# Shell Mart McKenzie Automotive Groundwater Monitoring Results, April 2019: Data Summary Report



**Environmental Assessment Program Publication Number: 21-03-002 Authored by: Jacob D. Carnes** 

# Abstract

In March 1994, a petroleum release at the Shell Mart McKenzie Automotive in Morton, Washington was reported to the Washington State Department of Ecology (Ecology). Due to the location and size of the release, an emergency response was initiated by Ecology's Spills Program. That response included the removal of 2 underground tanks and some of the adjacent contaminated soil.

Groundwater monitoring conducted in March 1994 and May 1996 confirmed the presence of petroleum hydrocarbons at concentrations exceeding (not meeting) applicable Model Toxics Control Act (MTCA) Method A cleanup levels in the shallow groundwater underlying the site.

In April 2019, Ecology collected samples from 3 monitoring wells to assess current petroleum hydrocarbon concentrations in groundwater at the Shell Mart McKenzie Automotive site. A fourth monitoring well on site could not be located. Because the monitoring wells had not been sampled since the 1990s, Ecology redeveloped the wells in March 2019.

Results from the 2019 monitoring show that contaminant concentrations at the site have decreased to below the MTCA Method A cleanup levels. Benzene, toluene, ethylbenzene, and xylene (BTEX) compounds, and gasoline and diesel range petroleum hydrocarbons, were not detected in any of the sampled wells. Lead was detected in one well (MW-4) at a concentration of 0.67  $\mu$ g/L, which is below the cleanup level of 15  $\mu$ g/L.

The analytical results meet the measurement quality objectives described in the 2019 Quality Assurance Project Plan.

## **Publication Information**

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Data for this project are available in Ecology's EIM Database. Study ID: FS29172624.

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Water Resource Inventory Area (WRIA) and 8-digit Hydrologic Unit Code (HUC) numbers for the study area: WRIA 26.

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# Background

Shell Mart McKenzie Automotive was a gasoline station and convenience store located at 103 2nd Street in downtown Morton, Washington (Figure 1). It is currently an automotive shop.

In March 1994, a petroleum release of approximately 3200 gallons of regular (leaded) gasoline was reported to Ecology. Ecology's Spills Program initiated an emergency response to minimize the immediate threat to the health and welfare of nearby businesses and community.

The emergency response included the removal of 2 underground storage tanks (4000-gallon regular/leaded gasoline and 4000-gallon unleaded gasoline) and some of the adjacent contaminated soil. Three tanks were left in place: a 1000-gallon tank and 2 older tanks (2000-3000 gallons) from a previous station. (Oberlander, 1994)

Four monitoring wells were installed during the 1994 emergency response. Olympus Environmental, Inc., the contractor that completed the emergency response, sampled all 4 monitoring wells in March 1994. Gasoline floating on top of groundwater was observed in well MW-4 along the west side of the property.

In May 1996, Wayne Coppel, a consultant for a prospective buyer of the site, sampled well MW-4. The results of that sample showed the continued presence of petroleum contamination exceeding Model Toxics Control Act (MTCA) Method A cleanup levels. Data from the 2 previous sampling events are summarized in Appendix A. Activity at the site has been limited since the late 1990s.

## **Methods and Results**

In March 2018, Ecology visited Shell Mart McKenzie Automotive to prepare for groundwater sampling by locating the monitoring wells, assessing their condition, and measuring water levels. Three of the 4 wells (MW-1, MW-2, MW-4) were located. The fourth monitoring well (MW-3) could not be located.

In July 2018, Ecology returned to redevelop the monitoring wells. However, low water levels prevented redevelopment at that time.

In March 2019, Ecology successfully redeveloped the 3 located monitoring wells by surging the wells with a surge block, followed by pumping water from the well. Wells MW-1 and MW-2 were redeveloped by pumping the well until drawdown stabilized. MW-4 was purged dry, allowed to recover, and purged dry again. Well re-development was necessary to improve recovery rates after the wells sat dormant since the 1990s.

In April 2019, Ecology sampled groundwater from wells MW-1, MW-2, and MW-4. MW-3 was not sampled because it could not be located. The wells were sampled in accordance with the sitespecific Quality Assurance Project Plan (QAPP) (Marti, 2019) and Ecology's standard operating procedures (SOPs) noted in the QAPP, including EAP052 (Marti, 2016a) and EAP078 (Marti, 2016b).

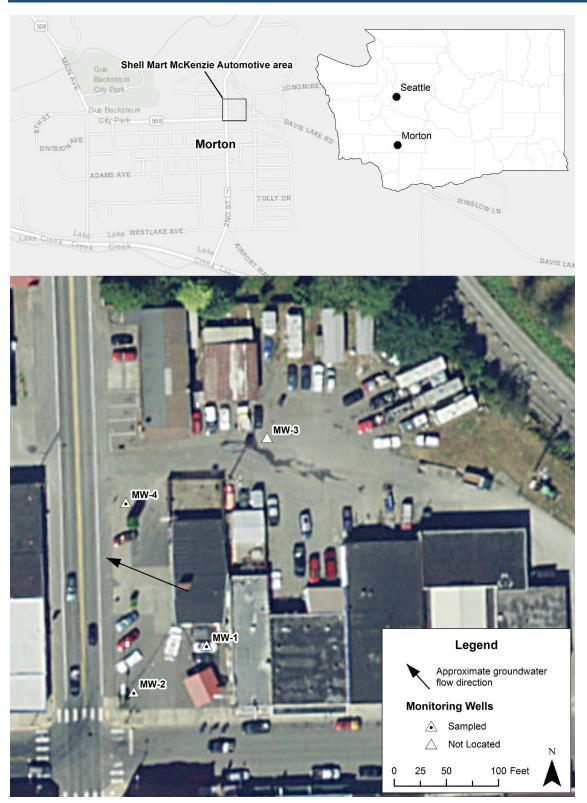


Figure 1. Location of Shell Mart McKenzie Automotive and 4 monitoring wells.

Ecology employed industry-standard lowflow sampling techniques. Because the wells are low yielding and slow to recover, each well was purged and sampled using a peristaltic pump with dedicated tubing. The pump tubing intake was placed near the bottom of the screen and the wells were purged at a rate of 0.5 liter/minute, or less.

