COMPLIANCE GROUNDWATER MONITORING TECHNICAL REPORT

LAKE WASHINGTON APARTMENTS, SEATTLE, WASHINGTON

Prepared for
EPMI, A Bayside Company
1990 North California Boulevard, Suite 1070
Walnut Creek, California 94596

Prepared by
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December 31, 2019

Note:
Some pages in this document have been purposely skipped or blank pages inserted so that this document will copy correctly when duplexed.

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ATTACHMENTS

TABLES

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INTRODUCTION

This report presents the results of groundwater monitoring performed by Herrera Environmental Consultants, Inc. (Herrera) at the Lake Washington Apartments in Seattle, Washington (Site) (Figure 1). During the late 1990s, 18 heating oil tanks were removed from the property, contaminated soils were excavated and disposed off site at a licensed facility, and some residual heating oil-contaminated soils were left in place beneath Building 35. In January 2013, three monitoring wells, MW-1, MW-2, and MW-3, were installed at the Site according to procedures outlined in the sampling plan (Herrera 2012). The wells were installed adjacent to Building 35 and sampled to satisfy groundwater point-of-compliance monitoring requirements (see soil boring and monitoring well construction records for the three wells included in Attachment 1).

On June 19, 2013, the Washington State Department of Ecology issued a No Further Action (NFA) designation for the Site under the Voluntary Cleanup Program (VCP – Project No. NW2570) (Ecology 2013). The NFA designation is contingent upon continued performance and effectiveness of post-cleanup controls and monitoring including:

- Compliance with institutional controls (i.e., restriction on land use due to residual soil contamination, and restriction on groundwater use).
- Performance of compliance monitoring (i.e., periodic groundwater monitoring once every 5 years).

GROUNDWATER MONITORING

Monitoring wells MW-1, MW-2, and MW-3 were sampled on November 15, 2019. Consistent with the previous sampling event, the wells were sampled with dedicated bailers instead of using a low-flow technique, due to slow recharge rates at all three locations. A minimum of three well volumes were removed from each well; and field readings recorded for pH, temperature, and specific conductivity confirmed that these parameters had equilibrated. However, because water levels dropped significantly in each well during purging, the wells were allowed to recharge for several hours before samples were collected later that same day.

Groundwater conditions are summarized in Table 1. Based on soil borings completed at the site Herrera assumes that groundwater collects in pockets on top of the shallow clay or other confining layer at the Site.

Table 1. Groundwater Conditions, Lake Washington Apartments.				
Monitoring Well	**Top of Casing Elevation[a] (feet)**	**Water Level Elevation[a] (feet)**	**Depth to Water[b] (feet)**	**Screened Interval[c] (feet)**
MW-1	101.31	95.68	5.63	4.5 to 14.5
MW-2	99.54	93.90	5.64	5.5 to 10.5
MW-3	87.94	85.45	2.49	5.5 to 10.5

[a] Relative to arbitrary datum established at 100 feet

[b] Below top of casing

[c] Below ground surface

Analytical Results and Conclusions

A quality assurance report is provided in Attachment 2. All quality assurance objectives were met; there are no limitations on use of the measurement data.

No diesel-range petroleum hydrocarbons were detected in any of the groundwater samples collected from the three wells. Lube oil-range petroleum hydrocarbons were detected in samples from MW-1 and MW-3 at concentrations of 320 micrograms per liter (µg/L) and 310 µg/L, respectively, but well below the Model Toxic Control Act (MTCA) Method A cleanup level of 500 µg/L. Based on these analytical results, no further groundwater sampling is recommended until the next 5-year follow-up event scheduled for November 2024.

Legend

- Former tank location
- Contour (5-ft)
- Parcel boundary

Figure 1.
Vicinity/Site Map, Lake Washington Apartments, Seattle, Washington.

