Lab ID	SW5030B d: NWTP1 ): B19G15(	l H-GX I-MSD1	P A N	e: Matr atch ID: B repared: 7 nalyzed: 7 Iatrix: Wa nits: %	19G150 //25/2019 //25/2019	e Dup
Analyte	7.	Sampl Result		Source Result	%Rec	RPD	%Rec Limits	RPD Limit
Gasoline Surrogate Rec	coverv:	0.812	0.750	0.00	108 Seilles	16	70-130	40
CAS#	Analyte			Result	Spike Level	% Rec.	% Rec . Limits	
540-36-3 615-59-8	1,4-Difluorobenzene Benzene, 1,4-dibromo-2-n	nethyl		21.2 55.1	24.0 56.0	88 98	70-130 70-130	
	v: 012			Relea		-1-	. [	

# Appendix A Sample Correlation Table

	B19G150	Prep Method: SW5030B	
Prepared:	7/25/2019	Analysis Method: NWTPH-GX	
	Field ID FLG-WT FLG-WT2 Blank LCS LCS Dup Matrix Spike (FLG-WT) Matrix Spike Dup (FLG-WT)	MEL ID 1907069-01 1907069-02 B19G150-BLK1 B19G150-BS1 B19G150-BS1 B19G150-MS1 B19G150-MS1	
		а. А	
OGRAM FILES (X86	5)/PROMIUM/ELEMENT/FORMAT/MEL	CASENARRATIVECLP PDF V3.3.0.RPT	07/30/2019 8

# Appendix B Manual Qualification Table

WO: 1907069	Analysis: TPHG	
No manual qualifiers were	added to the samples or batch QC.	
		×.
12 <sup>12</sup>		
		2
OGP AM EIT ES (YSG)IDDOMITIMET EMEN	TFORMATMEL CASENARRATIVECLP PDF V3.3.0.	RPT 07/30/2019
JUKAM PILLES (ASU) FROMIOWIELEWEN	TPORMATMEL CASEWARKATIVECLP PDF V5.5.0.	KP1 0//30/2019

# Appendix C Data Qualifier Definitions

# Code Definition

- E Reported result is an estimate because it exceeds the calibration range.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- N The analysis indicates the present of an analyte for which there is presumptive evidence to make a "tentative identification".
- NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
- NAF Not analyzed for.
- NC Not calculated.
- REJ The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.
- U The analyte was not detected at or above the reported sample quantitation limit.
- UJ The analyte was not detected at or above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately measure the analyte in the sample.
- **bold** The analyte was present in the sample. (Visual aid to locate detected compounds on the analytical report.)

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07/30/2019 8:03

Appendix D QC Exceptions Report

Lab ID	Analyte ptions reported.			Exception	
No QU exce	puons reported.				
Exceptions determine	ed using unrounded QC	results but are reported as integ	ers throughout th	his analytical report.	
PROGRAM FILES (X86	)/PROMIUM\ELEMENT	FORMATIMEL CASENARRATI	VECLP PDF V3.	3.0.RPT	07/30/2019 8:0

Initial Cali	Appendix bration Exc	E eptions Repor	ť	
Calibration ID: B8C2801		Analysis: TF	PHG	
LabNumber Analyte		QC Exception	i	
No ICAL exceptions.				
8				

# DEPARTMENT OF ECOLOGY

Manchester Environmental Laboratory 7411 Beach Drive East 

Port Orchard, Washington 98366-8204

#### **Case Narrative**

# August 1, 2019

# To: Marti, Pam

Project: Fargher Lake Grocery

Work Order: 1907069

Subject: Semivolatile Petroleum Products

B

From: Karin Bailey

# Sample Receipt

Enclosed are the TPHD results for the samples received by MEL on July 25, 2019. All samples were received in acceptable condition unless noted in Analyst Comments. All samples were prepared and analyzed within holding times unless noted in Analyst Comments.