Before sampling, wells were 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). The QAPP states that the optimal draw-down during sampling should not exceed 0.3 ft. This goal was met in wells MW-1 and MW-2. In MW-4 the water level was drawn down by 1.75 ft. before stabilizing.

Samples were collected in clean laboratory-supplied 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 lead. Unfiltered samples for total lead were collected at all 3 sampled monitoring wells. At MW-4 a filtered sample was also collected for analysis of dissolved lead. This filtered sample was collected because the water produced from MW-4 was visibly turbid. Field personnel did not have access to a turbidity meter for this sampling trip. All samples were analyzed by Ecology's Manchester Environmental Laboratory.

Stabilized field measurements are presented in Table 1. Tables 2 and 3 summarize analytical results.

A field duplicate sample was collected from well MW-4. The relative percent difference (RPD<sup>1</sup>) calculated for the duplicate results ranged from 0% to less than 5%, meeting the measurement quality objectives established in the QAPP (Marti, 2019). All other measurement quality objectives for analytical measurements listed in the QAPP were also met.

Neither BTEX compounds nor petroleum hydrocarbons were detected in the 3 wells sampled in April 2019. Total lead was detected in well MW-4 at a concentration near the reporting limit. Dissolved phase lead was not detected in MW-4. Results for all analytes in all 3 wells, including total lead in MW-4, were below the MTCA Method A Cleanup Levels (Tables 2 and 3).

The chain of custody form is included in Appendix B. The analytical reports from Manchester Environmental Laboratory are included in Appendix C. Analytical results for this project are available at Ecology's Environmental Information Management System and can be viewed on the project's <u>summary page</u>.

<sup>&</sup>lt;sup>1</sup> RPD 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. 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.

Well ID	Well Depth (feet, bgs)	Ground- water Elevation (feet)	pH (Standard Units)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)
MW-1	25.2	938.53	4.8	68	9.3	104
MW-2	25.1	938.12	5.1	171	7.4	89
MW-4	26.3	937.52	4.8	151	3.3	87

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

bgs: below ground surface

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

Well ID	Benzene (µg/L)	Toluene (µg/L)	Ethyl Benzene (µg/L)	m,p- Xylene (µg/L)	o-Xylene (µg/L)
MW-1	1U	1U	1U	2U	1U
MW-2	1U	1U	1U	2U	1U
MW-4	1U	1U	1U	2U	1U
MW-4A	1U	1U	1U	2U	1U
MTCA Cleanup Level	5	1000	700	1000ª	1000ª

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

<sup>*a*</sup> The cleanup level is 1000 µg/L total xylenes (m,p-Xylene + o-Xylene).

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

Well ID	TPH-G (μg/L)	TPH-D (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)
MW-1	70U	150U	0.1U	
MW-2	70U	150U	0.1U	
MW-4	70U	150U	0.67	0.02U
MW-4A	70U	150U	0.70	0.02U
MTCA Cleanup Level	800-1000ª	500	15	15

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

<sup>a</sup> MTCA Method A Cleanup Level for Gasoline is 800  $\mu$ g/L if benzene is present in groundwater and 1000  $\mu$ g/L if benzene is not detectable in groundwater.

# Conclusions and Recommendations

Analytical results from the April 2019 groundwater monitoring show that all 3 wells sampled met the applicable MTCA Method A cleanup levels. Dissolved phase BTEX compounds, and gasoline and diesel range petroleum hydrocarbons, were not detected in any of the sampled wells. Total lead was detected in well MW-4 at a concentration near the reporting limit. Dissolved phase lead was not detected in MW-4. A fourth monitoring well on site was not sampled because it could not be located.

The 3 monitoring wells were purged and sampled in accordance with low-flow sampling procedures outlined in the QAPP (Marti, 2019). However, minimal water level drawdown in well MW-4 could not be achieved. The water level was drawn down by 1.75 ft. before stabilizing.

Any future groundwater monitoring at the Shell Mart McKenzie Automotive site should prioritize locating and sampling monitoring well MW-3.

# References

- Coppel, W. 1996. Correspondence to Dave Jansen, Section Manager for Ecology's Toxics Cleanup Program, Southwest Regional Office. Regarding Former Shell Station at 103 2nd St. Morton, WA. July 17, 1996.
- Ecology. 1996. Correspondence to Wayne Coppell, Environmental Consultant. Regarding Former Shell Station at 103 2nd St. Morton, WA. Sept. 10, 1996.
- Marti, P. 2019. Quality Assurance Project Plan: Shell Mart McKenzie Automotive and Fargher Lake Grocery Groundwater Assessment Monitoring. Publication 19-03-101. Washington State Department of Ecology, Olympia. <u>https://apps.ecology.wa.gov/publications/summarypages/1903101.html</u>
- Marti, P. 2016a. Standard Operating Procedure EAP052, Version 1.2: Manual Well-Depth and Depth-to-Water Measurements. Washington State Department of Ecology, Olympia. <u>https://apps.ecology.wa.gov/publications/SummaryPages/1803215.html</u>
- Marti, P. 2016b. Standard Operating Procedure EAP078, Version 2.0: Collecting Groundwater Samples for Volatiles and other Organic Compounds from Monitoring Wells. Washington State Department of Ecology, Olympia. <u>https://ecology.wa.gov/Quality</u>
- Oberlander, J. 1994. Morton LUST, March 1994 May 1994, McKenzie Automotive Shell Mini Mart. Washington State Department of Ecology April 17, 1994. Memo to the File.
- Olympus Environmental, Inc. 1994. Site Characterization Report McKenzie Automotive/Shell, 103 Second and Main, Morton, Washington. July 29, 1994. Olympus WO# 94-5000.