N

0 100 200 400

Feet

HERRERA

Aerial: Bing Maps, 2012

K:\Projects\11-05186-000\Project\Vicinity_map.mxd (11/29/2012)

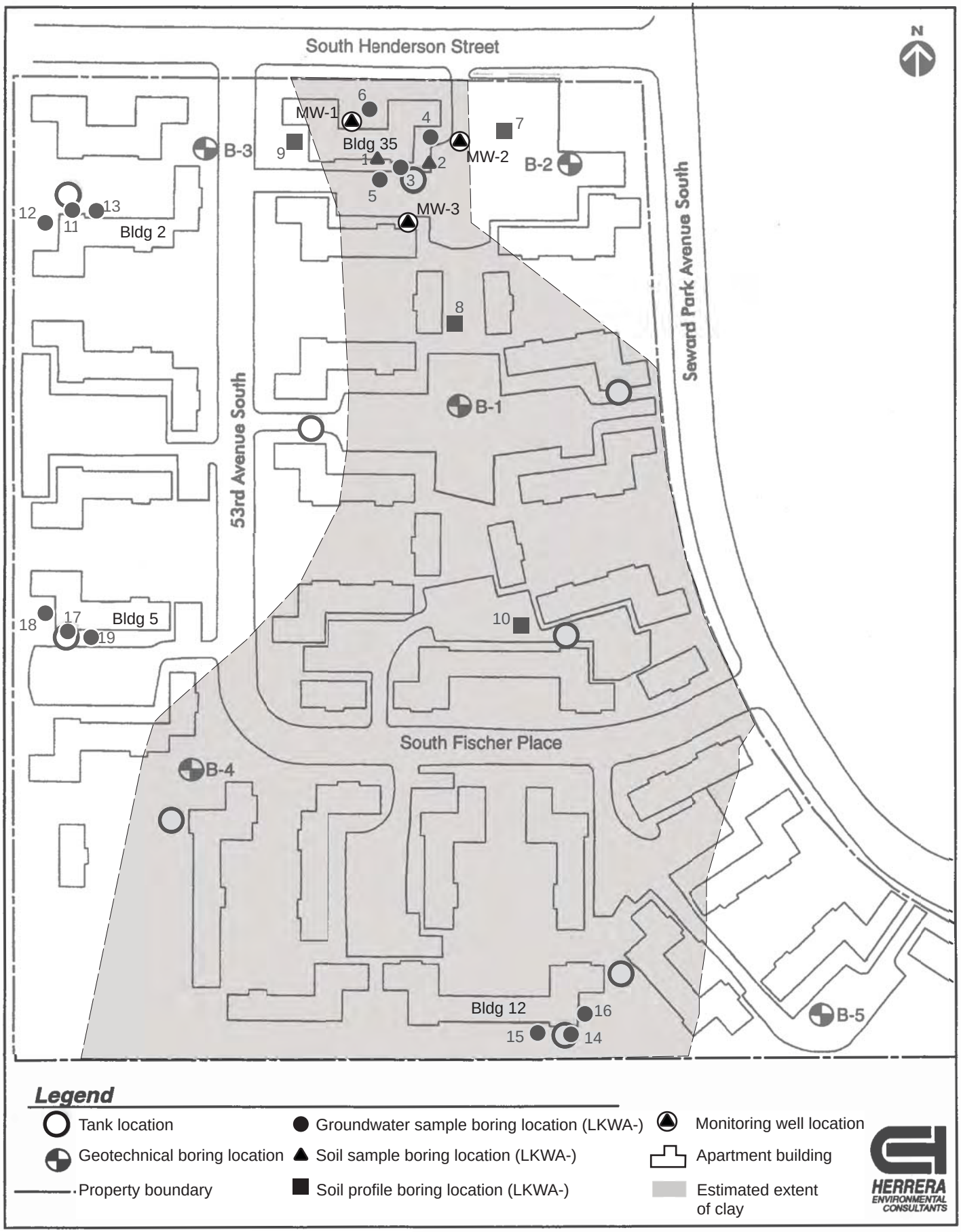


Figure 2. Monitoring Well Location Map, Lake Washington Apartments, Seattle, Washington.

REFERENCES

Ecology. 2013. No Further Action Letter for Lakeshore Village Apartments (Facility/Site No.: 2285). Issued by the Washington State Department of Ecology, Northwest Regional Office, Bellevue, Washington. June 19.

Herrera. 2012. Compliance Monitoring Well Installation and Sampling Plan, Lake Washington Apartments, Seattle, Washington. Prepared by Herrera Environmental Consultants, Inc., Seattle, Washington, for Bayside Washington, LLC. December 3, 2012.