#### Analytical Methods

These samples were prepared, analyzed, and verified by MEL according to the submitted chain-of-custody and MEL's procedures. A Sample Correlation Table with batch summary is located in Appendix A. The samples were:

- · extracted following a modification of method SW3535A.
- · analyzed following a modification of method NWTPH-DX.

#### Analyst Comments

None noted.

# Sample Qualification

The samples were qualified according to MEL's procedures. The table in Appendix B summarizes the manual qualifiers added by MEL. All results reported below the method reporting limit (RL) were automatically qualified as estimates, but not included in Appendix B. The qualifiers are defined in Appendix C.

# Sample Verification

All analyses met QC acceptance criteria except as noted in Appendix D. All analytes met linearity requirements unless noted in Appendix E.

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08/01/2019 8:56

Publication 21-03-006

		Washington State Dep Manchester Environn Final Rep Semivolatile Petro	nental Labora ort for	tory		
Project: 1	Fargher Lake G	Frocery			Field ID	: FLG-WT
Work Order: 1907069 Project Officer: Marti, Pam Initial Vol: 1000 mL Final Vol: 3 mL		Lab ID #: 1907069- Collected: 7/24/2015 Prep Method: SW3 Analysis Method: N	535A	Pre Ana Mat	ch ID: B19 pared: 7/29 ilyzed: 7/31 trix: Water ts: mg/L	0/2019 1/2019
CAS#	Analyte		Resu	lt Quali	fier RL	MDL
68476-34-6 NULL	#2 Diesel Lube Oil		0.15 0.38			
Surrogate Rec	covery:			Spike		% Rec.
CAS#	Analyte		Result	Level	% Rec.	Limits
629-99-2	Pentacosane		0.191	0.200	95	50-150
						9
	n N					
						13

	V	Vashington State Dep Manchester Environ Final Rep	mental Laborat	logy ory			
		Semivolatile Petro					
Project: I	Fargher Lake G	rocery		F	ield II	D: FLG-WT2	
Work Order: Project Office Initial Vol: 10 Final Vol: 3 r	er: Marti, Pam 040 mL	Lab ID #: 1907069- Collected: 7/24/2019 Prep Method: SW3 Analysis Method: J	9 3535A	Prep Ana Mat	ared: 7/	RL MDL .14 .36 % Rec.	
CAS#	Analyte		Result	Qualif	er Rl	L MDL	
58476-34-6 NULL	#2 Diesel Lube Oil	2.42	0.14 0.36	บ บ			
Surrogate Rec	covery:			Spike		% Rec.	
CAS#	Analyte		Result	Level	% Rec.		
529-99-2	Pentacosane		0.185	0.192	96	50-150	
3							
J							
3							
.2							
đ							
3							
			Release			1/19	

		Manches	on State Do ster Enviro Final Ro volatile Pet	nmental L eport for	aborat	ory				
Project: F	argher Lake						Туре	: Me	thod Bl	ank
Work Order:	Batch QC er: Marti, Pam 000 mL	La Pi A	ab ID #: B19G rep Method: S' nalysis Method ource Field ID:	W3535A : NWTPH-DX		P A N	QC Type : Method Blank         Batch ID: B19G174         Prepared: 7/29/2019         Analyzed: 7/31/2019         Matrix: Water         Units: mg/L         Qualifier       RL       MDL         U       0.15         U       0.38         Spike       % Rec.			
CAS#	Analyte				Result	Qu	alifier	RL	MDI	
68476-34-6 NULL	#2 Diesel Lube Oil				0.15 0.38					
Surrogate Rec	overy:					Spike	1933	2		
CAS# 629-99-2	Analyte Pentacosane				sult	Level				
							340			
Authorized b		1/2			Release	Date:	ę	3/1	(19	

