

February 26, 2015

Project No. 073-93368-06.09A

Harry Grant
Riddell Williams P.S.
1001 Fourth Avenue, Suite 4500
Seattle, WA 98154

**RE: SEA-TAC DEVELOPMENT SITE (MASTERPARK LOT C) PERFORMANCE GROUNDWATER
MONITORING REPORT – FOURTH QUARTER 2014**

Dear Harry:

Golder Associates Inc. (Golder) completed performance groundwater monitoring at the Sea-Tac Development Site (MasterPark Lot C) December 3 through 5, 2014. Groundwater sampling was conducted in accordance with the Compliance Monitoring Plan, Sea-Tac Development Site (Golder 2011)¹. Groundwater samples were collected from monitoring wells MW-06, MW-07, MW-09, MW-12, MW-13, MW-17A, MW-18, MW-19, MW-20, MW-21, MW-22, and PORT-MW-B (Figure 1). Monitoring wells MW-07, MW-09, MW-12, MW-13, MW-17A, MW-18, and MW-22 are completed to monitor the approximate groundwater plume boundary. Monitoring wells MW-06, MW-19, MW-20, MW-21, and PORT-MW-B are completed to monitor background concentrations. Static water elevations were collected at all site wells, which also include MW-01, MW-05, MW-08A, MW-10, MW-11, MW-14, MW-15, and MW-16.

1.0 SAMPLING PROTOCOL

Groundwater sampling was conducted in accordance with the Compliance Monitoring Plan, Sea-Tac Development Site (Golder 2011)¹, and included the following activities:

- Measurement of static water elevations at monitoring wells.
- Well purging to ensure sample representativeness with the newly installed dedicated submersible bladder pumping systems.
- Measurement of field parameters including: pH, specific conductance, temperature, dissolved oxygen, and turbidity.
- Collection of all purge water in appropriate containers for on-site storage prior to disposal.
- Collection of representative and quality assurance / quality control (QA/QC) samples in appropriate containers.
- Analyses of groundwater for volatile organic compounds (VOCs, EPA Method 8260C): ethylene dibromide (EDB), naphthalene, and n-hexane; diesel and motor oil range Northwest Total Petroleum Hydrocarbons (Method NWTPH-D); and gasoline range Northwest Total Petroleum Hydrocarbons, benzene, toluene, ethylbenzene, and xylene (NWTPH-Gx/BTEX).

¹Golder Associates Inc. (Golder). 2011. Attachment E: Compliance Monitoring Plan Sea-Tac Development Site, SeaTac Washington. November 2.



Appendix A presents the laboratory analytical reports for all analyses. Sampling activities were documented on Sample Integrity Data Sheets (SIDS), which are provided in Appendix B. Appendix C presents the Data Validation Memorandum. Appendix D provides summary data tables and trend graphs for all sampling events. Table 1 presents water depth measurements and elevations that were collected from wells prior to sampling activities. Table 2 shows a summary of the field parameters and laboratory analytical results for each groundwater sample collected in December 2014.

2.0 FOURTH QUARTER 2014 GROUNDWATER SAMPLING RESULTS

Following sample collection, all bottles were sealed, labeled, and placed in an iced cooler until delivery to the laboratory. All groundwater samples from monitoring wells were transported under chain-of-custody procedures to Analytical Resources Incorporated (ARI), of Tukwila, Washington, for analysis. Upon receipt of laboratory data reports, data underwent a data validation review. Results were compared to State of Washington Model Toxics Control Act (MTCA) Method A or B clean-up levels (CULs) and Secondary Maximum Containment Levels (MCLs), whichever value is more protective.

The analytical results indicate that groundwater conditions have improved significantly from those observed during the historical groundwater monitoring during the Remedial Investigation (RI) and since the startup of the In-situ Air Sparging (IAS)-Soil Vapor Extraction (SVE) system. Table 2 presents the field parameter measurements and laboratory analytical results for each groundwater sample collected in December 2014.

Results for NWTPH-Gasoline exceeded the MTCA Method A limit for groundwater when benzene is present (0.8 milligrams per liter [mg/L]) in wells MW-07, MW-09, MW-22, and the field duplicate at MW-22 (MW-22-DUP). NWTPH-Gx was detected but the value was less than the MTCA standard in well PORT-MW-B. NWTPH-Gx was non-detect in wells MW-06, MW-12, MW-13, MW-17A, MW-18, MW-19, MW-20, and MW-21.

The MTCA standard for benzene (5 micrograms per liter [$\mu\text{g/L}$]) was exceeded in wells MW-07, MW-09, MW-22, and MW-22-DUP. Benzene was detected in MW-17A and MW-18, but was less than the MTCA standard. Benzene was non-detect in wells MW-06, MW-12, MW-13, MW-19, MW-20, MW-21, and PORT-MW-B.

There were detections of toluene and/or ethylbenzene in wells MW-07, MW-09, MW-12 (ethylbenzene only), MW-18 (ethylbenzene only), MW-22, MW-22-DUP, and PORT-MW-B (ethylbenzene only), but the values did not exceed the MTCA standard (640 $\mu\text{g/L}$ for toluene and 700 $\mu\text{g/L}$ for ethylbenzene) except for ethylbenzene in MW-22 and MW-22-DUP. Toluene and ethylbenzene were non-detect in wells MW-06, MW-12 (toluene only), MW-13, MW-17A, MW-18 (toluene only), MW-19, MW-20, MW-21, and PORT-MW-B (toluene only).

Results for total xylenes exceeded the MTCA Method A standard (1,000 $\mu\text{g/L}$) in wells MW-07, MW-22, and MW-22-DUP. Xylenes were detected, but below the standard in MW-09, MW-12, MW-17A, MW-18, and PORT-MW-B, and were non-detect in wells MW-06, MW-13, MW-19, MW-20, and MW-21.

Ethylene dibromide (EDB) results were non-detect for all samples. The reporting limits were raised for samples from MW-22 and MW-22-DUP due to high levels of BTEX. More information is provided in the Data Validation Memorandum in Appendix C. The method detection limits (MDLs) for EDB for all samples were greater than the MTCA CULs.

N-hexane was detected, and below the MTCA Method B level (480 $\mu\text{g/L}$) in wells MW-07, MW-12, MW-18, MW-22, and MW-22-DUP. N-hexane was non-detect in wells MW-06, MW-09, MW-13, MW-17A, MW-19, MW-20, MW-21, and PORT-MW-B.

Naphthalene was detected above the MTCA limit (160 $\mu\text{g/L}$) in wells MW-07, MW-22, and MW-22-DUP. Naphthalene was also detected, but below the MTCA limit, in wells MW-09, MW-12, and MW-17A.

Naphthalene was non-detect in wells MW-06, MW-13, MW-18, MW-19, MW-20, MW-21, and PORT-MW-B.

Results for NWTPH-Diesel were detected above the MTCA Method A limit (0.5 mg/L) in wells MW-07, MW-09, MW-22, and MW-22-DUP. NWTPH-Diesel was detected, but below the MTCA limit in wells MW-12, MW-13, and MW-18. NWTPH-Diesel was non-detect in MW-06, MW-17A, MW-19, MW-20, MW-21, and PORT-MW-B. The highest concentrations of diesel were detected in groundwater from monitoring well MW-07 at 11 mg/L, while all other diesel concentrations were less than 1.9 mg/L or non-detect. Results for NWTPH-Motor Oil were non-detect at less than 0.20 mg/L for all samples except for sample MW-07, which was detected below the MTCA limit.

3.0 DATA QUALITY ASSURANCE / VALIDATION

Data underwent a data validation review and is presented in detail in Appendix C. In general, the data were acceptable, except for the following:

- The naphthalene result for the initial analysis of MW-07 was qualified as estimated (J) due to a surrogate being out of control high. The result was not reported since it was reanalyzed at a dilution.
- Naphthalene, gasoline, and BTEX results in sample MW-17A were qualified as estimated (J/UJ) due to out of control matrix spike (MS) and matrix spike duplicate (MSD).
- The field blank (FB) contained n-hexane. No associated contamination in the samples was noted.
- A method blank contained naphthalene, and the reanalysis of PORT-MW-B was qualified as non-detect (U) at the LOQ value of 0.50 µg/L.
- PORT-MW-B was reanalyzed for possible naphthalene carry over. The re-analysis was selected for reporting.
- Samples MW-07, MW-22, and MW-22-DUP had to be reanalyzed at a dilution due to high levels of analytes. The diluted results are reported and are detailed in Appendix C.
- The relative percent difference (RPD) for o-xylene results for MW-22 and MW-22-DUP was outside of the control limits. No action was taken as the RPD for total xylene was in control.
- Diesel results for samples MW-07, MW-22, and MW-22-DUP were qualified as estimated (J) due to unidentifiable hydrocarbons.
- The motor oil result for the initial analysis of MW-07 was qualified as estimated (J) due to unidentifiable hydrocarbons.
- Samples MW-22, MW-22-DUP, PORT-MW-B and MW-17A were extracted outside of the method recommended holding time by one day. No action was taken as results were similar to previous sampling events.
- Results for QA/QC samples (field blanks, trip blanks, and field duplicate) were acceptable except as discussed above. No other issues were noted.

4.0 SUMMARY

The analytical results for the fourth quarter 2014 groundwater sampling indicate that there continues to be significant improvements to the groundwater conditions following the startup of the IAS-SVE system and since the first quarter (February 2014) groundwater sampling event. For the February 2014 sampling, there were 24 results that were greater than the MTCA CULs; in May 2014 there were 14 results above the MTCA CULs; and in September 2014 there were 13 results above MTCA CULs. For the fourth quarter (December 2014), there were 14 results above MTCA CULs. Overall, concentrations are trending downward as shown in the historical data tables and graphs in Appendix D.

The only on-site wells containing compounds with results above MTCA CULs in December 2014 were MW-07 and MW-09. Wells MW-07 and MW-09 are located just outside of the zone most influenced by the IAS-SVE system and may take longer to respond to the treatment. The only off-site well that was sampled and contained compounds with results above the MTCA CULs in December 2014 was MW-22; although, two off-site monitoring wells (MW-15 and MW-16) that had detected contaminants over MTCA CULs during the RI are not sampled for performance monitoring.

Wells MW-12 and MW-13 showed the greatest drop in concentrations since the startup of the IAS-SVE system with NWTPH-Gx levels going from 8.6 mg/L to <0.10 mg/L and 14 mg/L to <0.10 mg/L, respectively. Benzene in MW-12 went from 79 µg/L to <0.25 µg/L. Toluene, ethylbenzene, total xylenes, and naphthalene in MW-12 and MW-13 also showed significant decreases in concentrations. MW-18 is also showing significant improvements with all results being non-detects or detected much lower than the MTCA CULs. Although slower to respond, MW-09 is starting to show greater improvement as well.


The wells inside of the IAS and SVE system area have significant reductions and are almost meeting performance goals. Refer to Appendix D for summary data tables and trend graphs for comparisons of the March 2010 final RI monitoring event with the 2014 performance monitoring results.

If you have any questions or require any additional information, please contact Douglas Morell at (425) 883-0777.

Sincerely,

GOLDER ASSOCIATES INC.


Jill Lamberts
Project Environmental Scientist


Douglas J. Morell, PhD, LHG
Principal

cc: Roger McCracken, McCracken Group
Tamarah Knapp-Hancock, Scarsella Bros. Inc.
Kevin Collette, Ryan Swanson & Cleveland, PPLC
Doug Rigoni, SeaTac Investments LLC

List of Tables

Table 1	Fourth Quarter 2014 Groundwater Elevation Data, Sea-Tac Development Site, SeaTac, Washington
Table 2	Fourth Quarter 2014 Groundwater Field Parameters and Analytical Data, Sea-Tac Development Site, SeaTac, Washington

List of Figures

Figure 1 Groundwater Monitoring Locations

List of Appendices

Appendix A	Laboratory Analytical Results
Appendix B	Sample Integrity Data Sheets (SIDS)
Appendix C	Data Validation Memorandum
Appendix D	Summary Data Tables and Trend Graphs

JL/DJM/cl

TABLES

Table 1: Fourth Quarter 2014 Groundwater Elevation Data Sea-Tac Development Site, Seatac, Washington

Sample Location ID	Date/Time Sampled	Well Data			Water Levels		
		Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Casing Diameter (inches)	TOC Elevation (feet msl)	Depth to Water (feet btoc)	Groundwater Elevation (feet msl)
MW-01 ^b	12/3/2014 10:18	51.0	41-51	2	361.38	48.73	312.65
MW-05	12/3/2014 9:58	58.0	48-58	2	364.26	53.80	310.46
MW-06 ^{b,c}	12/3/2014 9:53	60.0	50-60	2	369.68	-	-
MW-07 ^b	12/3/2014 10:45	53.5	43.5-53.5	2	358.69	47.95	310.74
MW-08A	12/3/2014 10:34	54.0	44-54	2	359.16	48.46	310.70
MW-09 ^b	12/3/2014 10:03	57.0	47.5-57	2	362.13	51.68	-
MW-10	12/3/2014 10:24	90.0	80-90	2	360.18	49.97	310.21
MW-11	12/3/2014 10:41	57.0	42-57	2	357.53	46.7	310.83
MW-12 ^b	12/3/2014 10:53	67.0	52-67	2	364.83	54.87	309.96
MW-13 ^b	12/3/2014 10:14	65.0	50-65	2	365.42	54.86	310.56
MW-14 ^b	12/3/2014 10:10	65.0	50-65	2	363.76	53.29	310.47
MW-15	12/5/2014 10:50	65.0	50-65	2	364.67	54.13	310.54
MW-16 ^b	12/3/2014 12:54	73.7	64-74	2	377.63	67.11	310.52
MW-17A ^{a,b}	12/5/2014 12:37	95.0	80-95	2	394.00	84.18	309.82
MW-18	12/3/2014 10:29	62.0	47-62	2	360.45	49.83	310.62
MW-19	12/3/2014 10:37	58.0	43-58	2	356.61	45.73	310.88
MW-20	12/3/2014 12:01	113.1	103-113	2	416.61	106.53	310.08
MW-21 ^b	12/3/2014 11:07	109.8	95-110	2	412.85	102.66	310.19
MW-22	12/5/2014 9:53	95.0	80-95	2	393.31	82.98	310.33
MW-23	12/5/2014 10:58	57.5	42.5-57.5	2	354.94	45.22	309.72
PORT-MW-B ^c	12/5/2014 11:22	99.0	79-99	2	400.00	89.71	310.29

Notes:

- Not measured or not available
- feet bgs Feet below ground surface
- feet bmp Feet below measuring point
- feet msl Feet above mean sea level
- TOC Top of casing inside PVC well
- ^a Well not surveyed, elevation estimated.
- ^b IAS/SVE in operation. Blowing may be affecting WLs.
- ^c Top of pump is above water level - not measured.