# **Appendix A. Previous Analytical Results**

Well ID	Date	Benzene (µg/L)	Toluene (μg/L)	Ethyl Benzene (µg/L)	Xylenes (µg/L)	TPH-G (mg/L)	Lead (µg/L)
MW-1	3/17/1994	38	30	7	82	1.1	7
MW-2	3/17/1994	nd	nd	nd	nd	nd	56
MW-3	3/17/1994	nd	2	nd	11	nd	86
MW-4	3/17/1994	90,000	160,000E	23,000	130,000	1,300	150
MW-4	5/30/1996	7,500	18,000	12,000	7,200	100	na

## Table A1. Analytical data collected by Olympus (1994) and Coppel (1996).

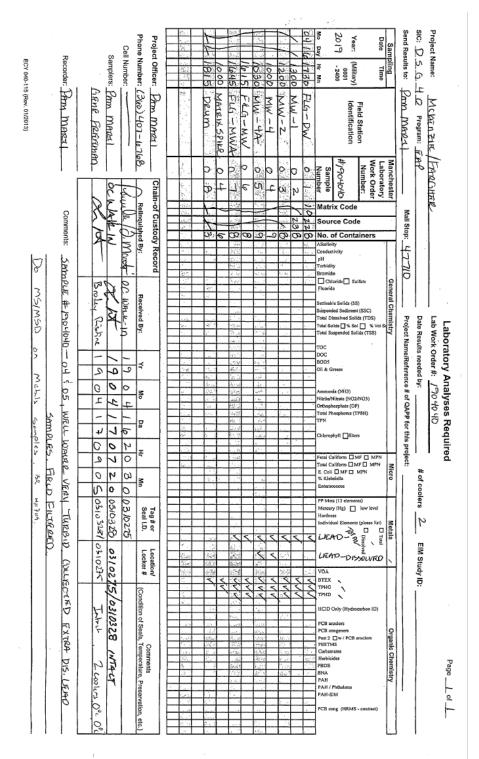
E - The concentration of this analyte exceeded the calibration range.

nd - Analyte not detected.

na - Analyte not analyzed.

## Appendix B. Chain of Custody Forms

Following are chain of custody forms for the April 2019 sampling that included the Shell Mart McKenzie Automotive groundwater samples, as well as groundwater samples from a separate site.



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Washington State Department of Ecology Manchester Environmental Laboratory Cooler Receipt and Preservation Form

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## **Appendix C. Analytical Reports**

Following are analytical laboratory reports from Manchester Environmental Laboratory on the results of the April 2019 groundwater sampling at Shell Mart McKenzie Automotive 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 DY

#### 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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Work Order:	1904040 er: Marti, Pam mL	Lab ID #: 190 Collected: 4/16 Prep Method:	gher Lake Grocery Lab ID #: 1904040-06 Collected: 4/16/2019 Prep Method: SW5030B Analysis Method: NWTPH-GX			Field ID: FLG-MW Batch ID: B19D116 Prepared: 4/17/2019 Analyzed: 4/17/2019 Matrix: Water Units: mg/L			
CAS#	Analyte			Result	Qual	ifier RL	MDL	-annotation	
86290-81-5	Gasoline			0.070	U	0.070			
Surrogate Rec CAS#	<u>coverv:</u> Analyte		Re	sult	Spike Level	% Rec.	% Rec. Limits		
540-36-3 615-59-8	1,4-Difluorobenzene Benzene, 1,4-dibromo	-2-methyl	2:	5.7 3.3	24.0 56.0	107 104	70-130 70-130		
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Work Order:	r: Marti, Pam mL	Lab ID #: 1904 Collected: 4/16/ Prep Method:	040-07 2019	Ba Pr Ai M	rield ID: match ID: B19 repared: 4/1 nalyzed: 4/1 atrix: Wate nits: mg/L	7/2019 7/2019
CAS#	Analyte		Re	sult Qua	lifier RL	MDL
86290-81-5	Gasoline		0.0	)70 1	J 0.070	)
Surrogate Rec	overy:			Spike		% Rec.
CAS#	Analyte	et an air an	Result	Level	% Rec.	Limits
540-36-3 615-59-8	1,4-Difluorobenzene Benzene, 1,4-dibromo-2-	methyl	25.4 58.7	24.0 56.0	106 105	70-130 70-130
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Project: N	Mckenzie Auto &	Fargher Lake Grocer		QCI	Гуре : Ме	thod Blank	
Work Order:	Batch QC er: Marti, Pam mL	Lab ID #: B19D116-B Prep Method: SW503 Analysis Method: NW Source Field ID: B191	LK1 0B 7TPH-GX	Batch ID: B19D116 Prepared: 4/17/2019 Analyzed: 4/17/2019 Matrix: Water Units: mg/L			
CAS#	Analyte		Resul	Qua	lifier RL	MDL	
86290-81-5	Gasoline		0.070	τ	J 0.070	6	
Surrogate Rec			Demik	Spike	0/ Dec	% Rec.	
CAS# 540-36-3	Analyte 1,4-Difluorobenzene		22.6	24.0	94	70-130	
615-59-8	Benzene, 1,4-dibrom	o-2-methyl	51.4	56.0	92	70-130	
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Work Order:	Batch QC er: Marti, Pam mL	Lab ID # Prep Me Analysis	: B19D116-BS1 thod: SW50301 Method: NWT ield ID; B19D1	l 3 PH-GX	i A N	Batch ID; Prepared: Analyzed: Matrix: W Jnits: %	B19D110 4/17/201 4/17/201	5 9	
Analyte				Result	Spike Level	RL	%Rec	%Rec Limits	
Gasoline				0.661	0.750	0.070	88	70-130	
Surrogate Rec					Spike			Rec.	
CAS#	Analyte 1,4-Difluorobenzene	ng kalanana atanan kata ana ana ana an	and a factor of the state of the	Result 24.1	24.0	% Re 100		nits 130	
540-36-3 615-59-8	Benzene, 1,4-dibromo-	2-methyl		55.4	56.0	99		130	
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Project: Mckenzi Work Order: Batch QC Project Officer: Marti, J Initial Vol: 5 mL Final Vol: 5 mL		Lab ID #: Prep Meth Analysis N Source Fig	B19D11 hod: SW Viethod:	16-BSD1 /5030B NWTPH-		P A N	atch ID: B repared: 4. nalyzed: 4 fatrix: Way	19D116 /17/2019 /17/2019	<u>s pu</u>	,
Analyte				Sample Result	Spike Level	%Rec	RPD -	%Rec Limits 70-130	RPD Limit 40	
Gasoline <u>Surrogate Recovery:</u> CAS# Analy	te			0.681	0,750 Result	91 Spike Level	5 % Rec.	% Re	с.	
540-36-3 1.4-Difly	uorobenzene 2, 1,4-dibromo-2-me	thyl			24.2 53.2	24.0 56.0	101 95	70-13 70-13		
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Project		anchester I Volatil	State Depar Environme Final Repor e Petroleun ake Grocer	ntal Labor t for 1 Products	atory	CType	: Matr	ix Spik	e
Work Order	r: Batch QC cer: Marti, Pam 5 mL	Lab ID Prep M Analys Source	#: B19D116-M lethod: SW5030 is Method: NW Field ID: B19D Lab ID #: 1904	S1 )B TPH-GX 0116-MS1		Batch ID: Prepared: Analyzed: Matrix: V Units: %	B19D110 4/17/201 4/17/201	9	
Analyte				Result	Spike Level	Source Result	%Rec	%Rec Limits	
Gasoline			an ann an Anna an Anna Anna Anna Anna A	0.648	0.750	0.00	86	70-130	<b>Viturity</b>
<u>Surrogate Re</u> CAS#				Result	Spike Level	% R		Rec. nits	
540-36-3 615-59-8	Analyte 1,4-Difluorobenzene Benzene, 1,4-dibromo-	2-methyl	den managen an de ser an de se	22.5 50.9	24.0 56.0	94 91	70-	130 130	La Castra
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Washington State Department of Ecology Manchester Environmental Laboratory Final Report for Volatile Petroleum Products									
Work Order:	er: Marti, Pam mL	La Pr Ar So	r Lake Gro b ID #: B19D1 ep Method: SV halysis Method: urce Field ID: urce Lab ID #:	16-MSD1 V5030B NWTPH B19D116	I-GX -MSD1	P A N	e: Matr atch ID: B repared: 4 nalyzed: 4 fatrix: Wa (nits: %	519D116 /17/2019 /17/2019	e Dup
Analyte			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 Rec CAS#	overy: Analyte				Result	Spike Level	% Rec	% Rec. . Limits	
540-36-3 615-59-8	1,4-Difluorobenze Benzene, 1,4-dibro		anna an		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
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	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	
	Analysis: TPHG