	Ν	ashington State De Janchester Enviror Final Re Semivolatile Peti	mental Labor port for	atory		
Project: Fargher Lake Gr Work Order: Batch QC Project Officer: Marti, Pam Initial Vol: 1000 mL Final Vol: 3 mL		OCETY Lab ID #: B19G1 Prep Method: SV Analysis Method: Source Field ID:	/3535A NWTPH-DX	P A N	QC atch ID: BJ repared: 7/ nalyzed: 7/ Iatrix: Wat nits: %	29/2019 31/2019
Analyte			Result	Spike Level	RL %	%Rec SRec Limits
#2 Diesel		_	2.75	3.00	0.15	92 70-130
Surrogate Rec CAS#	overy: Analyte		Result	Spike Level	% Rec.	% Rec. Limits
529-99-2	Pentacosane		0.194	0.200	97	50-150

		Vashington State Manchester Envir Final Semivolatile P	ronmental Report for	Labora r	itory			
Proiect: F	argher Lake G					QC Ty	pe : LC	S Dup
Work Order: Batch QC Project Officer: Marti, Pam Initial Vol: 1000 mL Final Vol: 3 mL		Lab ID #: B19 Prep Method: Analysis Meth Source Field I	SW3535A od: NWTPH-		P A N	atch ID: ] repared:	% %Rec Rl Limits Lin 70-130 4 %Rec. Rec. Limits	
Analyte			Sample Result	Spike Level	%Rec	RPD		RPD Limit
#2 Diesel			2.61	3.00	87	5		40
Surrogate Reco	overy:				Spike		% Re	c.
CAS#	Analyte			Result	Level	% Re		
629-99-2	Pentacosane			0.188	0.200	94	50-15	50
	53			e				
Authorized by	y:	LB		_ Releas	se Date:	3	<u>( \                                   </u>	٩

# Prep Method: SW3535A Batch ID: B19G174 Analysis Method: NWTPH-DX Prepared: 7/29/2019 MEL ID Field ID 1907069-01 FLG-WT FLG-WT2 1907069-02 B19G174-BLK1 Blank B19G174-BS1 LCS B19G174-BSD1 LCS Dup 08/01/2019 8:56 C:\PROGRAM FILES (X86)\PROMIUM\ELEMENT\FORMAT\MEL CASENARRATIVECLP PDF V3.3.0.RPT

# Appendix A Sample Correlation Table

# Appendix B Manual Qualification Table

WO: 1907069	Analysis: TPHD	

No manual qualifiers were added to the samples or batch QC.

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08/01/2019 8:56

Publication 21-03-006

# Appendix C Data Qualifier Definitions

# Code Definition

E	Reported r	esult is an	estimate	because i	t exceeds	the calibration r	ange.
---	------------	-------------	----------	-----------	-----------	-------------------	-------

- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- N The analysis indicates the present of an analyte for which there is presumptive evidence to make a "tentative identification".
- NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
- NAF Not analyzed for.
- NC Not calculated.
- REJ The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.
- U The analyte was not detected at or above the reported sample quantitation limit.
- UJ The analyte was not detected at or above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately measure the analyte in the sample.
- **bold** The analyte was present in the sample. (Visual aid to locate detected compounds on the analytical report.)

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08/01/2019 8:56

Appendix D QC Exceptions Report

Lab ID	Analyte			Except	ion	
No QC except	ions reported.					
		1 33				
					ΞX	
				10.1		
Exceptions determined	l using unrounded QC i PROMIUM/FLEMENT/F	results but are reported as i FORMAT\MEL_CASENARR	ntegers throughout this ATIVECLP PDF V3.3.0	analytical report	. 08/01/2	019 8:56
restruit i inter (700)						

# Appendix E Initial Calibration Exceptions Report

Calibration ID: B9F2701	Analysis: TPHD
LabNumber Analyte	QC Exception
No ICAL exceptions.	