Table 2: Fourth Quarter 2014 Groundwater Field Parameters and Analytical Data, Sea-Tac Development Site, Seatac, Washington

Sample Location ID	Date/Time Sampled ^c	Field Parameters								Analytical Data									
		TOC Elevation (feet msl)	Depth to Water (feet btoc)	Groundwater Elevation (feet msl)	pH (standard units)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	NWTPH-Gasoline (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	EDB (ethylene dibromide) (µg/L) ^f	N-hexane (µg/L)	Naphthalene (µg/L)	NWTPH-Diesel (mg/L)	NWTPH-Motor Oil (mg/L)
MW-06 ^{b,j}	12/3/2014 13:40	369.7	-	-	6.27	13.6	314	2.14	6.75	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.07	< 0.20	< 0.50	< 0.10	< 0.20
MW-07 ^b	12/4/2014 11:25	358.7	48.0	310.7	6.70	15.7	333	0.20	2.95	26	21	66	200	1507	< 0.07	170	180	11 J	0.32 J
MW-09 ^{b,j}	12/3/2014 15:30	362.1	51.7	-	6.47	13.6	307	0.18	2.37	4.1	14	2.8	76	8.8	< 0.07	< 0.20	44	1.9	< 0.20
MW-12 ^b	12/4/2014 12:20	364.8	54.9	310.0	8.04	15.1	258	11.51	153	< 0.10	< 0.25	< 0.25	0.73	6.0	< 0.07	0.18 J	0.68	0.20	< 0.20
MW-13 ^b	12/4/2014 9:45	365.4	54.9	310.6	7.06	13.9	163	10.10	2.32	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.07	< 0.20	< 0.50	0.31	< 0.20
MW-17A ^{a,b}	12/5/2014 13:20	394.0	84.2	309.8	6.42	11.7	167	1.09	31.8	< 0.10 UJ	0.54 J	< 0.25 UJ	< 0.25 UJ	0.63 J	< 0.07	< 0.20 UJ	2.8	< 0.10	< 0.20
MW-18	12/4/2014 10:35	360.5	49.8	310.6	7.84	14.4	470	10.78	81.6	< 0.10	0.69	< 0.25	0.63	0.93	< 0.07	0.10 J	< 0.50	0.24	< 0.20
MW-19	12/3/2014 14:40	356.6	45.7	310.9	6.82	13.3	380	0.20	0.86	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.07	< 0.20	< 0.50	< 0.10	< 0.20
MW-20	12/3/2014 12:40	416.6	106.5	310.1	6.79	12.4	355	7.67	1.30	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.07	< 0.20	< 0.50	< 0.10	< 0.20
MW-21 ^b	12/3/2014 11:50	412.9	102.7	310.2	6.20	12.3	304	5.54	13.1	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.07	< 0.20	< 0.50	< 0.10	< 0.20
MW-22	12/5/2014 10:30	393.3	83.0	310.3	6.81	12.8	378	0.26	3.71	16	8.7	11	740	1103	< 1.5	7.2	380	0.86 J	< 0.20
MW-22 Duplicate	12/5/2014 10:35	-	-	-	-	-	-	-	-	16	8.9	10	700	1100	< 1.5	7.8	370	0.96 J	< 0.20
PORT-MW-B ^a	12/5/2014 12:00	400.0	89.7	310.3	6.57	12.6	265	4.07	84.1	0.11	< 0.25	< 0.25	1.1	1.0	< 0.07	< 0.20	< 0.50	< 0.10	< 0.20
Clean-up Level			MTCA Method A for Groundwater (unrestricted landuse)							0.8 ^d /1.0 ^e	5 ^g	1000 ^g	700 ^g	1000 ^h	0.01 ^h	NSA	160	0.5	0.5
			MTCA Method B for Groundwater (unrestricted landuse)							NSA	5 ⁱ	640	800	1600	0.022	480	160	NSA	NSA

- Notes:
- feet bgs

Feet below ground surface

-

Not measured or not available
- feet bmp

Feet below measuring point

Result exceeds Clean-up Level (CUL)
- feet msl

Feet above mean sea level

mg/L

Milligrams per liter
- ^a

Well not surveyed, elevation estimated.

µg/L

Micrograms per liter
- ^b

IAS/SVE in operation. Blowing may be affecting WLs.

NTU

Nephelometric Turbidity Unit
- ^c

Water levels collected at various times prior to sampling (see Table 1). Date/time is sampling time.

µmhos/cm

Micromhos per centimeter
- ^d

When benzene is present.

<

Analyte not detected above the reporting limit shown
- ^e

When benzene is not present.

MTCA

Model Toxics Control Act
- ^f

Reported at Method Detection Limit (MDL). The MDL is greater than the MTCA CULs.

MCL

Maximum Containment Level
- ^g

Inclusive of 40 CFR 141.61 Federal Law for drinking water MCLs

NSA

No Standard Available
- ^h

Value is more protective than Federal MCLs.

TOC

Top of casing inside PVC well
- ⁱ

MTCA 173-340-705(5): Adjustments to cleanup levels based on applicable laws.

°C

Degrees Celsius
- ^j

Top of pump is above water level - not measured.

J

The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
- *

Reported at the Limit of Quantitation (LOQ). The LOQ is less than MTCA CULs.

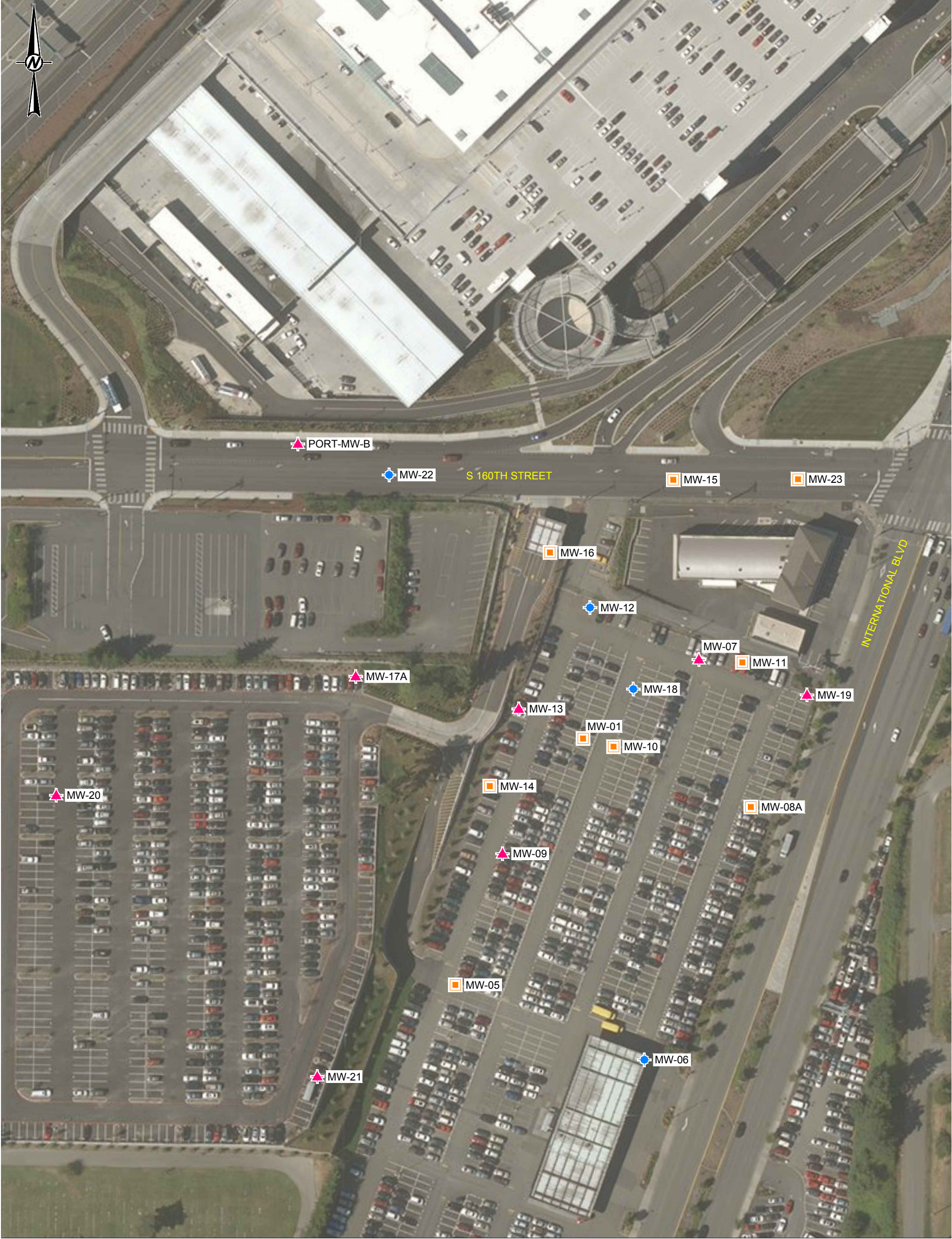
UJ

The constituent was analyzed for, but was not detected above the reported sample quantitation limit; however, the value reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
- J+




The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result may be biased high.
- B

Analyte detected in an associated Method Blank at a concentration greater than one-half of laboratory's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

FIGURE



LEGEND

	MW-14	MONITORING WELL - GROUNDWATER ELEVATIONS MEASURED
	MW-09	MONITORING WELL - COMPLIANCE
	MW-01	MONITORING WELL - NATURAL ATTENUATION

NOTES

1. MONITORING WELL LOCATIONS ARE APPROXIMATE.

REFERENCE

IMAGE COURTESY OF USGS EARTHSTAR GEOGRAPHICS

CLIENT
RIDDELL-WILLIAMS

CONSULTANT



YYYY-MM-DD	2014-04-01
PREPARED	REDMOND
DESIGN	JL
REVIEW	DM
APPROVED	

PROJECT
SEATAC DEVELOPMENT SITE
MASTER PARK LOT C

TITLE
GROUNDWATER MONITORING LOCATIONS

PROJECT No. U+0000
073-93368x06.09A

Rev.
B

FIGURE
1



APPENDIX A
LABORATORY ANALYTICAL RESULTS



Analytical Resources, Incorporated
Analytical Chemists and Consultants

December 22, 2014

Mr. Doug Morell
Golder Associates Inc.
18300 NE Union Hill Road
Suite 200
Redmond, WA 98052

Re: Project: MasterPark Lot C
ARI Job No.: ZN09

Dear Doug:

Please find enclosed Chain-of-Custody record (COC), sample receipt documentation, and the final results for the project referenced above. Analytical Resources, Inc. (ARI) accepted five water samples and trip blanks on December 3, 2014. For further details regarding sample receipt, please refer to the Cooler Receipt Form.


The samples were analyzed NWTPH-Dx, NWTPH-Gx/BETX and VOCs, as requested on the COC. Quality control analyses have been included for your review.

The VOCs CCAL on 12/11/14 is out of control low for n-Hexane. All associated samples were re-analyzed with the exception of the trip blank which had no sample remaining.

There were no other anomalies associated with the analyses.

An electronic copy of this report and all associated raw data will remain electronically on file at ARI. Please feel free to contact me if you have any questions or require any additional information.

Respectfully,
ANALYTICAL RESOURCES, INC.