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

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### Appendix C Data Qualifier Definitions

Code	Definition
Е	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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	Арр	endix	D	
QC	Excep	otions	Report	t

Exception

Lab ID No QC exceptions reported.

Analyte

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

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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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		Washington State Dep Manchester Environ Final Rep Semivolatile Petro	nental Laborat ort for deum Products	ory		
Work Order:	1904040 r: Marti, Pam 110 mL	& Fargher Lake Groo Lab ID #: 1904040 Collected: 4/16/201 Prep Method: SW3 Analysis Method: 1	-01 9 3535A	Bat Pre An Ma	Field ID cch ID: B19 pared: 4/17 alyzed: 4/24 trix: Water its: mg/L	/2019 /2019
CAS#	Analyte		Resul	t 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 Rec CAS#	overy: Analyte		Result	Spike Level	% Rec.	% Rec. Limits
629-99-2	Pentacosane		0.203	0.218	93	50-150
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Work Order:     1904040     Lab ID #:     1904040-02     Prepared:     4/17/2       Initial Vol:     995 mL     Collecte:     4/16/20     Analyze:     4/24/2       Initial Vol:     995 mL     Prep Method:     SW3535A     Analyze:     4/24/2       Analysis Method:     NWTPH-DX     Matrix:     Water     Water       CAS#     Analyte     0.15     U     0.38     U     0.38       Surrogate Recovery:     0.38     U     0.38     U     0.38       CAS#     Analyte     Result     Level     % Rec.     9       CAS#     Analyte     0.218     0.221     99     5	Washington State Department of Ecology Manchester Environmental Laboratory Final Report for Semivolatile Petroleum Products									
Project Officer: Marti, Pam Initial Vol: 995 mL     Collected: 4/16/2019 Prep Method: SW353A Analysis Method: NWTPH-DX     Prepared: 4/17/2 Analysis Method: NWTPH-DX       CAS#     Analyte     Result     Qualifier       68476-34-6     #2 Diesel     0.15     U     0.15       NULL     Lube Oil     0.38     U     0.38       Surrogate Recovery:     Spike     9     2       CAS#     Analyte     Result     Level     % Rec.       629-99-2     Pentacosane     0.218     0.221     99     5	<b>D: MW-</b>	Field ID:	F			ery	her Lake Gro	to & Farg	Ackenzie Aut	Project: N
CAS#         Nutry           68476-34-6         #2 Diesel         0.15         U         0.15           NULL         Lube Oil         0.38         U         0.38           Sarrogate Recovery:         Spike         9         CAS#         Analyte         Result         Level         % Rec.         1           629-99-2         Pentacosane         0.218         0.221         99         5	019	red: 4/17/2019 red: 4/24/2019 r: Water	Prepared: Analyzed: Matrix: N	Pi A M		02 535A	Lab ID #: 1904040 Collected: 4/16/201 Prep Method: SW	Work Order: 1904040 Project Officer: Marti, Pam Initial Vol: 995 mL Final Vol: 3 mL		
68476-34-6     #2 Diesel     0.15     U     0.15       NULL     Lube Oil     0.38     U     0.38       Sarrogate Recovery:     Spike     9       CAS#     Analyte     Result     Level     % Rec.       629-99-2     Pentacosane     0.218     0.221     99     5	MDL	RL	alifier	Qua	Result				Analyte	CAS#
CAS#     Analyte     Result     Level     % Rec.     I       629-99-2     Pentacosane     0.218     0.221     99     5		0.15	U	1					#2 Diesel	68476-34-6
629-99-2 Pentacosane 0.218 0.221 99 5	% Rec. Limits		9/ 10			Dec	á.			
0.29-99-2 Feillaconaire	50-150						ni Alatan Palat State In Hall and an			
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Manchester Environmental Laboratory Final Report for Semivolatile Petroleum Products Project: Mckenzie Auto & Fargher Lake Grocery Field ID: MW-2									
Work Order: 1904040 Project Officer: Marti, Pam Initial Vol: 1000 mL Final Vol: 3 mL		Lab ID #: 1904040-03 Collected: 4/16/2019 Prep Method: SW3535A Analysis Method: NWTPH-DX				Batch ID: B19D136 Prepared: 4/17/2019 Analyzed: 4/24/2019 Matrix: Water Units: mg/L			
CAS#	Analyte			Result	Qualifi		MDL		
58476-34-6 NULL	#2 Diesel Lube Oil			0.15 0.38	U U	0.15 0.38			
Surrogate Reco			a.	Result	Spike Level	% Rec.	% Rec. Limits		
CAS# 529-99-2	Analyte Pentacosane		and the second secon	0.234	0.220	106	50-150		
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Work Order:	1904040 er: Marti, Pam 010 mL		o & Fargher Lake Grocery Lab ID #: 1904040-04 Collected: 4/16/2019 Prep Method: SW3535A Analysis Method: NWTPH			Batch ID: B19D136 Prepared: 4/17/2019 Analyzed: 4/24/2019			
CAS#	Analyte				Result	Quali		The second s	
68476-34-6 NULL	#2 Dicsel Lube Oil			2	0.15 0.37	บ บ			
Surrogate Rec				Deer		Spike Level	% Rec.	% Rec. Limits	
CAS#	Analyte Pentacosane			0.223		0.218	102	50-150	
629-99-2	Pentacosane		Υ.						
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Washington State Department of Ecology Manchester Environmental Laboratory Final Report for Semivolatile Petroleum Products										
Project: Mckenzie Auto Work Order: 1904040 Project Officer: Marti, Pam Initial Vol: 1005 mL Final Vol: 3 mL		Lab ID #: 1904040-05 Collected: 4/16/2019 Prep Method: SW3535A Analysis Method: NWTPH-DX			in the second	Field ID: MW-4 Batch ID: B19D136 Prepared: 4/17/2019 Analyzed: 4/24/2019 Matrix: Water Units: mg/L				
CAS#	Analyte		3	. 1	Result	Qualifier	RL	MDL		
68476-34-6 NULL	#2 Diesel Lube Oil				0.15 0.37	U U	0.15 0.37			
Surrogate Rec				Result		ike evel %	6 Rec.	% Rec. Limits		
CAS# 629-99-2	Analyte Pentacosane	and the state of the		0.218	and the second se	219	100	50-150		
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Washington State Department of Ecology Manchester Environmental Laboratory Final Report for Semivolatile Petroleum Products								
Project: I	Mckenzie Auto &	& Fargher Lake Grocer	у		Field ID	FLG-MW		
Work Order: 1904040 Project Officer: Marti, Pam Initial Vol: 1010 mL Final Vol: 3 mL		Lab ID #: 1904040-06 Collected: 4/16/2019 Prep Method: SW3535A Analysis Method: NWTPH-DX			Batch ID: B19D136 Prepared: 4/17/2019 Analyzed: 4/24/2019 Matrix: Water Units: mg/L			
CAS#	Analyte		Resul	t Qua	lifier RL	MDL		
68476-34-6 NULL	#2 Diesel Lube Oil		<b>0.28</b> 0.37		0.15 U 0.37	þ.		
Surrogate Rec				Spike	0/ D	% Rec.		
CAS#	Analyte		Result 0.220	0.218	% Rec. 101	Limits		
629-99-2	Pentacosane		0.220	0.210	101	50.150		
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Project: N	Ickenzie Aut	o & Fargher Lake Groco	ery		Field ID	: FLG-MWA
Work Order: Project Office: Initial Vol: 10 Final Vol: 3 m	r: Marti, Pam 00 mL	Lab ID #: 1904040- Collected: 4/16/2019 Prep Method: SW3: Analysis Method: N	535A		Batch ID: B Prepared: 4 Analyzed: 4 Matrix: Wa Units: mg/L	/17/2019 /24/2019 ter
CAS#	Analyte		Re	sult Q	ualifier R	L MDL
68476-34-6 NULL	#2 Diesel Lube Oil			31 38	0. U 0.	
Surrogate Reco	overy:	×		Spike		% Rec.
CAS# 629-99-2	Analyte		0.217	0.220		Limits 50-150
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Project: N	Ackenzie Auto	o & Fargher Lake Grocery		QC Type	e : Me	thod Blank
Work Order: Batch QC Project Officer: Marti, Pam Initial Vol: 1000 mL Final Vol: 3 mL		Lab ID #: B19D136-BL Prep Method: SW3535 Analysis Method: NWT Source Field ID: B19D1	Batch ID: B19D136 Prepared: 4/17/2019 Analyzed: 4/24/2019 Matrix: Water Units: mg/L			
CAS#	Analyte		Result	Qualificr	RL	MDL
68476-34-6 NULL	#2 Diesel Lube Oil	1 × 2	0.15	ប ប	0.15 0.38	
Surrogate Rec	overy:			Spike		% Rec.
CAS# 629-99-2	Analyte Pentacosane		Result 0.218	Level %	99	Limits 50-150
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Project: Mckenz	Mano Se	ngton State Depa chester Environm Final Repo emivolatile Petrol gher Lake Groce	iental Labor ort for leum Produc	atory	Q	ос Тур	be : LCS			
Work Order: Batch QC Project Officer: Marti, Pam Initial Vol: 1000 mL Final Vol: 3 mL		Lab ID #: B19D136- Prep Method: SW35 Analysis Method: N	Lab ID #: B19D136-BS1 Prep Method: SW3535A Analysis Method: NWTPH-DX Source Field ID: B19D136-BS1			Batch ID: B19D136 Prepared: 4/17/2019 Analyzed: 4/24/2019 Matrix: Water Units: %				
Analyte			Result	Spike Level	RL	%Rec	%Rec Limits			
#2 Diesel			2.54	3.00	0.15	85	70-130			
CAS# Analy	vta	×	Result	Spike Level	% Re		Rec. nits			
CAS# Analy 529-99-2 Pentaco	age and the second s		0.215	0.220	98		150			
	э					1	2			
Authorized by:	L	2 <u>8</u>	Rele	ase Date:	_4	130	[19			