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06/27/2019 8:47

# DEPARTMENT OF ECOLOGY

Manchester Environmental Laboratory 7411 Beach Drive East • Port Orchard, Washington 98366-8204

#### **Case Narrative**

July 30, 2019

To: Marti, Pam

Project: Fargher Lake Grocery

Work Order: 1907069

Subject: BTEX

From: Dolores Montgomery De

# Sample Receipt

Enclosed are the BTEX results for the samples received by MEL on July 25, 2019. All samples were received in acceptable condition unless noted in Analyst Comments. All samples were prepared and analyzed within holding times unless noted in Analyst Comments.

# Analytical Methods

These samples were prepared, analyzed, and verified by MEL according to the submitted chain-of-custody and MEL's procedures. A Sample Correlation Table with batch summary is located in Appendix A. The samples were:

- · extracted following a modification of method SW5030B.
- · analyzed following a modification of method SW8021B.

#### Analyst Comments

None noted.

#### Sample Qualification

The samples were qualified according to MEL's procedures. The table in Appendix B summarizes the manual qualifiers added by MEL. All results reported below the method reporting limit (RL) were automatically qualified as estimates, but not included in Appendix B. The qualifiers are defined in Appendix C.

# Sample Verification

All analyses met QC acceptance criteria except as noted in Appendix D. All analytes met linearity requirements unless noted in Appendix E.

CAPROGRAM FILES (X86)/PROMIUM/ELEMENT/FORMAT/MEL CASENARRATIVECLP PDF V3.3.0.RPT

07/30/2019 15:41

Publication 21-03-006

		shington Stat anchester Env Fina		al Labor			
Project: F	Fargher Lake Gro	cery				Field I	D: FLG-WI
Work Order: Project Office Initial Vol: 5 Final Vol: 5 n	r: Marti, Pam mL			1B	P A M	atch ID: B1 repared: 7/ nalyzed: 7/ latrix: Wat nits: ug/L	29/2019 29/2019
CAS#	Analyte			Re	sult Ous	lifier RI	L MDL
71-43-2 100-41-4 179601-23-1 95-47-6 108-88-3	Benzene Ethylbenzene m,p-Xylene o-Xylene Toluene			1. 2. 1.	00 00 00 00	U 1.0 U 1.0 U 2.0 U 1.0 U 1.0	0 0.106 0 0.240 0 0.177
Surrogate Rec	overy:				Spike		% Rec.
CAS#	Analyte			Result	Level	% Rec.	Limits
540-36-3 615-59-8	1,4-Difluorobenzene Benzene, 1,4-dibromo-	2-methyl		23.5 53.0	24.0 56.0	98 95	70-130 70-130
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					10		
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Authorized by	y: <u>D(1</u>			Relea	se Date:	07 30	0 19

		shington State Departs inchester Environmen Final Report BTEX	tal Laborat					
Work Order:	r: Marti, Pam mL	Lab ID #: 1907069-02 Collected: 7/24/2019 Prep Method: SW5030B Analysis Method: SW80		Bat Pre An: Ma	Field ID: FLG-WT2 Batch ID: B19G173 Prepared: 7/29/2019 Analyzed: 7/29/2019 Matrix: Water Units: ug/L			
CAS#	Analyte		Result	Quali	fier RL	MDL		
71-43-2 100-41-4 179601-23-1 95-47-6 108-88-3	Benzene Ethylbenzene m,p-Xylene o-Xylene Toluene		1.00 1.00 2.00 1.00 1.00	บ บ บ บ บ	1.00 1.00 2.00 1.00	0.258 0.106 0.240 0.177		
Surrogate Rec CAS#	10.000 million		Docult	Spike Level	% Dee	% Rec. Limits		
540-36-3 615-59-8	Analyte 1,4-Difluorobenzene Benzene, 1,4-dibromo-2		23.2 41.7	24.0 56.0	% Rec. 97 74	70-130 70-130		
				il a				
		5 <sup>8</sup> 14						
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2		hington State Depa nchester Environm Final Repo BTEX	ental Labo rt for					
Project: H	argher Lake Groce	ery	4.12	(	QC Type	: Me	thod Blan	ık
Work Order: Batch QCLab ID #: B19G173-IProject Officer: Marti, PamPrep Method: SW50Initial Vol: 5 mLAnalysis Method: SVFinal Vol: 5 mLSource Field ID: B19			80B         Prepared: 7/29/2019           /8021B         Analyzed: 7/29/2019					
CAS#	Analyte		Re	sult	Qualifier	RL	MDL	
71-43-2 100-41-4 179601-23-1 95-47-6 108-88-3	Benzene Ethylbenzene m,p-Xylene o-Xylene Toluene	<u></u>	1 2 1	.00 .00 .00 .00 .00	U · U U U U U	1.00 1.00 2.00 1.00 1.00	0.258 0.106 0.240 0.177 0.145	
Surrogate Rec CAS#	overý: Analyte		Result		ike vel %	Rec.	% Rec. Limits	
540-36-3	1,4-Difluorobenzene		23.6	-		99	70-130	
615-59-8	Benzene, 1,4-dibromo-2-	methyl	53.1	50	5.0	95	70-130	
2		81						
Authorized by	v: P12-		Rele	ase Dat	· ~7	30/1	7	