Kelly Bottem
Client Services Manager
(206) 695-6211

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 2N09	Turn-around Requested: Standard	Page: 1 of 1	
ARI Client Company: Golder	Phone: 425-883-0777	Date: 12/3/2014	Ice Present? 4
Client Contact: D. Morell / J. Lamberts		No. of Coolers: 1	Cooler Temps: 4.3, 4.3



Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

Client Project Name: Master park lot C					Analysis Requested							Notes/Comments		
Client Project #: 073-93368-06-09A					<div style="display: flex; justify-content: space-around;"> <div> NWTPH-Gx BTEx EDB by 8260 report to MDL N-Hexane Naphthalene NWTPH-Dx </div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>							No LL EDB required for this round.		
Sample ID	Date	Time	Matrix	No Containers	NWTPH-Gx	BTEx	EDB by 8260 report to MDL	N-Hexane	Naphthalene	NWTPH-Dx				
Trip Blank - 120314	12/3/14	-	W	2	X	X	X	X	X					
MPLOT- MW-21-120314		1150		7	X	X	X	X	X	X				
MPLOT- MW-24-120314		1240		7	X	X	X	X	X	X				
MPLOT- MW-06-120314		1340		7	X	X	X	X	X	X				
MPLOT- MW-19-120314		1440		7	X	X	X	X	X	X				
MPLOT- MW-09-120314		1530		7	X	X	X	X	X	X				
Comments/Special Instructions *Ecology EIM EDD Pls cc jlamberts@golder.com dmorell@golder.com					Relinquished by (Signature) <i>[Signature]</i>		Received by (Signature) <i>[Signature]</i>		Relinquished by (Signature)		Received by (Signature)			
					Printed Name J. Lamberts		Printed Name Angela Street		Printed Name		Printed Name			
					Company Golder		Company ART		Company		Company			
					Date & Time 12/3/2014 1602		Date & Time 12.3.14 1602		Date & Time		Date & Time			

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



Cooler Receipt Form

ARI Client: Golder

COC No(s): _____ (NA)

Assigned ARI Job No: ZN09

Project Name: Master Park C

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES (NO)

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time: 11:02 4.3

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 9087762

Cooler Accepted by: TS (AV) Date: 12/3/14 Time: 11:02

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES (NO)

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA YES NO

Were all bottles sealed in individual plastic bags? YES NO

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI... NA

Was Sample Split by ARI: (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: TS (AV) Date: 12/4/14 Time: 12:00

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____

Small Air Bubbles ~2mm 	Peabubbles 2-4 mm 	LARGE Air Bubbles > 4 mm 	Small → "sm" (< 2 mm) Peabubbles → "pb" (2 to < 4 mm) Large → "lg" (4 to < 6 mm) Headspace → "hs" (> 6 mm)
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Sample ID Cross Reference Report



ARI Job No: ZN09
Client: Golder Associates
Project Event: 073-93368-06-09A
Project Name: Master Park Lot C

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. Trip Blank-120314	ZN09A	14-26151	Water	12/03/14	12/03/14 16:02
2. MPLOT-MW-21-120314	ZN09B	14-26152	Water	12/03/14 11:50	12/03/14 16:02
3. MPLOT-MW-20-120314	ZN09C	14-26153	Water	12/03/14 12:40	12/03/14 16:02
4. MPLOT-MW-06-120314	ZN09D	14-26154	Water	12/03/14 13:40	12/03/14 16:02
5. MPLOT-MW-19-120314	ZN09E	14-26155	Water	12/03/14 14:40	12/03/14 16:02
6. MPLOT-MW-09-120314	ZN09F	14-26156	Water	12/03/14 15:30	12/03/14 16:02


**ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS**

 NWTPHD by GC/FID
 Extraction Method: SW3510C
 Page 1 of 1

 QC Report No: ZN09-Golder Associates
 Project: Master Park Lot C
 073-93368-06-09A

Matrix: Water

Date Received: 12/03/14

 Data Release Authorized: 
 Reported: 12/22/14

ARI ID	Sample ID	Analysis Date	DF	Range	Result	LOQ	DL
MB-121014 14-26152	Method Blank	12/20/14 FID3B	1.0	Diesel Range Motor Oil Range HC ID o-Terphenyl	< 0.10 U < 0.20 U --- 78.0%	0.10 0.20	0.02 0.04
ZN09B 14-26152	MPLOT-MW-21-120314	12/21/14 FID3B	1.0	Diesel Motor Oil HC ID o-Terphenyl	< 0.10 U < 0.20 U --- 93.3%	0.10 0.20	0.02 0.04
ZN09C 14-26153	MPLOT-MW-20-120314	12/21/14 FID3B	1.0	Diesel Motor Oil HC ID o-Terphenyl	< 0.10 U < 0.20 U --- 83.1%	0.10 0.20	0.02 0.04
ZN09D 14-26154	MPLOT-MW-06-120314	12/21/14 FID3B	1.0	Diesel Motor Oil HC ID o-Terphenyl	< 0.10 U < 0.20 U --- 59.9%	0.10 0.20	0.02 0.04
ZN09E 14-26155	MPLOT-MW-19-120314	12/21/14 FID3B	1.0	Diesel Motor Oil HC ID o-Terphenyl	< 0.10 U < 0.20 U --- 90.7%	0.10 0.20	0.02 0.04
ZN09F 14-26156	MPLOT-MW-09-120314	12/21/14 FID3B	1.0	Diesel Motor Oil HC ID o-Terphenyl	1.9 < 0.20 U DIESEL 76.1%	0.10 0.20	0.02 0.04

Reported in mg/L (ppm)

Diesel quantitation on total peaks in the range from C12 to C24.
 Motor Oil quantitation on total peaks in the range from C24 to C38.
 HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ZN09-Golder Associates
Project: Master Park Lot C
073-93368-06-09A

<u>Client ID</u>	<u>OTER</u>	<u>TOT OUT</u>
MB-121014	78.0%	0
LCS-121014	67.5%	0
LCSD-121014	60.0%	0
MPLOT-MW-21-120314	93.3%	0
MPLOT-MW-20-120314	83.1%	0
MPLOT-MW-06-120314	59.9%	0
MPLOT-MW-19-120314	90.7%	0
MPLOT-MW-09-120314	76.1%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3510C
Log Number Range: 14-26152 to 14-26156

ORGANICS ANALYSIS DATA SHEET

NWTPHD by GC/FID

Page 1 of 1


Sample ID: LCS-121014

LCS/LCSD

Lab Sample ID: LCS-121014

LIMS ID: 14-26152

Matrix: Water

Data Release Authorized: 

Reported: 12/22/14

QC Report No: ZN09-Golder Associates

Project: Master Park Lot C

073-93368-06-09A

Date Sampled: NA

Date Received: NA

Date Extracted LCS/LCSD: 12/10/14

Sample Amount LCS: 500 mL

LCSD: 500 mL

Date Analyzed LCS: 12/20/14 19:30

Final Extract Volume LCS: 1.0 mL

LCSD: 12/20/14 19:55

LCSD: 1.0 mL

Instrument/Analyst LCS: FID3B/JLW

Dilution Factor LCS: 1.00

LCSD: FID3B/JLW

LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2.12	3.00	70.7%	2.40	3.00	80.0%	12.4%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	67.5%	60.0%

Results reported in mg/L

RPD calculated using sample concentrations per SW846.

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

Matrix: Water
Date Received: 12/03/14

ARI Job: ZN09
Project: Master Park Lot C
073-93368-06-09A

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
14-26152-121014MB1	Method Blank	500 mL	1.00 mL	12/10/14
14-26152-121014LCS1	Lab Control	500 mL	1.00 mL	12/10/14
14-26152-121014LCSD1	Lab Control Dup	500 mL	1.00 mL	12/10/14
14-26152-ZN09B	MPLOT-MW-21-120314	500 mL	1.00 mL	12/10/14
14-26153-ZN09C	MPLOT-MW-20-120314	500 mL	1.00 mL	12/10/14
14-26154-ZN09D	MPLOT-MW-06-120314	500 mL	1.00 mL	12/10/14
14-26155-ZN09E	MPLOT-MW-19-120314	500 mL	1.00 mL	12/10/14
14-26156-ZN09F	MPLOT-MW-09-120314	500 mL	1.00 mL	12/10/14

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: Trip Blank-120314

Page 1 of 1

SAMPLE

Lab Sample ID: ZN09A

QC Report No: ZN09-Golder Associates

LIMS ID: 14-26151

Project: Master Park Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: *Ymw*

Date Sampled: 12/03/14

Reported: 12/18/14

Date Received: 12/03/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/12/14 00:52

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	91.6%
d8-Toluene	98.3%
Bromofluorobenzene	99.1%
d4-1,2-Dichlorobenzene	99.2%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPL0TC-MW-21-120314

Page 1 of 1

SAMPLE

Lab Sample ID: ZN09B

QC Report No: ZN09-Golder Associates

LIMS ID: 14-26152

Project: Master Park Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: *[Signature]*

Date Sampled: 12/03/14

Reported: 12/18/14

Date Received: 12/03/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/16/14 16:12

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	95.8%
d8-Toluene	99.1%
Bromofluorobenzene	97.3%
d4-1,2-Dichlorobenzene	101%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C
Page 1 of 1Sample ID: MPL0TC-MW-20-120314
SAMPLE

Lab Sample ID: ZN09C

LIMS ID: 14-26153

Matrix: Water

Data Release Authorized: *MW*

Reported: 12/18/14

QC Report No: ZN09-Golder Associates

Project: Master Park Lot C

073-93368-06-09A

Date Sampled: 12/03/14

Date Received: 12/03/14

Instrument/Analyst: NT3/PKC

Date Analyzed: 12/16/14 16:39

Sample Amount: 10.0 mL

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	95.4%
d8-Toluene	99.0%
Bromofluorobenzene	95.0%
d4-1,2-Dichlorobenzene	101%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPL0TC-MW-06-120314

Page 1 of 1

SAMPLE

Lab Sample ID: ZN09D

QC Report No: ZN09-Golder Associates

LIMS ID: 14-26154

Project: Master Park Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: *MW*

Date Sampled: 12/03/14

Reported: 12/18/14

Date Received: 12/03/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/16/14 17:06

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	96.8%
d8-Toluene	98.9%
Bromofluorobenzene	96.7%
d4-1,2-Dichlorobenzene	99.5%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPL0TC-MW-19-120314

Page 1 of 1

SAMPLE

Lab Sample ID: ZN09E

QC Report No: ZN09-Golder Associates

LIMS ID: 14-26155

Project: Master Park Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: *MW*

Date Sampled: 12/03/14

Reported: 12/18/14

Date Received: 12/03/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/16/14 17:33

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	93.1%
d8-Toluene	100%
Bromofluorobenzene	97.9%
d4-1,2-Dichlorobenzene	99.5%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C
Page 1 of 1

Sample ID: MPL0TC-MW-09-120314
SAMPLE

Lab Sample ID: ZN09F

LIMS ID: 14-26156

Matrix: Water

Data Release Authorized: *MW*

Reported: 12/18/14

QC Report No: ZN09-Golder Associates

Project: Master Park Lot C

073-93368-06-09A

Date Sampled: 12/03/14

Date Received: 12/03/14

Instrument/Analyst: NT3/PKC

Date Analyzed: 12/16/14 18:01

Sample Amount: 10.0 mL

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	44
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	100%
d8-Toluene	102%
Bromofluorobenzene	100%
d4-1,2-Dichlorobenzene	98.2%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C
Page 1 of 1Sample ID: MB-121114A
METHOD BLANK

Lab Sample ID: MB-121114A

LIMS ID: 14-26151

Matrix: Water

Data Release Authorized: *mm*

Reported: 12/18/14

QC Report No: ZN09-Golder Associates

Project: Master Park Lot C

073-93368-06-09A

Date Sampled: NA

Date Received: NA

Instrument/Analyst: NT3/PKC

Date Analyzed: 12/11/14 23:57

Sample Amount: 10.0 mL

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	93.1%
d8-Toluene	97.6%
Bromofluorobenzene	98.9%
d4-1,2-Dichlorobenzene	99.8%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MB-121614A

Page 1 of 1

METHOD BLANK

Lab Sample ID: MB-121614A

QC Report No: ZN09-Golder Associates

LIMS ID: 14-26152

Project: Master Park Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: *mm*

Date Sampled: NA

Reported: 12/18/14

Date Received: NA

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/16/14 12:49

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	96.5%
d8-Toluene	100%
Bromofluorobenzene	98.6%
d4-1,2-Dichlorobenzene	98.7%

VOA SURROGATE RECOVERY SUMMARY



Matrix: Water

QC Report No: ZN09-Golder Associates
Project: Master Park Lot C
073-93368-06-09A

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MB-121114A	Method Blank	10	93.1%	97.6%	98.9%	99.8%	0
LCS-121114A	Lab Control	10	89.5%	99.1%	99.7%	99.9%	0
LCSD-121114A	Lab Control Dup	10	90.2%	99.0%	97.7%	101%	0
ZN09A	Trip Blank-120314	10	91.6%	98.3%	99.1%	99.2%	0
MB-121614A	Method Blank	10	96.5%	100%	98.6%	98.7%	0
LCS-121614A	Lab Control	10	94.0%	98.9%	99.4%	102%	0
LCSD-121614A	Lab Control Dup	10	96.8%	99.4%	98.1%	98.1%	0
ZN09B	MPLOT-MW-21-120314	10	95.8%	99.1%	97.3%	101%	0
ZN09C	MPLOT-MW-20-120314	10	95.4%	99.0%	95.0%	101%	0
ZN09D	MPLOT-MW-06-120314	10	96.8%	98.9%	96.7%	99.5%	0
ZN09E	MPLOT-MW-19-120314	10	93.1%	100%	97.9%	99.5%	0
ZN09F	MPLOT-MW-09-120314	10	100%	102%	100%	98.2%	0

LCS/MB LIMITS

QC LIMITS

SW8260C

(DCE) = d4-1,2-Dichloroethane	(80-120)	(80-120)
(TOL) = d8-Toluene	(80-120)	(80-120)
(BFB) = Bromofluorobenzene	(80-120)	(80-120)
(DCB) = d4-1,2-Dichlorobenzene	(80-120)	(80-120)