Washington State Department of Ecology Manchester Environmental Laboratory Final Report for Semivolatile Petroleum Products Project: Mckenzie Auto & Fargher Lake Grocery QC Type : LCS Dup								
Work Order: Batch QC Project Officer: Marti, Pam Initial Vol: 1000 mL Final Vol: 3 mL		Lab ID #: B19D136-BSD1 Prep Method: SW3535A Analysis Method: NWTPH-DX Source Field ID: B19D136-BSD1			Batch ID: B19D136 Prepared: 4/17/2019 Analyzed: 4/24/2019 Matrix: Water Units: %			
analyte		and the second	Sample Result	Spike Level	%Rec	RPD	%Rec Limits	RPD Limit
#2 Diesel			2.67	3.00	89	5	70-130	40
Surrogate Reco				Result	Spike Level	% Rec	% Re . Limi	
CAS# 529-99-2	Analyte Pentacosane		A MANAGEMENT OF THE	0.209	0.220	95	50-1:	
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	y:	-		Dalar	se Date:	A	130	119

Batch ID: B19D136	Prep Method: SW3535A
Prepared: 4/17/2019	Analysis Method: NWTPH-DX
Field ID	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	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

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

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04/30/2019 16:06

## 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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04/30/2019 16:06

# Appendix D QC Exceptions Report

Lab ID	Analyte	÷	Exception
No QC excepti	ons reported.		

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

Shell Mart McKenzie Auto GW Monitoring, April 2019, Data Summary

04/30/2019 16:06

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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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04/04/2019 12:25

#### 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  $\beta$ 

### 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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04/22/2019 16:28