ATTACHMENT 1

Soil Boring and Monitoring Well Construction Records

SOIL BORING AND MONITORING WELL CONSTRUCTION RECORD

HERRERA

Well ID MW-1
Total depth: 15.5
Sheet 1 of 1

Project name: Lake WA Apartments
Project number: 11-05186-000
Client: EPMI
Location: North of Bldg. 35

HEC rep.: Bruce Carpenter
Start Date: 12/20/2012
Compl. Date: 12/20/2012

Drilling Contractor: Cascade
Drilling method: Hollow Stem Auger (HSA)
Sampling method: Split Spoon
Measuring point elev.: —
Ground elevation: —
Air monitoring (y/n): No
Instrument(s): NA

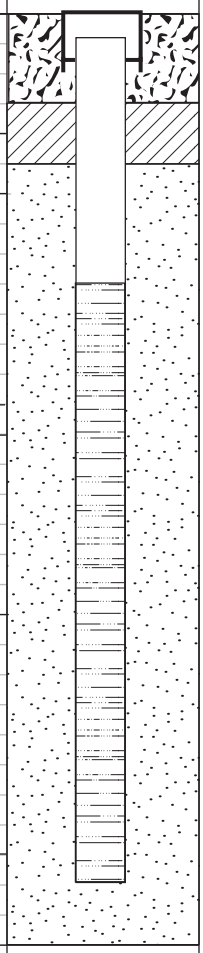
Casing material: Sch 40 PVC
Casing diameter: 2-inch
Screen slot width: 0.010
Casing joint type: Threaded
Filter pack: 2-12 sand
Annular seal: Bentonite
Monument type: Flush-mount

Depth to water	5.65	4.65
Reference point	TOC	TOC
Time	1543	955
Date	1/2/2013	1/3/2013

Monitoring well details
Cement
Bentonite
Filterpack
Well screen

Sample type, interval	% recovery	Blow Counts	Depth (feet, BGS)	Soil group	Soil description
			1		Grass/Topsoil
				ML	Dark brown sandy gravelly SILT, moist
			2		
				SM	Gray silty gravelly SAND, moist
			3		
				CH	Gray silty CLAY, moist
			4		
			5		
SS	80	3 3 4	6		
			7	ML	Gray sandy SILT, trace clay, moist
				CH	Gray silty, CLAY, trace sand, moist
			8		
			9		
			10		
SS	100	10 12 15	11	ML	Gray gravelly sandy SILT, trace clay, moist
			12		
			13		
			14		
				ML	Light brown gravelly sandy SILT, dense, dry
			15		
SS	50	50/6			
			16		

Well details



Last Modified: 01/15/2013
Filepath: O:\proj\Y2011\11-05186-000\Data\Construction_Record\MW-2_construction_record.pdf

SOIL BORING AND MONITORING WELL CONSTRUCTION RECORD

HERRERA

Well ID MW-2
Total depth: 13
Sheet 1 of 1

Project name: Lake WA Apartments
Project number: 11-05186-000
Client: EPMI
Location: 24.5' East of SE corner of Bldg. 35
HEC rep.: Bruce Carpenter
Start Date: 12/20/2012
Compl. Date: 12/20/2012

Drilling Contractor: Cascade
Drilling method: Hollow Stem Auger (HSA)
Sampling method: Split Spoon
Measuring point elev.: —
Ground elevation: —
Air monitoring (y/n): No
Instrument(s): NA

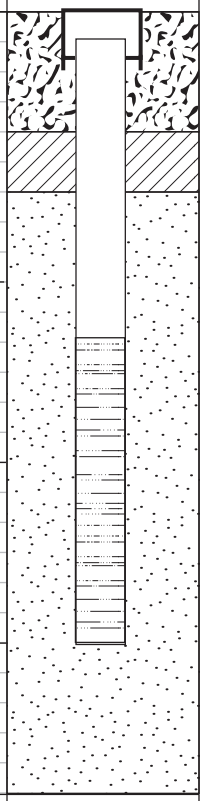
Casing material: Sch 40 PVC
Casing diameter: 2-inch
Screen slot width: 0.010
Casing joint type: Threaded
Filter pack: 2-12 sand
Annular seal: Bentonite
Monument type: Flush-mount

Depth to water	5.85	5.54
Reference point	TOC	TOC
Time	1558	1115
Date	1/2/2013	1/3/2013