Prep Method: SW5030B
Log Number Range: 14-26151 to 14-26156

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C
Page 1 of 1

Sample ID: LCS-121114A

LAB CONTROL SAMPLE

Lab Sample ID: LCS-121114A

LIMS ID: 14-26151

Matrix: Water

Data Release Authorized: *MW*

Reported: 12/18/14

QC Report No: ZN09-Golder Associates

Project: Master Park Lot C

073-93368-06-09A

Date Sampled: NA

Date Received: NA

Instrument/Analyst LCS: NT3/PKC

LCSD: NT3/PKC

Date Analyzed LCS: 12/11/14 22:35

LCSD: 12/11/14 23:02

Sample Amount LCS: 10.0 mL

LCSD: 10.0 mL

Purge Volume LCS: 10.0 mL

LCSD: 10.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
1,2-Dibromoethane	10.0	10.0	100%	9.98	10.0	99.8%	0.2%
Naphthalene	9.10	10.0	91.0%	9.80	10.0	98.0%	7.4%
Hexane	6.48 Q	10.0	64.8%	6.75 Q	10.0	67.5%	4.1%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	89.5%	90.2%
d8-Toluene	99.1%	99.0%
Bromofluorobenzene	99.7%	97.7%
d4-1,2-Dichlorobenzene	99.9%	101%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C
Page 1 of 1

Sample ID: LCS-121614A

LAB CONTROL SAMPLE

Lab Sample ID: LCS-121614A

LIMS ID: 14-26152

Matrix: Water

Data Release Authorized: *MM*

Reported: 12/18/14

QC Report No: ZN09-Golder Associates

Project: Master Park Lot C

073-93368-06-09A

Date Sampled: NA

Date Received: NA

Instrument/Analyst LCS: NT3/PKC

LCSD: NT3/PKC

Date Analyzed LCS: 12/16/14 11:55

LCSD: 12/16/14 12:22

Sample Amount LCS: 10.0 mL

LCSD: 10.0 mL

Purge Volume LCS: 10.0 mL

LCSD: 10.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
1,2-Dibromoethane	9.44	10.0	94.4%	8.71	10.0	87.1%	8.0%
Naphthalene	10.2	10.0	102%	9.26	10.0	92.6%	9.7%
Hexane	8.54	10.0	85.4%	8.31	10.0	83.1%	2.7%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	94.0%	96.8%
d8-Toluene	98.9%	99.4%
Bromofluorobenzene	99.4%	98.1%
d4-1,2-Dichlorobenzene	102%	98.1%

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1

Sample ID: Trip Blank-120314
SAMPLE

Lab Sample ID: ZN09A

LIMS ID: 14-26151

Matrix: Water

Data Release Authorized: *AB*

Reported: 12/08/14

QC Report No: ZN09-Golder Associates

Project: Master Park Lot C

Event: 073-93368-06-09A

Date Sampled: 12/03/14

Date Received: 12/03/14

Date Analyzed: 12/05/14 12:09

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	< 0.50 U
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	101%
Bromobenzene	96.5%

Gasoline Surrogate Recovery

Trifluorotoluene	100%
Bromobenzene	95.1%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1

Sample ID: MPlotC-MW-21-120314
SAMPLE

Lab Sample ID: ZN09B

LIMS ID: 14-26152

Matrix: Water

Data Release Authorized:

Reported: 12/08/14

QC Report No: ZN09-Golder Associates

Project: Master Park Lot C

Event: 073-93368-06-09A

Date Sampled: 12/03/14

Date Received: 12/03/14

Date Analyzed: 12/05/14 13:33

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	< 0.50 U
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	98.5%
Bromobenzene	97.2%

Gasoline Surrogate Recovery

Trifluorotoluene	98.6%
Bromobenzene	94.3%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1




Sample ID: MPlotC-MW-20-120314

SAMPLE

Lab Sample ID: ZN09C

LIMS ID: 14-26153

Matrix: Water

Data Release Authorized: 

Reported: 12/08/14

QC Report No: ZN09-Golder Associates

Project: Master Park Lot C

Event: 073-93368-06-09A

Date Sampled: 12/03/14

Date Received: 12/03/14

Date Analyzed: 12/05/14 14:07

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	< 0.50 U
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	97.6%
Bromobenzene	95.7%

Gasoline Surrogate Recovery

Trifluorotoluene	100%
Bromobenzene	96.0%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1


Sample ID: MPlotC-MW-06-120314

SAMPLE

Lab Sample ID: ZN09D

LIMS ID: 14-26154

Matrix: Water

Data Release Authorized: 

Reported: 12/08/14

QC Report No: ZN09-Golder Associates

Project: Master Park Lot C

Event: 073-93368-06-09A

Date Sampled: 12/03/14

Date Received: 12/03/14

Date Analyzed: 12/05/14 14:35

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	< 0.50 U
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	101%
Bromobenzene	95.8%

Gasoline Surrogate Recovery

Trifluorotoluene	98.6%
Bromobenzene	96.0%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1


Sample ID: MPlotC-MW-19-120314

SAMPLE

Lab Sample ID: ZN09E

LIMS ID: 14-26155

Matrix: Water

Data Release Authorized: 

Reported: 12/08/14

QC Report No: ZN09-Golder Associates

Project: Master Park Lot C

Event: 073-93368-06-09A

Date Sampled: 12/03/14

Date Received: 12/03/14

Date Analyzed: 12/05/14 15:59

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	< 0.50 U
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	98.6%
Bromobenzene	96.9%

Gasoline Surrogate Recovery

Trifluorotoluene	101%
Bromobenzene	98.1%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG
Page 1 of 1



Sample ID: MPLOTG-MW-09-120314
SAMPLE

Lab Sample ID: ZN09F
LIMS ID: 14-26156
Matrix: Water
Data Release Authorized: *AB*
Reported: 12/08/14

QC Report No: ZN09-Golder Associates
Project: Master Park Lot C
Event: 073-93368-06-09A
Date Sampled: 12/03/14
Date Received: 12/03/14

Date Analyzed: 12/05/14 16:28
Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL
Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	14
108-88-3	Toluene	0.014	0.25	2.8
100-41-4	Ethylbenzene	0.028	0.25	76
179601-23-1	m,p-Xylene	0.022	0.50	8.2
95-47-6	o-Xylene	0.027	0.25	0.56

Gasoline Range Hydrocarbons	0.057	0.10	4.1	GAS ID GAS
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BETX Surrogate Recovery

Trifluorotoluene	104%
Bromobenzene	97.4%

Gasoline Surrogate Recovery

Trifluorotoluene	105%
Bromobenzene	102%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)


GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG
 Page 1 of 1

Sample ID: MB-120514
METHOD BLANK

Lab Sample ID: MB-120514
 LIMS ID: 14-26151
 Matrix: Water
 Data Release Authorized: 
 Reported: 12/08/14

QC Report No: ZN09-Golder Associates
 Project: Master Park Lot C
 Event: 073-93368-06-09A
 Date Sampled: NA
 Date Received: NA

Date Analyzed: 12/05/14 10:03
 Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL
 Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	< 0.50 U
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	99.5%
Bromobenzene	97.7%

Gasoline Surrogate Recovery

Trifluorotoluene	98.8%
Bromobenzene	95.9%

BETX values reported in µg/L (ppb)
 Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
 GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

BETX WATER SURROGATE RECOVERY SUMMARY

ARI Job: ZN09
Matrix: Water

QC Report No: ZN09-Golder Associates
Project: Master Park Lot C
Event: 073-93368-06-09A

Client ID	TFT	BBZ	TOT OUT
MB-120514	99.5%	97.7%	0
LCS-120514	97.7%	95.8%	0
LCSD-120514	97.3%	96.6%	0
Trip Blank-120314	101%	96.5%	0
MPLOT-MW-21-12031	98.5%	97.2%	0
MPLOT-MW-20-12031	97.6%	95.7%	0
MPLOT-MW-06-12031	101%	95.8%	0
MPLOT-MW-19-12031	98.6%	96.9%	0
MPLOT-MW-09-12031	104%	97.4%	0

		LCS/MB LIMITS	QC LIMITS
(TFT) = Trifluorotoluene	(5 mL PV)	(80-120)	(80-120)
(TFT) = Trifluorotoluene	(15 mL PV)	(79-120)	(80-120)
(BBZ) = Bromobenzene	(5 mL PV)	(80-120)	(77-120)
(BBZ) = Bromobenzene	(15 mL PV)	(79-120)	(80-120)

Log Number Range: 14-26151 to 14-26156

TPHG WATER SURROGATE RECOVERY SUMMARY

ARI Job: ZN09
Matrix: Water

QC Report No: ZN09-Golder Associates
Project: Master Park Lot C
Event: 073-93368-06-09A

Client ID	TFT	BBZ	TOT OUT
MB-120514	98.8%	95.9%	0
LCS-120514	101%	97.6%	0
LCSD-120514	97.1%	95.9%	0
Trip Blank-120314	100%	95.1%	0
MPLOT-MW-21-12031	98.6%	94.3%	0
MPLOT-MW-20-12031	100%	96.0%	0
MPLOT-MW-06-12031	98.6%	96.0%	0
MPLOT-MW-19-12031	101%	98.1%	0
MPLOT-MW-09-12031	105%	102%	0

	LCS/MB LIMITS	QC LIMITS
(TFT) = Trifluorotoluene	(80-120)	(80-120)
(BBZ) = Bromobenzene	(80-120)	(80-120)

Log Number Range: 14-26151 to 14-26156

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
Page 1 of 1



Sample ID: LCS-120514
LAB CONTROL SAMPLE

Lab Sample ID: LCS-120514
LIMS ID: 14-26151
Matrix: Water
Data Release Authorized:
Reported: 12/08/14

QC Report No: ZN09-Golder Associates
Project: Master Park Lot C
Event: 073-93368-06-09A
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 12/05/14 09:07
LCSD: 12/05/14 09:35
Instrument/Analyst LCS: PID3/ML
LCSD: PID3/ML

Purge Volume: 5.0 mL
Dilution Factor LCS: 1.0
LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	7.64	7.00	109%	7.80	7.00	111%	2.1%
Toluene	53.0	49.4	107%	54.2	49.4	110%	2.2%
Ethylbenzene	13.9	12.3	113%	14.0	12.3	114%	0.7%
m,p-Xylene	45.7	40.0	114%	47.0	40.0	118%	2.8%
o-Xylene	16.1	15.3	105%	16.0	15.3	105%	0.6%

Reported in µg/L (ppb)


RPD calculated using sample concentrations per SW846.

BETX Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	97.7%	97.3%
Bromobenzene	95.8%	96.6%

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
 Page 1 of 1

Sample ID: LCS-120514
LAB CONTROL SAMPLE

Lab Sample ID: LCS-120514
 LIMS ID: 14-26151
 Matrix: Water
 Data Release Authorized: 
 Reported: 12/08/14

QC Report No: ZN09-Golder Associates
 Project: Master Park Lot C
 Event: 073-93368-06-09A
 Date Sampled: NA
 Date Received: NA

Date Analyzed LCS: 12/05/14 09:07
 LCSD: 12/05/14 09:35
 Instrument/Analyst LCS: PID3/ML
 LCSD: PID3/ML

Purge Volume: 5.0 mL
 Dilution Factor LCS: 1.0
 LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	1.12	1.00	112%	1.11	1.00	111%	0.9%

Reported in mg/L (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	101%	97.1%
Bromobenzene	97.6%	95.9%



Analytical Resources, Incorporated
Analytical Chemists and Consultants

December 22, 2014

Mr. Doug Morell
Golder Associates Inc.
18300 NE Union Hill Road
Suite 200
Redmond, WA 98052

Re: Project: MasterPark Lot C
ARI Job No.: ZN25

Dear Doug:

Please find enclosed Chain-of-Custody record (COC), sample receipt documentation, and the final results for the project referenced above. Analytical Resources, Inc. (ARI) accepted five water samples and trip blanks on December 4, 2014. For further details regarding sample receipt, please refer to the Cooler Receipt Form.

The samples were analyzed NWTPH-Dx, NWTPH-Gx/BETX and VOCs, as requested on the COC. Quality control analyses have been included for your review.

The VOCs surrogate DCE is out of control high in sample MP-LOT-07-120414. The sample was re-analyzed with surrogate recoveries in control and both sets of data have been included for your review.

The NWTPH-Gx/ BTEX BCAL failed low for the 12/8/14 analysis. All associated samples were re-analyzed on 12/10/14 with the exception of the trip which was consumed during the original analysis.

There were no other anomalies associated with the analyses.

An electronic copy of this report and all associated raw data will remain electronically on file at ARI. Please feel free to contact me if you have any questions or require any additional information.