Washington State Department of Ecology Manchester Environmental Laboratory Final Report for BTEX									
Project: Mckenzie Auto & Fargher Lake GroceryWork Order: 1904040Lab ID #: 1904040-01Project Officer: Marti, PamCollected: 4/16/2019Initial Vol: 5 mLPrep Method: SW5030BFinal Vol: 5 mLAnalysis Method: SW8021B			3	Field ID: FLG-DW Batch ID: B19D139 Prepared: 4/18/2019 Analyzed: 4/18/2019 1B Matrix: Water Units: ug/L					
CAS#	Analyte		Resul	t Qual	ifier RL	MDL			
/1-43-2 00-41-4 79601-23-1 95-47-6 .08-88-3	Benzene Ethylbenzene m,p-Xylene o-Xylene Toluene		1.00 1.00 2.00 1.00	L L L	J 1.00 J 2.00 J 1.00	0.177			
urrogate Reco			Develt	Spike	% Rec.	% Rec. Limits			
CAS#	Analyte 1,4-Difluorobenzene		Result 24.0	24.0	100	70-130			
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Project: M	(ckenzie Auto	& Farg	her Lal	ke Groc	ery					Field	ID: MW-	
Work Order: Project Officer Initial Vol: 5 n Final Vol: 5 m	: Marti, Pam 1L	2	Lab ID #: 1904040-02 Collected: 4/16/2019 Prep Method: SW5030B Analysis Method: SW8021B				Batch ID: B19D139 Prepared: 4/18/2019 Analyzed: 4/18/2019 Matrix: Water Units: ug/L					
CAS#	Analyte					J	Result	Q	nalifie	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					1.00 1,00 2.00 1.00 1.00		บ บ บ บ บ	1.00 1.00 2.00 1.00 1.00	0.258 0.106 0.240 0.177 0.145	
Surrogate Reco						~ .		Spike	,	/ <b>D</b>	% Rec.	
CAS#	Analyte	<b>n</b>		A MARINE MARINE OF	19 <b>7-19195-0</b> 4488	Result 24,2		Level 24.0		% Rec.	Limits 70-130	
615-59-8	Benzene, 1,4-dibra	omo-2-metl	ıyl	х Х		58.4	р Т	56.0		104	70-130	
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Project: M	ckenzie Auto & Fa	rgher Lake Grocer	Y		Field	ID: MW-2			
Work Order: 1 Project Officer: Initial Vol: 5 m Final Vol: 5 m]	: Marti, Pam L	Lab ID #: 1904040-03 Collected: 4/16/2019 Prep Method: SW5030 Analysis Method: SW5		Batch ID: B19D139 Prepared: 4/18/2019 Analyzed: 4/18/2019 Matrix: Water Units: ug/L					
CAS#	Analyte		Rest	ult Qual	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	*	1.0 1.0 2.0 1.0 1.0	0 U 0 U 0 U 0 U	J 1.00 J 1.00 J 2.00 J 1.00	0.258 0.106 0.240 0.177 0.145			
Surrogate Reco				Spike	5	% Rec.			
CAS#	Analyte 1,4-Difluorobenzene		Result 23.9	Level 24.0	% Rec.	Limits 70-130			
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Work Order: Project Officer Initial Vol: 5 m Final Vol: 5 m	1904040 r: Marti, Pam nL	Lab ID #: Collected Prep Met	Lab ID #: 1904040-04 Collected: 4/16/2019 Prep Method: SW5030B Analysis Method: SW8021B			Batch ID: B19D139 Prepared: 4/18/2019 Analyzed: 4/18/2019 Matrix: Water Units: ug/L				
CAS#	Analyte			Result	t Qu	alifier 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	×	2	1.00 1.00 2.00 1.00 1.00		U 1.0 U 1.0 U 2.0 U 1.0 U 1.0 U 1.0	0 0.106 0 0.240 0 0.177			
Surrogate Reco				-	Spike	0/ D	% Rec.			
CAS# 540-36-3 615-59-8	Analyte 1,4-Difluorobenzene Benzene, 1,4-dibromo-2-	methyl	2	<b>Result</b> 23.7 56.9	24.0 56.0	% Rec. 99 102	Limits 70-130 70-130			
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Project: Mckenzie Auto & Fargher Lake Grocery       Field ID: MW         Work Order: 1904040       Lab ID #: 1904040-05       Batch ID: B19D139         Project Officer: Marti, Pam       Collected: 4/16/2019       Prepared: 4/18/2019         Initial Vol: 5 mL       Prep Method: SW5030B       Analyzei: 4/18/2019         Final Vol: 5 mL       Analysis Method: SW8021B       Matrix: Water Units: ug/L								
CAS#	Analyte		Resul	t 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	บ บ บ บ	1.00 2.00 1.00	0.258 0.106 0.240 0.177 0.145		
Surrogate Reco			Decult	Spike Level	% Rec.	% Rec. Limits		
CAS# 540-36-3	Analyte 1,4-Difluorobenzene Benzene, 1,4-dibromo-2-m	<u></u>	24,2 57.6	24.0 56.0	101 103	70-130 70-130		
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Project:Mckenzie Auto & Fargher Lake GroceryField ID: FLG-MWWork Order:1904040Lab ID #: 1904040-06Batch ID: B19D139Project Officer:Marti, PamCollected: 4/16/2019Prepared: 4/18/2019Initial Vol:5 mLPrep Method:SW5030BAnalyzed: 4/18/2019Final Vol:5 mLAnalysis Method:SW8021BMatrix: WaterUnits:ug/L								
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		Reso 48. 32. 16. 1.5 5.0	3 6 3 5	ifier RL 1.00 1.00 2.00 1.00 1.00	0.258 0.106 0.240 0.177		
Surrogate Reco CAS#	wery: Analyte		Result	Spike Level	% Rec.	% Rec. Limits		
540-36-3 615-59-8	1,4-Difluorobenzene Benzene, 1,4-dibromo-	2-methyl	26.4 70.4	24.0 56.0	110 126	70-130 70-130		
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Project: M		2	ironmental l Report fo BTEX	Labor:	atory	field ID:	FLG-MV	WA
Work Order: Project Officer Initial Vol: 5 m Final Vol: 5 m	1904040 ': Marti, Pam nL	Lab ID #: 19 Collected: 4/ Prep Method	904040-07	8	Pr Ai M	tch ID: B19 epared: 4/1: aalyzed: 4/1: atrix: Water atrix: ug/L	8/2019 8/2019	
CAS#	Analyte			Res	ult Qua	lifier RL	MDI	4
71-43-2 100-41-4 179601-23-1 95-47-6 108-88-3	Benzene Ethylbenzene m,p-Xylene o-Xylene Toluene	annan an ann an ann an ann an ann an ann an a	gescheidungen der geschen Antorge soch antorgesche	47. 35. 17. 1,5 5.2	6 0 3 9	1,00 1,00 2,00 1,00 1,00	0.258 0.106 0.240 0.177	3 5 ) 7