		shington State Dep unchester Environ Final Rep BTH	mental Labor port for				
Project: F	argher Lake Groo	ery			Q	С Туре	: LCS
Work Order: Batch QC Project Officer: Marti, Pam Initial Vol: 5 mL Final Vol: 5 mL		Lab ID #: B19G17 Prep Method: SW Analysis Method: Source Field ID: F	5030B SW8021B	Batch ID: B19G173 Prepared: 7/29/2019 Analyzed: 7/29/2019 Matrix: Water Units: %			
Analyte			Result	Spike Level	RL 9		%Rec Limits
Benzene Ethylbenzene m,p-Xylene o-Xylene Toluene	ž		10.0 9.5 18.0 9.1 9.7	10.0 10.0 20.0 10.0 10.0	1.00 1.00 2.00 1.00 1.00	100 95 90 91	70-130 70-130 70-130 70-130 70-130
Surrogate Reco CAS#	overy: Analyte		Result	Spike Level	% Rec.	% Re Limit	
540-36-3	1.4-Difluorobenzene		23.6	24.0	98	70-13	
	•		ξ.				
		1					$\tilde{v}$
			5				
			-				

	Wash Man	ington State D chester Enviro Final R BT	nmenta	l Labora	ology itory			
Project: F	argher Lake Grocei					QC Ty	pe : LC	S Dup
Work Order: Batch QC Project Officer: Marti, Pam Initial Vol: 5 mL Final Vol: 5 mL		Lab ID #: B19G Prep Method: S' Analysis Method Source Field ID:	W5030B : SW8021		P A N	atch ID: B repared: 7 nalyzed: 7 Iatrix: Wa inits: %	/29/2019 /29/2019	
Analyte			Sample	Spike	%Rec	RPD	%Rec	RPD Limit
Benzene Ethylbenzene m,p-Xylene o-Xylene Toluene	- B		9.9 9.2 17.6 8.9 9.5	Level 10.0 10.0 20.0 10.0 10.0	99 92 88 89 95	1 3 2 2 2	Limits 70-130 70-130 70-130 70-130 70-130	Limit 40 40 40 40 40 40
Surrogate Reco CAS#	wery: Analyte			Result	Spike Level	% Rec.	% Re Limit	
540-36-3	1,4-Difluorobenzene			23.6	24.0	99	70-13	
615-59-8	Benzene, 1,4-dibromo-2-m	ethyl		51.1	56.0	91	70-13	0
				03				
		2						
		2 U						
							2	
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- anior lacu by	· · · · · ·			Release	. Date:	VI	11	