Monitoring well details
Cement
Bentonite
Filterpack
Well screen

Sample type, interval	% recovery	Blow Counts	Depth (feet, BGS)	Soil group	Soil description
					Grass/Topsoil
			1	SM	Brown gravelly sillty SAND, moist (fill)
			2		
			3		
			4		
			5	ML	Brown clayey SILT, moist
SS	5	8 10 12	6		
			7		
SS	100	6 12 50	8	SM	Gray silty SAND, trace clay, moist, dense
			9		
			10		
SS	100	20 50	11	ML	Brown mottled sandy SILT, dense, moist
			12		
SS	100	50	13		dry

Well details



SOIL BORING AND MONITORING WELL CONSTRUCTION RECORD

HERRERA

Well ID MW-3
Total depth: 11.5
Sheet 1 of 1

Project name: Lake WA Apartments
Project number: 11-05186-000
Client: EPMI
Location: 53' South of SE corner of Bldg. 35
HEC rep.: Bruce Carpenter
Start Date: 12/20/2012
Compl. Date: 12/20/2012

Drilling Contractor: Cascade
Drilling method: Hollow Stem Auger (HSA)
Sampling method: Split Spoon
Measuring point elev.: —
Ground elevation: —
Air monitoring (y/n): No
Instrument(s): NA

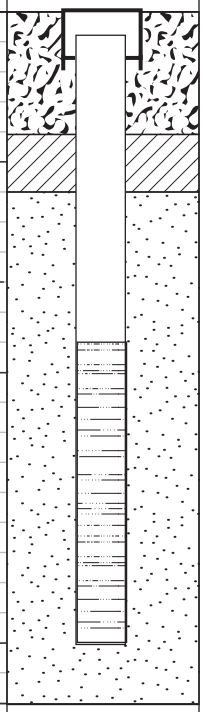
Casing material: Sch 40 PVC
Casing diameter: 2-inch
Screen slot width: 0.010
Casing joint type: Threaded
Filter pack: 2-12 sand
Annular seal: Bentonite
Monument type: Flush-mount

Depth to water	8.09	5.75
Reference point	TOC	TOC
Time	1602	819
Date	1/2/2013	1/3/2013

Monitoring well details
Cement
Bentonite
Filterpack
Well screen

Sample type, interval	% recovery	Blow Counts	Depth (feet, BGS)	Soil group	Soil description
					Grass/Topsoil
			1	SW	Brown gravelly SAND, moist (fill)
			2		
			3	ML	Brown sand SILT, moist
			4		
			5	ML	Light Brown-beige clayey SILT, trace sand, moist
SS	100	3			
		5	6		
		5		PT	Brown Peat w/ silt, moist
			7		
SS	100	20	8		
		5			As above / wood, moist
		6	9		
			10		
SS	100	2			
		3	11	CH	Blue; gray silty CLAY, trace gravel, moist
		3			
			12		

Well details



ATTACHMENT 2

Data Quality Summary Report and Laboratory Data

Herrera Environmental Consultants, Inc.

Internal Memorandum

Date: December 2, 2019

To: Project File 19-07240-000

From: Gina Catarra, Herrera Environmental Consultants, Inc.

Subject: Data Quality Assurance Review of Lake Washington Apartments Compliance Monitoring Data

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SUMMARY OF RESULTS

This memorandum presents a review of data quality for three groundwater samples collected at the Lake Washington Apartments site on November 15, 2019. All samples were analyzed by OnSite Environmental of Redmond, Washington, by Ecology's NWTPH-Dx method.

Results for the following samples were validated.

Sample ID	Date Collected	Matrix	Laboratory Sample Number
MW1-111519	11/15/2019	Groundwater	11-199-01
MW2-111519	11/15/2019	Groundwater	11-199-02
MW3-111519	11/15/2019	Groundwater	11-199-03

Laboratory performance was reviewed in accordance with quality control (QC) criteria outlined in the *Lake Washington Apartments Compliance Monitoring Well Installation and Sampling Plan* (Herrera 2012) and the specified analytical method.

Quality control data summaries submitted by the laboratories were reviewed; raw data were not submitted by the laboratories. Data validation results are summarized below, followed by definitions of data qualifiers.

Custody, Preservation, Holding Times, and Completeness—Acceptable

The samples were properly preserved and sample custody was maintained from sample collection to receipt at the laboratory. All samples were analyzed within the required holding times (7 days for water samples). The laboratory reports were complete and contained results for all samples and tests requested on the chain-of-custody (COC) forms.

Laboratory Reporting Limits—Acceptable

The laboratory reporting limits were reasonable for the specified analytical method.