Surrogate Reco					Spike	-	% Rec.	1
CAS# 540-36-3	Analyte 1,4-Difluorobenzene			Result 28.0	24.0	% Rec.	Limits 70-130	
615-59-8	Benzene, 1,4-dibromo-2	-methyl	• •	75.6	56.0	135	70-130	
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Project:     Mckenzie Auto & Fargher Lake Grocery     Field ID: DRUM       Work Order:     1904040     Lab ID #: 1904040-08     Batch ID: B19D139       Project Officer:     Marti, Pam     Collected: 4/16/2019     Prepared: 4/18/2019       Initial Vol:     5 mL     Prep Method:     SW8021B     Matrix: Water       Units:     ug/L     Units:     ug/L								
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	5.		Result           2.63           2.31           1.84           0.651           1.00	Qualifier J J 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#	<u>very:</u> Analyte		Resul		oike evel %	Rec.	% Rec. Limits	
540-36-3 615-59-8	1,4-Difluorobenzene Benzene, 1,4-dibromo-2-		23.9 64.3	2	4.0	99 115	70-130 70-130	
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Project: M	[ckenzie Auto &	Fargher La	ike Grocery	5	QCT	ype : Me	thod Blank		
Work Order: 1 Project Officer Initial Vol: 5 n Final Vol: 5 m	: Marti, Pam 1L	Lab ID #: B19D139-BLK1 Prep Method: SW5030B Analysis Method: SW8021B Source Field ID: B19D139-BLK1			Batch ID: B19D139 Prepared: 4/18/2019 Analyzed: 4/18/2019 Matrix: Water Units: ug/L				
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		nder de la segue de conservent de serven antes	1.00 1.00 2.00 1.00 1.00	) [ ] [ ] [	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		
540-36-3 615-59-8	1,4-Difluorobenzene Benzene, 1,4-dibromo-	2-methyl	8	24.3 58.8	24.0 56,0	101 105	70-130 70-130		
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Project: M	ckenzie Auto & I	Fargher L	ake Grocer	У		Q	QC Typ	e : LC	S
Work Order: 1 Project Officer Initial Vol: 5 m Final Vol: 5 m)	: Marti, Pam L	Lab ID #: B19D139-BS1 Prep Method; SW5030B Analysis Method: SW8021B Source Field ID; B19D139-BS1			Batch ID: B19D139 Prepared: 4/18/2019 Analyzed: 4/18/2019 Matrix: Water Units: %				
Analyte		4		Result	Spike Level	RL	%Rec	%Rec Limits	
Benzene Ethylbenzene n,p-Xylene p-Xylene Foluene	1. Na na kananangana kananangan peranganan manga		an na shara na shekara ka shekara sheka	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	
ourrogate Reco					Spike			Rec.	2
CAS#	Analyte 1,4-Difluorobenzene		an ease east to be a state of the second state of the second state of the second state of the second state of t	Result 24.1	Level 24.0	% Re 101		nits 130	Papers
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Project: M	ckenzie Auto & F	argher Lake	Grocery		r.	QC Typ	e:LCS	S Dup
Work Order: H Project Officer: Initial Vol: 5 m Final Vol: 5 mJ	: Marti, Pam L	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	2		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-	-methyl		24.4 58.2	24.0 56.0	102 104	70-130 70-130	
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Project: M	Ickenzie Auto &	Fargher Lake Grocer	у	, QO	C Type :	Matr	ix Spike
Work Order: Project Officer Initial Vol: 5 n Final Vol: 5 m	r: Marti, Pam nL	Lab ID #: B19D139-M Prep Method: SW503 Analysis Method: SW Source Field ID: B19I Source Lab ID #: 1904	0B 8021B 0139-MS1	Batch ID: B19D139 Prepared: 4/18/2019 Analyzed: 4/18/2019 Matrix: Water Units: %			
Analyte			Result	Spike Level	Source Result	%Rec	%Rec Limits
Benzene Ethylbenzene m,p-Xylene o-Xylene Toluene	ana ana ang ang ang ang ang ang ang ang		10.4 9.9 19.0 9.6 10.2	10.0 10.0 20.0 10.0 10.0	0.0 0.0 0.0 0.0 0.0 0.0	104 99 95 96 102	70-130 70-130 70-130 70-130 70-130
Surrogate Reco CAS#			Result	Spike Level	% Ree		Rec. nits
540-36-3 615-59-8	Analyte 1,4-Difluorobenzene Benzene, 1,4-dibromo-	0 10 1	24.0 56.6	24.0 56.0	100 101	70-	130 130
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Work Order: 1 Project Officer Initial Vol: 5 m Final Vol: 5 m	: Marti, Pam 1L	Prep Analy Source	D#: B19D1 Method: SV ysis Method: ce Field ID: ce Lab ID #:	V5030B SW8021 B19D139-	B -MSD1		Batch ID: B Prepared: 4, Analyzed: 4, Matrix: Wat Units: %	/18/2019 /18/2019	
Analyte			Sample Result	Spike Level	Source Result	%Rec	RPD	%Rec Limits	RPD Limit
Benzene	uzuzun erun zelaint en Bahar pad Bahari (di bili e Akuzel		10.7	10.0	0.0	107	3	70-130	50
Ethylbenzene			10.2	10.0	0.0	102	3	70-130	50
n,p-Xylene			19.6	20.0	0.0	98	3	70-130	50
o-Xylene			9.9	10.0	0,0	99	3	70-130	50
Toluene		2	10.5	10.0	0.0	105	3	70-130	50
Surrogate Reco						Spike	D / 35	% Rec	
CAS#	Analyte	and the state of the state of the		موسية ومرجو ومراويتها وهو	Result	Level	% Rec.		Northern American District
540-36-3 515-59-8	1,4-Difluorobenzene Benzene, 1,4-dibromo-2	-methyl			24.1 59.4	24.0 56.0	100 106	70-130 70-130	
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Batch ID: B19D139	Prep Method: SW5030B Analysis Method: SW8021B				
Prepared: 4/18/2019					
Field ID	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				
DRUM	1904040-08				
Blank	B19D139-BLK1				
LCS	B19D139-BS1				
LCS Dup	B19D139-BSD1				
Matrix Spike (MW-4)	B19D139-MS1				
Matrix Spike Dup (MW-4)	B19D139-MSD1				