Project: F	argher Lake Gro	BTI	2A	0	C Type •	Matrix Spik	
Work Order: Batch QC Project Officer: Marti, Pam Initial Vol: 5 mL Final Vol: 5 mL		Lab ID #: B19G17 Prep Method: SW Analysis Method: Source Field ID: F Source Lab ID #:	5030B SW8021B 319G173-MS1		QC Type : Matrix Spik Batch ID: B19G173 Prepared: 7/29/2019 Analyzed: 7/29/2019 Matrix: Water Units: %		
Analyte			Result	Spike Level	Source Result	%Rec %Rec Limits	
Benzene Ethylbenzene m,p-Xylene o-Xylene Toluene	62	2 1	11.1 10.3 19.4 9.7 10.3	10.0 10.0 20.0 10.0 10.0	0.0 0.0 0.0 0.0 0.0	111         70-130           103         70-130           97         70-130           97         70-130           103         70-130	
Surrogate Reco CAS#	overy: Analyte		Result	Spike Level	% Rec	% Rec.	
540-36-3 615-59-8	1,4-Difluorobenzene Benzene, 1,4-dibromo-	2-methyl	23.5 49.4	24.0 56.0	98 88	70-130 70-130	
						11 14	

		ngton State De hester Enviror Final Re BT	menta port fo	l Labor				
Project: F	argher Lake Grocery				QC Typ	e : Matr	ix Spil	e Dup
Work Order: Batch QC Project Officer: Marti, Pam Initial Vol: 5 mL Final Vol: 5 mL		Lab ID #: B19G1 Prep Method: SV Analysis Method: Source Field ID: Source Lab ID #:	V5030B SW8021 B19G173	B -MSD1	P A N	atch ID: B repared: 7 nalyzed: 7 Iatrix: Wa nits: %	/29/2019 /29/2019	
Analyte		Sample Result	Spike Level	Source Result	%Rec	RPD	%Rec Limits	RPD Limit
Benzene Ethylbenzene m,p-Xylene o-Xylene Toluene		10.9 10.1 19.1 9.6 10.1	10.0 10.0 20.0 10.0 10.0	0.0 0.0 0.0 0.0 0.0 0.0	109 101 96 96 101	2 2 2 1 2	70-130 70-130 70-130 70-130 70-130 70-130	50 50 50 50 50 50
Surrogate Rec CAS#	overy: Analyte			Result	Spike	9/ Bee	% Re	
540-36-3	1,4-Difluorobenzene			23.5	Level 24.0	% Rec. 98	70-13	
		2						
		25						
	1997					P		
							# Y	

Batch ID:	B19G173		Prep Method	1: SW5030B		
Prepared:	7/29/2019		 Analysis Me	thod: SW8021	В	
1	Field ID FLG-WT FLG-WT2 Blank LCS LCS Dup Matrix Spike (FLC Matrix Spike Dup (F		2 35	MEL ID 1907069-01 1907069-02 B19G173-BLK B19G173-BSL B19G173-BSD B19G173-MSD	1	

# Appendix A Sample Correlation Table

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# Appendix B Manual Qualification Table

WO: 1907069	Analysis: BTEX
No manual qualifiers were added	to the samples or batch QC.

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# Appendix C Data Qualifier Definitions

# Code Definition

- E Reported result is an estimate because it exceeds the calibration range.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- N The analysis indicates the present of an analyte for which there is presumptive evidence to make a "tentative identification".
- NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
- NAF Not analyzed for.
- NC Not calculated.
- REJ The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.
- U The analyte was not detected at or above the reported sample quantitation limit.
- UJ The analyte was not detected at or above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately measure the analyte in the sample.
- **bold** The analyte was present in the sample. (Visual aid to locate detected compounds on the analytical report.)

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Appendix D QC Exceptions Report

Lab ID	Analyte	Exception	
No QC excep	tions reported.		