Respectfully,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
(206) 695-6211

Chain of Custody Record & Laboratory Analysis Request

Please analyze under existing MSA b/wm Golder + AKI

ARI Assigned Number: 2N25	Turn-around Requested: Standard
ARI Client Company: Golder	Phone: 425-883-0777
Client Contact: D. Morell / J. Lamberts	
Client Project Name: Masterpark Lot C	
Client Project #: 073-93368-06-09A	Samplers: Lamberts

Page: 1	of 1
Date: 12/4/2014	Ice Present? Y
No. of Coolers: 1	Cooler Temps: 4.3



Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested						Notes/Comments
					NWTPH-GX BTEx	EDB by 8260 * report to MDL	N-Hexane	Naphthalene	NWTPH-DX		
Trip Blank - 120414	12/4/14	-	W	2	X	X	X	X			
MPLDTC-MW-13-120414	1	0945	W	7	X	X	X	X	X		
MPLDTC-MW-18-120414	1	1035	W	7	X	X	X	X	X		
MPLDTC-MW-07-120414	1	1125	W	7	X	X	X	X	X		
MPLDTC-FB-120414	1	1100	W	7	X	X	X	X	X		
MPLDTC-MW-12-120414	1	1220	W	7	X	X	X	X	X		
Comments/Special Instructions * Ecology EIM EDD Pls cc J Lamberts + D. Morell.	Relinquished by (Signature) <i>[Signature]</i> Printed Name: J Lamberts Company: Golder Date & Time: 12/4/2014 1312		Received by (Signature) <i>[Signature]</i> Printed Name: Jennifer Miller Company: AKI Date & Time: 12/4/14 1312		Relinquished by: (Signature) _____ Printed Name: _____ Company: _____ Date & Time: _____		Received by (Signature) _____ Printed Name: _____ Company: _____ Date & Time: _____				

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Sample ID Cross Reference Report



ARI Job No: ZN25
Client: Golder Associates
Project Event: 673-93368-06-09A
Project Name: Masterpark Lot C

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. TripBlank-120414	ZN25A	14-26288	Water	12/04/14	12/04/14 13:12
2. MPLOT-MW-13-120414	ZN25B	14-26289	Water	12/04/14 09:45	12/04/14 13:12
3. MPLOT-MW-18-120414	ZN25C	14-26290	Water	12/04/14 10:35	12/04/14 13:12
4. MPLOT-MW-07-120414	ZN25D	14-26291	Water	12/04/14 11:25	12/04/14 13:12
5. MPLOT-FB-120414	ZN25E	14-26292	Water	12/04/14 11:00	12/04/14 13:12
6. MPLOT-MW-12-120414	ZN25F	14-26293	Water	12/04/14 12:20	12/04/14 13:12



Cooler Receipt Form

ARI Client: Golder

Project Name: Masterpark

COC No(s): _____ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: ZN25

Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES NO

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2 0-6.0 °C for chemistry)

Time: _____ 4.3

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 90877952

Cooler Accepted by: JM Date: 2/4/14 Time: 1312

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA YES NO

Were all bottles sealed in individual plastic bags? YES NO

Did all bottles arrive in good condition (unbroken)? ... YES NO

Were all bottle labels complete and legible? ... YES NO

Did the number of containers listed on COC match with the number of containers received? ... YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI..... NA 1/25/14

Was Sample Split by ARI : NA YES Date/Time: _____ Equipment: _____ Split by: _____

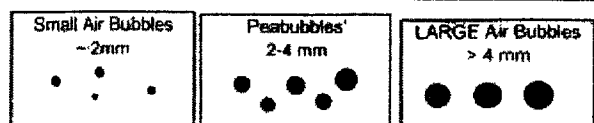
Samples Logged by: TL Date: 2-5-14 Time: 800

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____



Small → "sm" (< 2 mm)
Peabubbles → "pb" (2 to < 4 mm)
Large → "lg" (4 to < 6 mm)
Headspace → "hs" (> 6 mm)

Sample ID: TripBlank-120414
SAMPLE

Lab Sample ID: ZN25A

LIMS ID: 14-26288

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/22/14

QC Report No: ZN25-Golder Associates

Project: Masterpark Lot C

Event: 673-93368-06-09A

Date Sampled: 12/04/14

Date Received: 12/04/14

Date Analyzed: 12/08/14 19:06

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	< 0.50 U
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	96.2%
Bromobenzene	93.4%

Gasoline Surrogate Recovery

Trifluorotoluene	97.2%
Bromobenzene	95.6%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG
Page 1 of 1



Sample ID: MPlotC-MW-13-120414
SAMPLE

Lab Sample ID: ZN25B
LIMS ID: 14-26289
Matrix: Water
Data Release Authorized: *W*
Reported: 12/22/14

QC Report No: ZN25-Golder Associates
Project: Masterpark Lot C
Event: 673-93368-06-09A
Date Sampled: 12/04/14
Date Received: 12/04/14

Date Analyzed: 12/10/14 13:02
Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL
Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	< 0.50 U
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	97.4%
Bromobenzene	94.4%

Gasoline Surrogate Recovery

Trifluorotoluene	94.9%
Bromobenzene	93.0%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG
Page 1 of 1



Sample ID: MPLOTG-MW-18-120414
SAMPLE

Lab Sample ID: ZN25C
LIMS ID: 14-26290
Matrix: Water
Data Release Authorized: *AD*
Reported: 12/22/14

QC Report No: ZN25-Golder Associates
Project: Masterpark Lot C
Event: 673-93368-06-09A
Date Sampled: 12/04/14
Date Received: 12/04/14

Date Analyzed: 12/10/14 13:30
Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL
Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	0.69
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	0.63
179601-23-1	m,p-Xylene	0.022	0.50	0.93
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	93.9%
Bromobenzene	86.4%

Gasoline Surrogate Recovery


Trifluorotoluene	91.3%
Bromobenzene	92.2%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Sample ID: MPLOTG-MW-07-120414
SAMPLE

Lab Sample ID: ZN25D
LIMS ID: 14-26291
Matrix: Water
Data Release Authorized: 
Reported: 12/22/14

QC Report No: ZN25-Golder Associates
Project: Masterpark Lot C
Event: 673-93368-06-09A
Date Sampled: 12/04/14
Date Received: 12/04/14

Date Analyzed: 12/10/14 13:58
Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL
Dilution Factor: 20.0

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.56	5.0	21
108-88-3	Toluene	0.28	5.0	66
100-41-4	Ethylbenzene	0.56	5.0	200
179601-23-1	m,p-Xylene	0.44	10	1,500
95-47-6	o-Xylene	0.54	5.0	7.2

Gasoline Range Hydrocarbons	1.1	2.0	26	GAS ID GAS
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BETX Surrogate Recovery

Trifluorotoluene	94.4%
Bromobenzene	90.4%

Gasoline Surrogate Recovery

Trifluorotoluene	98.5%
Bromobenzene	96.7%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1



Sample ID: MPLOTG-FB-120414

SAMPLE

Lab Sample ID: ZN25E

LIMS ID: 14-26292

Matrix: Water

Data Release Authorized: *W*

Reported: 12/22/14

QC Report No: ZN25-Golder Associates

Project: Masterpark Lot C

Event: 673-93368-06-09A

Date Sampled: 12/04/14

Date Received: 12/04/14

Date Analyzed: 12/10/14 14:27

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	< 0.50 U
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	93.1%
Bromobenzene	90.6%

Gasoline Surrogate Recovery

Trifluorotoluene	97.3%
Bromobenzene	96.1%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1



Sample ID: MPlotC-MW-12-120414

SAMPLE

Lab Sample ID: ZN25F

LIMS ID: 14-26293

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/22/14

QC Report No: ZN25-Golder Associates

Project: Masterpark Lot C

Event: 673-93368-06-09A

Date Sampled: 12/04/14

Date Received: 12/04/14

Date Analyzed: 12/10/14 14:55

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	0.73
179601-23-1	m,p-Xylene	0.022	0.50	4.5
95-47-6	o-Xylene	0.027	0.25	1.5

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U
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GAS ID

BETX Surrogate Recovery

Trifluorotoluene	96.5%
Bromobenzene	94.9%

Gasoline Surrogate Recovery

Trifluorotoluene	96.8%
Bromobenzene	95.6%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1



Sample ID: MB-121014

METHOD BLANK

Lab Sample ID: MB-121014

LIMS ID: 14-26289

Matrix: Water

Data Release Authorized: [Signature]

Reported: 12/22/14

QC Report No: ZN25-Golder Associates

Project: Masterpark Lot C

Event: 673-93368-06-09A

Date Sampled: NA

Date Received: NA

Date Analyzed: 12/10/14 12:06

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	< 0.50 U
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	94.4%
Bromobenzene	88.7%

Gasoline Surrogate Recovery

Trifluorotoluene	95.6%
Bromobenzene	93.8%

BETX values reported in µg/L (ppb)

Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG
Page 1 of 1



Sample ID: MB-120814
METHOD BLANK

Lab Sample ID: MB-120814
LIMS ID: 14-26288
Matrix: Water
Data Release Authorized: *SW*
Reported: 12/22/14

QC Report No: ZN25-Golder Associates
Project: Masterpark Lot C
Event: 673-93368-06-09A
Date Sampled: NA
Date Received: NA

Date Analyzed: 12/08/14 10:33
Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL
Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	< 0.50 U
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	95.9%
Bromobenzene	93.8%

Gasoline Surrogate Recovery

Trifluorotoluene	97.0%
Bromobenzene	94.5%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

BETX WATER SURROGATE RECOVERY SUMMARY

ARI Job: ZN25
Matrix: Water

QC Report No: ZN25-Golder Associates
Project: Masterpark Lot C
Event: 673-93368-06-09A

Client ID	TFT	BBZ	TOT OUT
MB-120814	95.9%	93.8%	0
LCS-120814	95.4%	93.2%	0
LCSD-120814	95.8%	93.8%	0
TripBlank-120414	96.2%	93.4%	0
MB-121014	94.4%	88.7%	0
LCS-121014	92.2%	89.4%	0
LCSD-121014	91.6%	91.7%	0
MPLOTTC-MW-13-12041	97.4%	94.4%	0
MPLOTTC-MW-18-12041	93.9%	86.4%	0
MPLOTTC-MW-07-12041	94.4%	90.4%	0
MPLOTTC-FB-120414	93.1%	90.6%	0
MPLOTTC-MW-12-12041	96.5%	94.9%	0

		LCS/MB LIMITS	QC LIMITS
(TFT) = Trifluorotoluene	(5 mL PV)	(80-120)	(80-120)
(TFT) = Trifluorotoluene	(15 mL PV)	(79-120)	(80-120)
(BBZ) = Bromobenzene	(5 mL PV)	(80-120)	(77-120)
(BBZ) = Bromobenzene	(15 mL PV)	(79-120)	(80-120)

Log Number Range: 14-26288 to 14-26293

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

Page 1 of 1

Sample ID: LCS-120814

LAB CONTROL SAMPLE

Lab Sample ID: LCS-120814

LIMS ID: 14-26288

Matrix: Water

Data Release Authorized: *MW*

Reported: 12/22/14

QC Report No: ZN25-Golder Associates

Project: Masterpark Lot C

Event: 6/3-93368-06-09A

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 12/08/14 09:36

LCSD: 12/08/14 10:04

Instrument/Analyst LCS: PID3/ML

LCSD: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor LCS: 1.0

LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	6.82	7.00	97.4%	7.19	7.00	103%	5.3%
Toluene	46.4	49.4	93.9%	49.6	49.4	100%	6.7%
Ethylbenzene	12.1	12.3	98.4%	13.0	12.3	106%	7.2%
m,p-Xylene	40.3	40.0	101%	42.9	40.0	107%	6.3%
o-Xylene	14.3	15.3	93.5%	15.4	15.3	101%	7.4%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

BETX Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	95.4%	95.8%
Bromobenzene	93.2%	93.8%

ORGANICS ANALYSIS DATA SHEET

TPHG by Method NWTPHG

Page 1 of 1

Sample ID: LCS-120814

LAB CONTROL SAMPLE

Lab Sample ID: LCS-120814

LIMS ID: 14-26288

Matrix: Water

Data Release Authorized: *W*

Reported: 12/22/14

QC Report No: ZN25-Golder Associates

Project: Masterpark Lot C

Event: 673-93368-06-09A

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 12/08/14 09:36

LCSD: 12/08/14 10:04

Instrument/Analyst LCS: PID3/ML

LCSD: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor LCS: 1.0

LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	1.02	1.00	102%	1.03	1.00	103%	1.0%

Reported in mg/L (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	97.8%	98.3%
Bromobenzene	95.7%	95.5%

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

Page 1 of 1

Sample ID: LCS-121014

LAB CONTROL SAMPLE

Lab Sample ID: LCS-121014

LIMS ID: 14-26289

Matrix: Water

Data Release Authorized: *MM*

Reported: 12/22/14

QC Report No: ZN25-Golder Associates

Project: Masterpark Lot C

Event: 673-93368-06-09A

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 12/10/14 09:59

Purge Volume: 5.0 mL

LCSD: 12/10/14 10:28

Instrument/Analyst LCS: PID3/ML

Dilution Factor LCS: 1.0

LCSD: PID3/ML

LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	7.45	7.00	106%	7.57	7.00	108%	1.6%
Toluene	52.0	49.4	105%	51.2	49.4	104%	1.6%
Ethylbenzene	13.3	12.3	108%	13.4	12.3	109%	0.7%
m,p-Xylene	44.4	40.0	111%	44.2	40.0	110%	0.5%
o-Xylene	15.7	15.3	103%	16.0	15.3	105%	1.9%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

BETX Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	92.2%	91.6%
Bromobenzene	89.4%	91.7%

ORGANICS ANALYSIS DATA SHEET

TPHG by Method NWTPHG

Page 1 of 1

Sample ID: LCS-121014

LAB CONTROL SAMPLE

Lab Sample ID: LCS-121014

LIMS ID: 14-26289

Matrix: Water

Data Release Authorized: *W*

Reported: 12/22/14

QC Report No: ZN25-Golder Associates

Project: Masterpark Lot C

Event: 673-93368-06-09A

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 12/10/14 09:59

Purge Volume: 5.0 mL

LCSD: 12/10/14 10:28

Instrument/Analyst LCS: PID3/ML

Dilution Factor LCS: 1.0

LCSD: PID3/ML

LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	1.15	1.00	115%	1.10	1.00	110%	4.4%

Reported in mg/L (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	97.4%	97.3%
Bromobenzene	92.9%	94.9%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: TripBlank-120414

Page 1 of 1

SAMPLE

Lab Sample ID: ZN25A


QC Report No: ZN25-Golder Associates

LIMS ID: 14-26288

Project: Masterpark Lot C

Matrix: Water

673-93368-06-09A

Data Release Authorized: 