Method Blank Analysis—Acceptable

Method blanks were analyzed at the required frequency. Method blanks did not contain levels of target analytes above the laboratory reporting limits.

Surrogate Analysis—Acceptable

Surrogate o-Terphynl was analyzed with each sample. The percent recovery values for all samples met the 50 to 150 percent control limits established by the method.

Matrix Spike Analysis—Not Analyzed

Matrix spike (MS) samples were not analyzed, which is acceptable per the analytical method.

Laboratory Duplicate Analysis—Acceptable

Laboratory duplicates were analyzed at the required frequency. The relative percent difference (RPD) was not calculated for the water duplicate, as both values were less than the reporting limit.

Data Quality Assessment Summary

The data quality for all samples was found to be acceptable based on holding time, reporting limit, method blank, surrogate, and laboratory duplicate criteria. Usability of the data is based on the guidance documents previously noted. Upon consideration of the information presented here, the data are acceptable as reported.

Definition of Data Qualifiers

The following data qualifier definitions are taken from *USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review* (USEPA 2017):

U The material was analyzed for, but was not detected above the level of the reported sample quantitation limit.

J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

UJ The material was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

R The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

References

Herrera. 2012. Lake Washington Apartments Compliance Monitoring Well Installation and Sampling Plan. Prepared for Bayside Washington, LLC, by Herrera Environmental Consultants, Inc., Seattle, Washington. December.

USEPA. 2017. National Functional Guidelines for Inorganic Superfund Methods Data Review. US Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation (OSRTI), Washington, DC. (EPA-540-R-2017-001). January.

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

November 25, 2019

George Iftner
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 19-07240-000
Laboratory Reference No. 1911-199

Dear George:

Enclosed are the analytical results and associated quality control data for samples submitted on November 19, 2019.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: November 25, 2019
Samples Submitted: November 19, 2019
Laboratory Reference: 1911-199
Project: 19-07240-000

Case Narrative

Samples were collected on November 15, 2019 and received by the laboratory on November 19, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: November 25, 2019
Samples Submitted: November 19, 2019
Laboratory Reference: 1911-199
Project: 19-07240-000

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW1-111519**					
Laboratory ID:	11-199-01					
Diesel Range Organics	**ND**	0.15	NWTPH-Dx	11-22-19	11-22-19	
Lube Oil Range Organics	**0.32**	0.24	NWTPH-Dx	11-22-19	11-22-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*131*	*50-150*				
Client ID:	**MW2-111519**					
Laboratory ID:	11-199-02					
Diesel Range Organics	**ND**	0.20	NWTPH-Dx	11-22-19	11-22-19	
Lube Oil Range Organics	**ND**	0.20	NWTPH-Dx	11-22-19	11-22-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*78*	*50-150*				
Client ID:	**MW3-111519**					
Laboratory ID:	11-199-03					
Diesel Range Organics	**ND**	0.13	NWTPH-Dx	11-22-19	11-22-19	
Lube Oil Range Organics	**0.31**	0.21	NWTPH-Dx	11-22-19	11-22-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*115*	*50-150*				

Date of Report: November 25, 2019
Samples Submitted: November 19, 2019
Laboratory Reference: 1911-199
Project: 19-07240-000

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1122W1					
Diesel Range Organics	**ND**	0.20	NWTPH-Dx	11-22-19	11-22-19	
Lube Oil Range Organics	**ND**	0.20	NWTPH-Dx	11-22-19	11-22-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*108*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	SB1122W1										
	ORIG	DUP									
Diesel Fuel #2	**0.508**	**0.444**	NA	NA		NA		NA	13	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*121*	*101*	*50-150*			

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: Herrera
Project Number: 19-07240-000
Project Name: Lake WA Apts.
Project Manager: George Ifther
Sampled by: George Ifther

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☑ Standard (7 Days)
☐ _____ (other)

Laboratory Number: 11-199

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A					% Moisture
1	MW1-111519	11/15/19	15:55	water	2				✓																		
2	MW2-111519	↓	16:00	↓	2				✓																		
3	MW3-111519	↓	15:45	↓	2				✓																		

	Signature	Company	Date	Time
Relinquished	George Ifther	Herrera OSE	11/15/19	17:50
Received			11/19/19	1500
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
Samples kept at Herrera over the weekend until courier pickup on monday.

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