QC Exceptions determined using unrounded QC results but are reported as integers throughout this analytical report. C\PROGRAM FILES (X86)\PROMIUM\ELEMENT\FORMAT\MEL CASENARRATIVECLP PDF V3.3.0.RPT

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Publication 21-03-006

Calibration ID:	B8C2801	1	Analysis:	TPHG		
LabNumber	Analyte		QC Excepti			
No ICAL except	ions.					
					2	
					10	
			3			

Publication 21-03-006

# Manchester Environmental Laboratory

7411 Beach Drive E, Port Orchard, Washington 98366

# **Case Narrative - Metals**

# July 30, 2019

Project: Fargher Lake Grocery

Work Order: 1907069

Project Manager: Marti, Pam

By: Dean Momohara

# Summary

The laboratory followed EPA 200.8 for the preparation and analysis of trace metals.

The analysis requested was evaluated by established regulatory quality assurance guidelines.

# Sample Information

The samples were received at the Manchester Laboratory on 7/25/2019. The samples were received in good condition and were properly preserved. Two samples were received and assigned laboratory identification numbers 01 and 02.

# **Holding Times**

The laboratory performed the analysis within its hold time.

# Calibration

The instrument was calibrated following the appropriate method. All initial and continuing calibration verification checks were within the acceptance limits. All initial and continuing calibration blank checks were within the acceptance limits. All standard residuals were within acceptance limits. The r-value was within acceptance limits. The instrument was calibrated with a NIST traceable standard and verified to be in calibration with a second source NIST traceable standard.

# **Method Blanks**

No analytically significant level of analyte was detected in the method blank associated with these samples.

# Laboratory Control Samples

The laboratory control sample recovery was within the acceptance limits.

#### Replicates

The associated duplicate relative percent difference of samples with concentrations greater than 5 times the reporting limit was within the acceptance limits.

# **Matrix Spikes**

The matrix spike recovery was within the acceptance limits.

# **Internal Standards**

All internal standard recoveries were within the acceptance limits.

#### Other Quality Assurance Measures and Issues

U - The analyte was not detected at or above the reported result.

**bold** - The analyte was present in the sample. (Visual Aid to locate detected compounds on report sheet.)

Please call Dean Momohara at (360) 871-8808 to further discuss this project.

cc: Project File

Project Officer: 1 Work Order: 190 Analyte: Lead Sample #	3.6	cery	Analysis R Lead	no <b>4</b> maria PATAT					
Project Officer: 1 Work Order: 190 Analyte: Lead Sample #	Marti, Pam								
Work Order: 190 Analyte: Lead Sample #	3.6	Pren							
Analyte: Lead Sample #	7069	riep	Method: EPA2	00.2		Anal	ysis Method:	EPA200	.8
Sample #		5	red: 07/26/19				rix: Water		
•		Batch	ID: B19G154			Unit	s: ug/L		
	Sample ID		Result	Qualifier	RL	MDL	Collected	Ana	lyzed
1907069-01	FLG-WT		0.10	U	0.10	0.02	07/24/19		29/19
1907069-02	FLG-WT2	32	0.10	U	0.10	0.02	07/24/19	07/2	29/19
QC Results for B	atch ID: B19G154								
Method Blank	Sample ID				Result		lifer RL	MI	
B19G154-BLK1	Blank				0.10	Ţ	J 0.10	0.0	12
		1.000	Spike	Source	Source	78-22-57 C	%Rec		RPD
Sample # B19G154-BS1	QC Sample LCS	Result 25.0	Level 25.0	Sample	Result	%Rec 100	Limits 85-115	RPD	Limit
B19G154-BS1 B19G154-BSD1	LCS Dup	25.0	25.0			99	85-115	0.5	20
B19G154-MS1	Matrix Spike	25.2	25.0	1907069-01	0.100 L		75-125		- 72
B19G154-MSD1	Matrix Spike Dup	25.9	25.0	1907069-01	0.100 t	7 103	75-125	3	
Authorized by:		2001		Rejease Date:	7	1301.	ą	Page 1	of 1