Date Sampled: 12/04/14

Reported: 12/19/14

Date Received: 12/04/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/12/14 13:02

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	89.6%
d8-Toluene	97.3%
Bromofluorobenzene	97.2%
d4-1,2-Dichlorobenzene	102%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPLOTG-MW-13-120414

Page 1 of 1

SAMPLE

Lab Sample ID: ZN25B

LIMS ID: 14-26289

Matrix: Water

Data Release Authorized: 

Reported: 12/19/14

QC Report No: ZN25-Golder Associates

Project: Masterpark Lot C

673-93368-06-09A

Date Sampled: 12/04/14

Date Received: 12/04/14

Instrument/Analyst: NT3/PKC

Date Analyzed: 12/12/14 16:43

Sample Amount: 10.0 mL

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	92.8%
d8-Toluene	96.8%
Bromofluorobenzene	96.5%
d4-1,2-Dichlorobenzene	99.1%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPLOTG-MW-18-120414

Page 1 of 1

SAMPLE

Lab Sample ID: ZN25C


QC Report No: ZN25-Golder Associates

LIMS ID: 14-26290

Project: Masterpark Lot C

Matrix: Water

673-93368-06-09A

Data Release Authorized: 

Date Sampled: 12/04/14

Reported: 12/19/14

Date Received: 12/04/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/12/14 17:10

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	0.10 J

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	91.8%
d8-Toluene	95.9%
Bromofluorobenzene	95.5%
d4-1,2-Dichlorobenzene	98.8%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPlotC-MW-07-120414

Page 1 of 1

SAMPLE

Lab Sample ID: ZN25D


QC Report No: ZN25-Golder Associates

LIMS ID: 14-26291

Project: Masterpark Lot C

Matrix: Water

673-93368-06-09A

Data Release Authorized: 

Date Sampled: 12/04/14

Reported: 12/19/14

Date Received: 12/04/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/12/14 17:37

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	20
110-54-3	Hexane	0.10	0.20	150 E

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	127%
d8-Toluene	103%
Bromofluorobenzene	106%
d4-1,2-Dichlorobenzene	98.6%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPLOTG-MW-07-120414

Page 1 of 1

DILUTION

Lab Sample ID: ZN25D


QC Report No: ZN25-Golder Associates

LIMS ID: 14-26291

Project: Masterpark Lot C

Matrix: Water

673-93368-06-09A

Data Release Authorized: 

Date Sampled: 12/04/14

Reported: 12/19/14

Date Received: 12/04/14

Instrument/Analyst: NT3/PKC

Sample Amount: 0.50 mL

Date Analyzed: 12/16/14 13:24

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	1.5	4.0	< 4.0 U
91-20-3	Naphthalene	2.4	10	180
110-54-3	Hexane	1.9	4.0	170

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	97.8%
d8-Toluene	98.7%
Bromofluorobenzene	97.8%
d4-1,2-Dichlorobenzene	98.8%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Page 1 of 1


Sample ID: MPLOTB-FB-120414

SAMPLE

Lab Sample ID: ZN25E

LIMS ID: 14-26292

Matrix: Water

Data Release Authorized: 

Reported: 12/19/14

QC Report No: ZN25-Golder Associates

Project: Masterpark Lot C

673-93368-06-09A

Date Sampled: 12/04/14

Date Received: 12/04/14

Instrument/Analyst: NT3/PKC

Date Analyzed: 12/16/14 13:51

Sample Amount: 10.0 mL

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	0.11 J

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	97.4%
d8-Toluene	99.5%
Bromofluorobenzene	98.0%
d4-1,2-Dichlorobenzene	99.6%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPLOTG-MW-12-120414

Page 1 of 1

SAMPLE

Lab Sample ID: ZN25F


QC Report No: ZN25-Golder Associates

LIMS ID: 14-26293

Project: Masterpark Lot C

Matrix: Water

673-93368-06-09A

Data Release Authorized: 

Date Sampled: 12/04/14

Reported: 12/19/14

Date Received: 12/04/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/12/14 18:32

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	0.68
110-54-3	Hexane	0.10	0.20	0.18 J

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	90.0%
d8-Toluene	98.1%
Bromofluorobenzene	96.3%
d4-1,2-Dichlorobenzene	101%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MB-121214A


Page 1 of 1

METHOD BLANK

Lab Sample ID: MB-121214A

LIMS ID: 14-26288

Matrix: Water

Data Release Authorized: 

Reported: 12/19/14

QC Report No: ZN25-Golder Associates

Project: Masterpark Lot C

673-93368-06-09A

Date Sampled: NA

Date Received: NA

Instrument/Analyst: NT3/PKC

Date Analyzed: 12/12/14 12:35

Sample Amount: 10.0 mL

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	90.6%
d8-Toluene	97.4%
Bromofluorobenzene	97.0%
d4-1,2-Dichlorobenzene	101%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MB-121614A

Page 1 of 1

METHOD BLANK

Lab Sample ID: MB-121614A


QC Report No: ZN25-Golder Associates

LIMS ID: 14-26292

Project: Masterpark Lot C

Matrix: Water

673-93368-06-09A

Data Release Authorized: 

Date Sampled: NA

Reported: 12/19/14

Date Received: NA

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/16/14 12:49

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	96.5%
d8-Toluene	100%
Bromofluorobenzene	98.6%
d4-1,2-Dichlorobenzene	98.7%

VOA SURROGATE RECOVERY SUMMARY



Matrix: Water

QC Report No: ZN25-Golder Associates
Project: Masterpark Lot C
673-93368-06-09A

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MB-121214A	Method Blank	10	90.6%	97.4%	97.0%	101%	0
LCS-121214A	Lab Control	10	88.9%	99.0%	98.8%	100%	0
LCSD-121214A	Lab Control Dup	10	90.0%	97.2%	97.2%	99.0%	0
ZN25A	TripBlank-120414	10	89.6%	97.3%	97.2%	102%	0
ZN25B	MPLOTC-MW-13-120414	10	92.8%	96.8%	96.5%	99.1%	0
ZN25C	MPLOTC-MW-18-120414	10	91.8%	95.9%	95.5%	98.8%	0
ZN25D	MPLOTC-MW-07-120414	10	127%*	103%	106%	98.6%	1
ZN25DDL	MPLOTC-MW-07-120414	10	97.8%	98.7%	97.8%	98.8%	0
MB-121614A	Method Blank	10	96.5%	100%	98.6%	98.7%	0
LCS-121614A	Lab Control	10	94.0%	98.9%	99.4%	102%	0
LCSD-121614A	Lab Control Dup	10	96.8%	99.4%	98.1%	98.1%	0
ZN25E	MPLOTC-FB-120414	10	97.4%	99.5%	98.0%	99.6%	0
ZN25F	MPLOTC-MW-12-120414	10	90.0%	98.1%	96.3%	101%	0

LCS/MB LIMITS

QC LIMITS

SW8260C

(DCE) = d4-1,2-Dichloroethane
(TOL) = d8-Toluene
(BFB) = Bromofluorobenzene
(DCB) = d4-1,2-Dichlorobenzene(80-120)
(80-120)
(80-120)
(80-120)(80-120)
(80-120)
(80-120)
(80-120)Prep Method: SW5030B
Log Number Range: 14-26288 to 14-26293

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: LCS-121214A

Page 1 of 1

LAB CONTROL SAMPLE

Lab Sample ID: LCS-121214A


QC Report No: ZN25-Golder Associates

LIMS ID: 14-26288

Project: Masterpark Lot C

Matrix: Water

673-93368-06-09A

Data Release Authorized: 

Date Sampled: NA

Reported: 12/19/14

Date Received: NA

Instrument/Analyst LCS: NT3/PKC

Sample Amount LCS: 10.0 mL

LCSD: NT3/PKC

LCSD: 10.0 mL

Date Analyzed LCS: 12/12/14 11:40

Purge Volume LCS: 10.0 mL

LCSD: 12/12/14 12:07

LCSD: 10.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
1,2-Dibromoethane	9.39	10.0	93.9%	9.08	10.0	90.8%	3.4%
Naphthalene	9.24	10.0	92.4%	9.54	10.0	95.4%	3.2%
Hexane	8.10	10.0	81.0%	7.77	10.0	77.7%	4.2%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	88.9%	90.0%
d8-Toluene	99.0%	97.2%
Bromofluorobenzene	98.8%	97.2%
d4-1,2-Dichlorobenzene	100%	99.0%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: LCS-121614A

Page 1 of 1

LAB CONTROL SAMPLE

Lab Sample ID: LCS-121614A

LIMS ID: 14-26292

Matrix: Water

Data Release Authorized: *B*

Reported: 12/19/14

QC Report No: ZN25-Golder Associates

Project: Masterpark Lot C

673-93368-06-09A

Date Sampled: NA

Date Received: NA

Instrument/Analyst LCS: NT3/PKC

LCSD: NT3/PKC

Date Analyzed LCS: 12/16/14 11:55

LCSD: 12/16/14 12:22

Sample Amount LCS: 10.0 mL

LCSD: 10.0 mL

Purge Volume LCS: 10.0 mL

LCSD: 10.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
1,2-Dibromoethane	9.44	10.0	94.4%	8.71	10.0	87.1%	8.0%
Naphthalene	10.2	10.0	102%	9.26	10.0	92.6%	9.7%
Hexane	8.54	10.0	85.4%	8.31	10.0	83.1%	2.7%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.


Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	94.0%	96.8%
d8-Toluene	98.9%	99.4%
Bromofluorobenzene	99.4%	98.1%
d4-1,2-Dichlorobenzene	102%	98.1%

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONSNWT PHD by GC/FID
Extraction Method: SW3510C
Page 1 of 1QC Report No: ZN25-Golder Associates
Project: Masterpark Lot C
673-93368-06-09A

Matrix: Water

Date Received: 12/04/14

Data Release Authorized: 
Reported: 12/22/14

ARI ID	Sample ID	Analysis Date	DF	Range	Result	LOQ	DL
MB-121114 14-26289	Method Blank	12/18/14 FID3B	1.0	Diesel Range Motor Oil Range HC ID o-Terphenyl	< 0.10 U < 0.20 U --- 75.4%	0.10 0.20	0.02 0.04
ZN25B 14-26289	MPLUTC-MW-13-120414	12/18/14 FID3B	1.0	Diesel Motor Oil HC ID o-Terphenyl	0.31 < 0.20 U DIESEL 64.3%	0.10 0.20	0.02 0.04
ZN25C 14-26290	MPLUTC-MW-18-120414	12/18/14 FID3B	1.0	Diesel Motor Oil HC ID o-Terphenyl	0.24 < 0.20 U DIESEL 65.7%	0.10 0.20	0.02 0.04
ZN25D 14-26291	MPLUTC-MW-07-120414	12/18/14 FID3B	1.0	Diesel Motor Oil HC ID o-Terphenyl	11 E 0.32 DRO/RRO 92.5%	0.10 0.20	0.02 0.04
ZN25D DL 14-26291	MPLUTC-MW-07-120414	12/19/14 FID3B	10	Diesel Motor Oil HC ID o-Terphenyl	11 < 2.0 U DRO 85.6%	1.0 2.0	0.22 0.44
ZN25E 14-26292	MPLUTC-FB-120414	12/18/14 FID3B	1.0	Diesel Motor Oil HC ID o-Terphenyl	< 0.10 U < 0.20 U --- 93.3%	0.10 0.20	0.02 0.04
ZN25F 14-26293	MPLUTC-MW-12-120414	12/18/14 FID3B	1.0	Diesel Motor Oil HC ID o-Terphenyl	0.20 < 0.20 U DIESEL 73.6%	0.10 0.20	0.02 0.04

Reported in mg/L (ppm)

Diesel quantitation on total peaks in the range from C12 to C24.
Motor Oil quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in
ranges are not identifiable.

TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ZN25-Golder Associates
Project: Masterpark Lot C
673-93368-06-09A

<u>Client ID</u>	<u>OTER</u>	<u>TOT OUT</u>
MB-121114	75.4%	0
LCS-121114	82.2%	0
LCSD-121114	68.6%	0
MPLOT-MW-13-120414	64.3%	0
MPLOT-MW-18-120414	65.7%	0
MPLOT-MW-07-120414	92.5%	0
MPLOT-MW-07-120414 DL	85.6%	0
MPLOT-FB-120414	93.3%	0
MPLOT-MW-12-120414	73.6%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3510C
Log Number Range: 14-26289 to 14-26293

ORGANICS ANALYSIS DATA SHEET

NWTPHD by GC/FID

Page 1 of 1

Sample ID: LCS-121114

LCS/LCSD

Lab Sample ID: LCS-121114

LIMS ID: 14-26289

Matrix: Water

Data Release Authorized: *MW*

Reported: 12/22/14

QC Report No: ZN25-Golder Associates

Project: Masterpark Lot C

673-93368-06-09A

Date Sampled: NA

Date Received: NA

Date Extracted LCS/LCSD: 12/11/14

Sample Amount LCS: 500 mL

LCSD: 500 mL

Date Analyzed LCS: 12/18/14 17:03

Final Extract Volume LCS: 1.0 mL

LCSD: 12/18/14 17:28

LCSD: 1.0 mL

Instrument/Analyst LCS: FID3B/JLW

Dilution Factor LCS: 1.00

LCSD: FID3B/JLW

LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2.34	3.00	78.0%	2.54	3.00	84.7%	8.2%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	82.2%	68.6%

Results reported in mg/L

RPD calculated using sample concentrations per SW846.