# Appendix A Sample Correlation Table

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04/22/2019 16:28

# Appendix B Manual Qualification Table

WO:	1904040	Analysis: BTEX

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

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04/22/2019 16:28

# Appendix C Data Qualifier Definitions

1	Code	Definition
	E	Reported result is an estimate because it exceeds the calibration range.
9	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.
	IJ	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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04/22/2019 16:28

# 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)\PROMIUMELEMENT\FORMAT\MEL CASENARRATIVECLP PDF V3.3.0,RPT

04/22/2019 16:28

# Appendix E Initial Calibration Exceptions Report

Calibration ID	: B8C2801	Analysis: TPHG
LabNumber	Analyte	QC Exception
NY YOUX		

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:

By: Dean Momohara

Marti, Pam

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

Project Officer: Marti, Pam Work Order: 1904040		Prepa	Prep Method: EPA200.2 Prepared: 04/18/19 Batch ID: B19D121			Matr	ysis Method: ] ix: Water :: ug/L	EPA200.8	
Analyte: Lead	a.	Batch	ID: B19D121			Units	a: ug/L		
Sample #	Sample ID		Result	Qualifier	RL	MDL	Collected	Ana	lyzed
1904040-01	FLG-DW		0.33		0.10	0.02	04/16/19		9/19
1904040-02	MW-1		0.10	U	0.10	0.02	04/16/19		9/19
1904040-03	MW-2		0.10	U	0.10	0.02	04/16/19		9/19
1904040-04	MW-4	5 <b>.</b>	0.67		0.10	0.02	04/16/19		19/19
1904040-05	MW-4A		0.70		0.10	0.02	04/16/19		19/19
1904040-06	FLG-MW		0.10	U	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
QC Results for Ba	tch ID: B19D121								
Method Blank	Sample ID				Result	Qua	lifer RL	M	DL
B19D121-BLK1	Blank				0.10	I	J 0.10	0,1	)2
	0.00	Result	Spike Level	Source Sample	Source Result	%Rec	%Rec Limits	RPD	RPD Limi
Sample #	QC Sample			Dumpie	ALOPHIL	101	85-115	RPD	
B19D121-BS1	LCS	25.3	25.0			101	85-115	0.9	20
B19D121-BSD1	LCS Dup	25.1	25.0	1001010.01	0.666	100	75-125	0.9	20
B19D121-MS1	Matrix Spike	25.7	25.0	1904040-04	0.666	100	75-125	0.5	20
B19D121-MSD1	Matrix Spike Dup	25.9	25.0	1904040-04	0.000	101	75-125	0.5	20
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Authorized by:

Shell Mart McKenzie Auto GW Monitoring, April 2019, Data Summary

Dr-

Page 1 of 2

4/22/2019

			-	ntal Labo eport for					
Project Name:	Mckenzie Auto & Far								
Project Officer: M Work Order: 1904 Analyte: Lead		Prep 1 Prepa Batch			Analysis Method: EPA20 Matrix: Water Units: ug/L			.00.8	
Sample #	Sample ID	Result		Qualifier	RL	MDL Collected		Analyzed	
1904040-04 1904040-05	MW-4 MW-4A		0.020 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				Result Qu		lifer RL	MDL	
B19D145-BLK1	Blank		Spike	Source	0.020 Source		J 0.020 %Rec		RPD
Sample #	QC Sample	Result 9.81	Level	Sample	Result	%Rec 98	Limits 85-115	RPD	Limit
B19D145-BS1 B19D145-BSD1 B19D145-MS1	LCS Dup Matrix Spike	9.81 9.84 19.4 19.5	10.0 20.0 20.0	1904040-04 1904040-04	0.020 T 0.020 T	98 U 97	85-115 75-125 75-125	0.3 0.7	20 20
B19D145-MSD1	Matrix Spike Dup	19.5	20.0	1304040-04	0.020	0 70	15 125	0.7	20
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Authorized by:	Dr			Release Date:		4/22)	1 0	Page 2	of 2