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

Matrix: Water
Date Received: 12/04/14

ARI Job: ZN25
Project: Masterpark Lot C
673-93368-06-09A

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
14-26289-121114MB1	Method Blank	500 mL	1.00 mL	12/11/14
14-26289-121114LCS1	Lab Control	500 mL	1.00 mL	12/11/14
14-26289-121114LCSD1	Lab Control Dup	500 mL	1.00 mL	12/11/14
14-26289-ZN25B	MPLOT-MW-13-120414	500 mL	1.00 mL	12/11/14
14-26290-ZN25C	MPLOT-MW-18-120414	500 mL	1.00 mL	12/11/14
14-26291-ZN25D	MPLOT-MW-07-120414	500 mL	1.00 mL	12/11/14
14-26292-ZN25E	MPLOT-FB-120414	500 mL	1.00 mL	12/11/14
14-26293-ZN25F	MPLOT-MW-12-120414	500 mL	1.00 mL	12/11/14



Analytical Resources, Incorporated
Analytical Chemists and Consultants

December 29, 2014

Mr. Doug Morell
Golder Associates Inc.
18300 NE Union Hill Road
Suite 200
Redmond, WA 98052

Re: Project: MasterPark Lot C
ARI Job No.: ZN59

Dear Doug:

Please find enclosed Chain-of-Custody record (COC), sample receipt documentation, and the final results for the project referenced above. Analytical Resources, Inc. (ARI) accepted four water samples and a trip blank on December 5, 2014. For further details regarding sample receipt, please refer to the Cooler Receipt Form.

The samples were analyzed NWTPH-Dx, NWTPH-Gx/BETX and VOCs, as requested on the COC. Quality control analyses have been included for your review.

The VOCs method blank on 12/16/14 contained naphthalene. All associated samples that contain analyte have been flagged with a "B" qualifier.

The VOCs sample PORT-MW-B-120514 was re-analyzed for possible naphthalene carry over. Both sets of data have been included for your review.

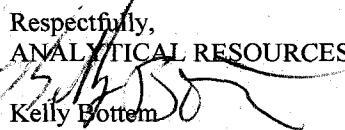
The VOCs matrix spike for MPLOT-MW-17A-120514 is out of control low for hexane.

The NWTPH-Gx plus BTEX matrix spike and matrix spike duplicate are out of control low for several analytes.

The NWTPH-Dx samples were originally extracted within the method recommended holding time. The extraction method blank vial cracked and the samples required a re-extraction outside of the method recommended holding time.

There were no other anomalies associated with the analyses.

An electronic copy of this report and all associated raw data will remain electronically on file at ARI. Please feel free to contact me if you have any questions or require any additional information.

Respectfully,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
(206) 695-6211

Chain of Custody Record & Laboratory Analysis Request

Please analyze under existing MSA btm Boulder & ARZ



Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

ARI Assigned Number:		Turn-around Requested:			Page: 1 of 1	
ARI Client Company: Golder		Phone: 425 883 0772			Date: 12/5/2014	Ice Present? Y
Client Contact: D. Morell / J. Lamberts					No. of Coolers:	Cooler Temps: 4.7
Client Project Name: Masterpark Lot C					Analysis Requested	
Client Project #: 073-93368-06-09A		Samplers: Lamberts, Rydecki			NWTPH-GW	Notes/Comments
Sample ID	Date	Time	Matrix	No. Containers	EDB by 8260 report to MDL	
Trip Blank-120514	12/5/14	-	W	2	X	
MPLOT-C-MW-22-120514		1030 1000		7	X	
MPLOT-C-MW-22-DUP-120514		1035		7	X	
PORT-MW-B-120514		1200		7	X	
MPLOT-C-MW-17A-120514		1320		21	X	MS/MSD
END OF SAMPLING EVENT						
Comments/Special Instructions x Ecology Elm EDD Pls cc J. Lamberts + D. Morell		Relinquished by: (Signature) J. Lamberts Printed Name: J. Lamberts Company: Golder Date & Time: 12/5/2014 1555		Received by: (Signature) Taylor Anderson Printed Name: Taylor Anderson Company: ARZ Date & Time: 12-5-14 1535		Received by: (Signature) Printed Name: Company: Date & Time:

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

7159:0000



Cooler Receipt Form

ARI Client: Colder

Project Name: Master park Lot C

COC No(s): _____ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 2058

Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES NO

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time: _____

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 908-7792

Cooler Accepted by: TS Date: 2-5-14 Time: 1535

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA YES NO

Were all bottles sealed in individual plastic bags? YES NO

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI NA 11.23.14

Was Sample Split by ARI : NA YES Date/Time: _____ Equipment: _____ Split by: _____


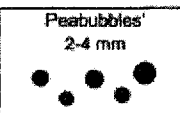
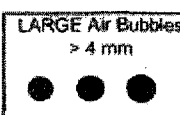
Samples Logged by: TS Date: 12-6-14 Time: 1002

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____

			Small → "sm" (< 2 mm)
			Peabubbles → "pb" (2 to < 4 mm)
			Large → "lg" (4 to < 6 mm)
			Headspace → "hs" (> 6 mm)

Sample ID Cross Reference Report



ARI Job No: ZN59
Client: Golder Associates
Project Event: 073-93368-06-09A
Project Name: Masterpark Lot C

Sample ID	ARI	ARI	Matrix	Sample Date/Time	VTSR
	Lab ID	LIMS ID			
1. TripBlank-120514	ZN59A	14-26436	Water	12/05/14	12/05/14 15:35
2. MPLOT-MW-22-120514	ZN59B	14-26437	Water	12/05/14 10:30	12/05/14 15:35
3. MPLOT-MW-22-DUP-120514	ZN59C	14-26438	Water	12/05/14 10:35	12/05/14 15:35
4. PORT-MW-B-120514	ZN59D	14-26439	Water	12/05/14 12:00	12/05/14 15:35
5. MPLOT-MW-17A-120514	ZN59E	14-26440	Water	12/05/14 13:20	12/05/14 15:35

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: TripBlank-120514

Page 1 of 1

SAMPLE

Lab Sample ID: ZN59A

QC Report No: ZN59-Golder Associates

LIMS ID: 14-26436

Project: Masterpark Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: *WVW*

Date Sampled: 12/05/14

Reported: 12/29/14

Date Received: 12/05/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/12/14 13:29

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	92.1%
d8-Toluene	97.5%
Bromofluorobenzene	96.8%
d4-1,2-Dichlorobenzene	98.6%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPL0TC-MW-22-120514

Page 1 of 1

SAMPLE

Lab Sample ID: ZN59B

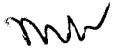
QC Report No: ZN59-Golder Associates

LIMS ID: 14-26437

Project: Masterpark Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: 

Date Sampled: 12/05/14

Reported: 12/29/14

Date Received: 12/05/14

Instrument/Analyst: NT3/PKC

Sample Amount: 0.50 mL

Date Analyzed: 12/12/14 19:56

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	1.5	4.0	< 4.0 U
91-20-3	Naphthalene	2.4	10	380
110-54-3	Hexane	1.9	4.0	7.2

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	90.6%
d8-Toluene	97.9%
Bromofluorobenzene	96.0%
d4-1,2-Dichlorobenzene	99.9%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPL0TC-MW-22-DUP-120514

Page 1 of 1

SAMPLE

Lab Sample ID: ZN59C

QC Report No: ZN59-Golder Associates

LIMS ID: 14-26438

Project: Masterpark Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: *MW*

Date Sampled: 12/05/14

Reported: 12/29/14

Date Received: 12/05/14

Instrument/Analyst: NT3/PKC

Sample Amount: 0.50 mL

Date Analyzed: 12/12/14 20:26

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	1.5	4.0	< 4.0 U
91-20-3	Naphthalene	2.4	10	370
110-54-3	Hexane	1.9	4.0	7.8

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	90.0%
d8-Toluene	98.6%
Bromofluorobenzene	97.4%
d4-1,2-Dichlorobenzene	100%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C
Page 1 of 1Sample ID: PORT-MW-B-120514
SAMPLE

Lab Sample ID: ZN59D

LIMS ID: 14-26439

Matrix: Water

Data Release Authorized: *mm*

Reported: 12/29/14

QC Report No: ZN59-Golder Associates

Project: Masterpark Lot C

073-93368-06-09A

Date Sampled: 12/05/14

Date Received: 12/05/14

Instrument/Analyst: NT3/PKC

Date Analyzed: 12/12/14 18:59

Sample Amount: 10.0 mL

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	0.63
110-54-3	Hexane	0.10	0.20	0.13 J

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	88.9%
d8-Toluene	97.4%
Bromofluorobenzene	95.2%
d4-1,2-Dichlorobenzene	101%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: PORT-MW-B-120514

Page 1 of 1

REANALYSIS

Lab Sample ID: ZN59D

QC Report No: ZN59-Golder Associates

LIMS ID: 14-26439

Project: Masterpark Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: *MW*

Date Sampled: 12/05/14

Reported: 12/29/14

Date Received: 12/05/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/16/14 14:18

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	0.47 J
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	94.5%
d8-Toluene	98.2%
Bromofluorobenzene	95.0%
d4-1,2-Dichlorobenzene	102%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPL0TC-MW-17A-120514

Page 1 of 1

SAMPLE

Lab Sample ID: ZN59E

QC Report No: ZN59-Golder Associates

LIMS ID: 14-26440

Project: Masterpark Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: *MW*

Date Sampled: 12/05/14

Reported: 12/29/14

Date Received: 12/05/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/12/14 19:27

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	2.8
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	90.7%
d8-Toluene	98.5%
Bromofluorobenzene	97.2%
d4-1,2-Dichlorobenzene	102%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPlotC-MW-17A-120514

Page 1 of 1

MATRIX SPIKE

Lab Sample ID: ZN59E

QC Report No: ZN59-Golder Associates

LIMS ID: 14-26440

Project: Masterpark Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: *mw*

Date Sampled: 12/05/14

Reported: 12/29/14

Date Received: 12/05/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/12/14 20:53

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	---
91-20-3	Naphthalene	0.12	0.50	---
110-54-3	Hexane	0.10	0.20	---

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	90.7%
d8-Toluene	98.2%
Bromofluorobenzene	96.6%
d4-1,2-Dichlorobenzene	100%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPLOTG-MW-17A-120514

Page 1 of 1

MATRIX SPIKE DUPLICATE

Lab Sample ID: ZN59E

QC Report No: ZN59-Golder Associates

LIMS ID: 14-26440

Project: Masterpark Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: *MM*

Date Sampled: 12/05/14

Reported: 12/29/14

Date Received: 12/05/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/12/14 21:20

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	---
91-20-3	Naphthalene	0.12	0.50	---
110-54-3	Hexane	0.10	0.20	---

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	89.6%
d8-Toluene	97.3%
Bromofluorobenzene	97.6%
d4-1,2-Dichlorobenzene	101%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C
Page 1 of 1Sample ID: MB-121214A
METHOD BLANK

Lab Sample ID: MB-121214A

LIMS ID: 14-26436

Matrix: Water

Data Release Authorized: *mw*

Reported: 12/29/14

QC Report No: ZN59-Golder Associates

Project: Masterpark Lot C

073-93368-06-09A

Date Sampled: NA

Date Received: NA

Instrument/Analyst: NT3/PKC

Date Analyzed: 12/12/14 12:35

Sample Amount: 10.0 mL

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	90.6%
d8-Toluene	97.4%
Bromofluorobenzene	97.0%
d4-1,2-Dichlorobenzene	101%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MB-121614A

Page 1 of 1

METHOD BLANK

Lab Sample ID: MB-121614A

QC Report No: ZN59-Golder Associates

LIMS ID: 14-26439

Project: Masterpark Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: *mm*

Date Sampled: NA

Reported: 12/29/14

Date Received: NA

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/16/14 12:49

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	0.21 J
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	96.5%
d8-Toluene	100%
Bromofluorobenzene	98.6%
d4-1,2-Dichlorobenzene	98.7%

VOA SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ZN59-Golder Associates
Project: Masterpark Lot C
073-93368-06-09A

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MB-121214A	Method Blank	10	90.6%	97.4%	97.0%	101%	0
LCS-121214A	Lab Control	10	88.9%	99.0%	98.8%	100%	0
LCSD-121214A	Lab Control Dup	10	90.0%	97.2%	97.2%	99.0%	0
ZN59A	TripBlank-120514	10	92.1%	97.5%	96.8%	98.6%	0
ZN59B	MPLOTC-MW-22-120514	10	90.6%	97.9%	96.0%	99.9%	0
ZN59C	MPLOTC-MW-22-DUP-120514	10	90.0%	98.6%	97.4%	100%	0
MB-121614A	Method Blank	10	96.5%	100%	98.6%	98.7%	0
LCS-121614A	Lab Control	10	94.0%	98.9%	99.4%	102%	0
LCSD-121614A	Lab Control Dup	10	96.8%	99.4%	98.1%	98.1%	0
ZN59D	PORT-MW-B-120514	10	88.9%	97.4%	95.2%	101%	0
ZN59DRE	PORT-MW-B-120514	10	94.5%	98.2%	95.0%	102%	0
ZN59E	MPLOTC-MW-17A-120514	10	90.7%	98.5%	97.2%	102%	0
ZN59EMS	MPLOTC-MW-17A-120514	10	90.7%	98.2%	96.6%	100%	0
ZN59EMSD	MPLOTC-MW-17A-120514	10	89.6%	97.3%	97.6%	101%	0

LCS/MB LIMITS

QC LIMITS

SW8260C

(DCE) = d4-1,2-Dichloroethane	(80-120)	(80-120)
(TOL) = d8-Toluene	(80-120)	(80-120)
(BFB) = Bromofluorobenzene	(80-120)	(80-120)
(DCB) = d4-1,2-Dichlorobenzene	(80-120)	(80-120)

Prep Method: SW5030B
Log Number Range: 14-26436 to 14-26440

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: LCS-121214A

Page 1 of 1

LAB CONTROL SAMPLE

Lab Sample ID: LCS-121214A

QC Report No: ZN59-Golder Associates

LIMS ID: 14-26436

Project: Masterpark Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: *WW*

Date Sampled: NA

Reported: 12/29/14

Date Received: NA

Instrument/Analyst LCS: NT3/PKC

Sample Amount LCS: 10.0 mL

LCSD: NT3/PKC

LCSD: 10.0 mL

Date Analyzed LCS: 12/12/14 11:40

Purge Volume LCS: 10.0 mL

LCSD: 12/12/14 12:07

LCSD: 10.0 mL

Analyte	LCS	Spike	LCS	LCSD	Spike	LCS	RPD
		Added-LCS	Recovery		Added-LCSD	Recovery	
1,2-Dibromoethane	9.39	10.0	93.9%	9.08	10.0	90.8%	3.4%
Naphthalene	9.24	10.0	92.4%	9.54	10.0	95.4%	3.2%
Hexane	8.10	10.0	81.0%	7.77	10.0	77.7%	4.2%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	88.9%	90.0%
d8-Toluene	99.0%	97.2%
Bromofluorobenzene	98.8%	97.2%
d4-1,2-Dichlorobenzene	100%	99.0%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: LCS-121614A

Page 1 of 1

LAB CONTROL SAMPLE

Lab Sample ID: LCS-121614A

QC Report No: ZN59-Golder Associates

LIMS ID: 14-26439

Project: Masterpark Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: *mm*

Date Sampled: NA

Reported: 12/29/14

Date Received: NA

Instrument/Analyst LCS: NT3/PKC

Sample Amount LCS: 10.0 mL

LCSD: NT3/PKC

LCSD: 10.0 mL

Date Analyzed LCS: 12/16/14 11:55

Purge Volume LCS: 10.0 mL

LCSD: 12/16/14 12:22

LCSD: 10.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
1,2-Dibromoethane	9.44	10.0	94.4%	8.71	10.0	87.1%	8.0%
Naphthalene	10.2	10.0	102%	9.26	10.0	92.6%	9.7%
Hexane	8.54	10.0	85.4%	8.31	10.0	83.1%	2.7%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	94.0%	96.8%
d8-Toluene	98.9%	99.4%
Bromofluorobenzene	99.4%	98.1%
d4-1,2-Dichlorobenzene	102%	98.1%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C
Page 1 of 1

Sample ID: MPLOTG-MW-17A-120514
MATRIX SPIKE

Lab Sample ID: ZN59E

LIMS ID: 14-26440

Matrix: Water

Data Release Authorized: *mm*

Reported: 12/29/14

QC Report No: ZN59-Golder Associates

Project: Masterpark Lot C

073-93368-06-09A

Date Sampled: 12/05/14

Date Received: 12/05/14

Instrument/Analyst MS: NT3/PKC

MSD: NT3/PKC

Date Analyzed MS: 12/12/14 20:53

MSD: 12/12/14 21:20

Sample Amount MS: 10.0 mL

MSD: 10.0 mL

Purge Volume MS: 10.0 mL

MSD: 10.0 mL

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
1,2-Dibromoethane	< 0.20 U	9.40	10.0	94.0%	9.18	10.0	91.8%	2.4%
Naphthalene	2.8	13.6	10.0	108%	13.5	10.0	107%	0.7%
Hexane	< 0.20 U	6.56	10.0	65.6%	7.43	10.0	74.3%	12.4%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: TripBlank-120514
SAMPLE

Lab Sample ID: ZN59A
LIMS ID: 14-26436
Matrix: Water
Data Release Authorized:
Reported: 12/22/14

QC Report No: ZN59-Golder Associates
Project: Masterpark Lot C
Event: 073-93368-06-09A
Date Sampled: 12/05/14
Date Received: 12/05/14

Date Analyzed: 12/15/14 13:17
Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL
Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	< 0.50 U
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	104%
Bromobenzene	104%

Gasoline Surrogate Recovery

Trifluorotoluene	108%
Bromobenzene	107%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.
Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1

Sample ID: MPLOTG-MW-22-120514

SAMPLE

Lab Sample ID: ZN59B

LIMS ID: 14-26437

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/22/14

QC Report No: ZN59-Golder Associates

Project: Masterpark Lot C

Event: 073-93368-06-09A

Date Sampled: 12/05/14

Date Received: 12/05/14

Date Analyzed: 12/15/14 13:45

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	8.4
108-88-3	Toluene	0.014	0.25	10
100-41-4	Ethylbenzene	0.028	0.25	590
179601-23-1	m,p-Xylene	0.022	0.50	980
95-47-6	o-Xylene	0.027	0.25	3.4

Gasoline Range Hydrocarbons 0.057 0.10 15 E GAS ID GAS

BETX Surrogate Recovery

Trifluorotoluene	107%
Bromobenzene	101%

Gasoline Surrogate Recovery

Trifluorotoluene	111%
Bromobenzene	101%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG
Page 1 of 1



Sample ID: MPlotC-MW-22-120514
DILUTION

Lab Sample ID: ZN59B
LIMS ID: 14-26437
Matrix: Water
Data Release Authorized: *[Signature]*
Reported: 12/22/14

QC Report No: ZN59-Golder Associates
Project: Masterpark Lot C
Event: 073-93368-06-09A
Date Sampled: 12/05/14
Date Received: 12/05/14

Date Analyzed: 12/18/14 16:12
Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL
Dilution Factor: 10.0

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.28	2.5	8.7
108-88-3	Toluene	0.14	2.5	11
100-41-4	Ethylbenzene	0.28	2.5	740
179601-23-1	m,p-Xylene	0.22	5.0	1,100
95-47-6	o-Xylene	0.27	2.5	< 2.5 U

Gasoline Range Hydrocarbons	0.057	1.0	16
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GAS ID
GAS

BETX Surrogate Recovery

Trifluorotoluene	98.8%
Bromobenzene	99.2%

Gasoline Surrogate Recovery

Trifluorotoluene	106%
Bromobenzene	104%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)


GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG
Page 1 of 1



Sample ID: MPLOT-MW-22-DUP-120514
SAMPLE

Lab Sample ID: ZN59C
LIMS ID: 14-26438
Matrix: Water
Data Release Authorized: 
Reported: 12/22/14

QC Report No: ZN59-Golder Associates
Project: Masterpark Lot C
Event: 073-93368-06-09A
Date Sampled: 12/05/14
Date Received: 12/05/14

Date Analyzed: 12/15/14 14:12
Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL
Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	8.6
108-88-3	Toluene	0.014	0.25	10
100-41-4	Ethylbenzene	0.028	0.25	590
179601-23-1	m,p-Xylene	0.022	0.50	970
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	15 E	GAS ID GAS
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BETX Surrogate Recovery

Trifluorotoluene	109%
Bromobenzene	108%

Gasoline Surrogate Recovery

Trifluorotoluene	113%
Bromobenzene	101%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG
Page 1 of 1

ANALYTICAL
RESOURCES
INCORPORATED

Sample ID: MPLOT-MW-22-DUP-120514
DILUTION

Lab Sample ID: ZN59C

LIMS ID: 14-26438

Matrix: Water

Data Release Authorized: *AS*

Reported: 12/22/14

QC Report No: ZN59-Golder Associates

Project: Masterpark Lot C

Event: 073-93368-06-09A

Date Sampled: 12/05/14

Date Received: 12/05/14

Date Analyzed: 12/18/14 16:40

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 10.0

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.28	2.5	8.9
108-88-3	Toluene	0.14	2.5	9.7
100-41-4	Ethylbenzene	0.28	2.5	700
179601-23-1	m,p-Xylene	0.22	5.0	1,100
95-47-6	o-Xylene	0.27	2.5	< 2.5 U

Gasoline Range Hydrocarbons

0.057

1.0

16

GAS ID

GAS

BETX Surrogate Recovery

Trifluorotoluene	103%
Bromobenzene	106%

Gasoline Surrogate Recovery

Trifluorotoluene	112%
Bromobenzene	111%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: PORT-MW-B-120514
SAMPLE

Lab Sample ID: ZN59D

LIMS ID: 14-26439

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/22/14

QC Report No: ZN59-Golder Associates

Project: Masterpark Lot C

Event: 073-93368-06-09A

Date Sampled: 12/05/14

Date Received: 12/05/14

Date Analyzed: 12/15/14 14:40

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	1.1
179601-23-1	m,p-Xylene	0.022	0.50	1.0
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons

0.057

0.10

0.11

GAS ID
GAS

BETX Surrogate Recovery

Trifluorotoluene	107%
Bromobenzene	108%

Gasoline Surrogate Recovery

Trifluorotoluene	109%
Bromobenzene	110%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1



Sample ID: MPLOTG-MW-17A-120514

SAMPLE

Lab Sample ID: ZN59E

LIMS ID: 14-26440

Matrix: Water

Data Release Authorized: *AS*

Reported: 12/22/14

QC Report No: ZN59-Golder Associates

Project: Masterpark Lot C

Event: 073-93368-06-09A

Date Sampled: 12/05/14

Date Received: 12/05/14

Date Analyzed: 12/15/14 15:08

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	0.54
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	0.63
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	102%
Bromobenzene	99.5%

Gasoline Surrogate Recovery

Trifluorotoluene	99.3%
Bromobenzene	101%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1

Sample ID: MB-121514

METHOD BLANK

Lab Sample ID: MB-121514

LIMS ID: 14-26437

Matrix: Water

Data Release Authorized: 

Reported: 12/22/14

QC Report No: ZN59-Golder Associates

Project: Masterpark Lot C

Event: 073-93368-06-09A

Date Sampled: NA

Date Received: NA

Date Analyzed: 12/15/14 10:29

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	< 0.50 U
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	108%
Bromobenzene	109%

Gasoline Surrogate Recovery

Trifluorotoluene	106%
Bromobenzene	104%

BETX values reported in µg/L (ppb)

Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1


Sample ID: MB-121814

METHOD BLANK

Lab Sample ID: MB-121814

LIMS ID: 14-26438

Matrix: Water

Data Release Authorized: 

Reported: 12/22/14

QC Report No: ZN59-Golder Associates

Project: Masterpark Lot C

Event: 073-93368-06-09A

Date Sampled: NA

Date Received: NA

Date Analyzed: 12/18/14 08:49

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	< 0.50 U
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	99.7%
Bromobenzene	101%

Gasoline Surrogate Recovery

Trifluorotoluene	106%
Bromobenzene	105%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

BETX WATER SURROGATE RECOVERY SUMMARY

ARI Job: ZN59
Matrix: Water

QC Report No: ZN59-Golder Associates
Project: Masterpark Lot C
Event: 073-93368-06-09A

Client ID	TFT	BBZ	TOT OUT
TripBlank-120514	104%	104%	0
MB-121514	108%	109%	0
LCS-121514	111%	108%	0
LCSD-121514	111%	109%	0
MPLOT-MW-22-12051	107%	101%	0
MPLOT-MW-22-12051 DL	98.8%	99.2%	0
MB-121814	99.7%	101%	0
LCS-121814	109%	108%	0
LCSD-121814	106%	106%	0
MPLOT-MW-22-DUP-1	109%	108%	0
MPLOT-MW-22-DUP-1 DL	103%	106%	0
PORT-MW-B-120514	107%	108%	0
MPLOT-MW-17A-1205	102%	99.5%	0
MPLOT-MW-17A-1205 MS	108%	109%	0
MPLOT-MW-17A-1205 MSD	107%	110%	0

		LCS/MB LIMITS	QC LIMITS
(TFT) = Trifluorotoluene	(5 mL PV)	(80-120)	(80-120)
(TFT) = Trifluorotoluene	(15 mL PV)	(79-120)	(80-120)
(BBZ) = Bromobenzene	(5 mL PV)	(80-120)	(77-120)
(BBZ) = Bromobenzene	(15 mL PV)	(79-120)	(80-120)

Log Number Range: 14-26436 to 14-26440

TPHG WATER SURROGATE RECOVERY SUMMARY

ARI Job: ZN59
Matrix: Water

QC Report No: ZN59-Golder Associates
Project: Masterpark Lot C
Event: 073-93368-06-09A

<u>Client ID</u>	<u>TFT</u>	<u>BBZ</u>	<u>TOT OUT</u>
TripBlank-120514	108%	107%	0
MB-121514	106%	104%	0
LCS-121514	111%	111%	0
LCSD-121514	107%	108%	0
MPLOTC-MW-22-12051	111%	101%	0
MPLOTC-MW-22-12051 DL	106%	104%	0
MB-121814	106%	105%	0
LCS-121814	114%	113%	0
LCSD-121814	111%	110%	0
MPLOTC-MW-22-DUP-1	113%	101%	0
MPLOTC-MW-22-DUP-1 DL	112%	111%	0
PORT-MW-B-120514	109%	110%	0
MPLOTC-MW-17A-1205	99.3%	101%	0
MPLOTC-MW-17A-1205 MS	111%	110%	0
MPLOTC-MW-17A-1205 MSD	111%	108%	0

	LCS/MB LIMITS	QC LIMITS
(TFT) = Trifluorotoluene	(80-120)	(80-120)
(BBZ) = Bromobenzene	(80-120)	(80-120)

Log Number Range: 14-26436 to 14-26440

ORGANICS ANALYSIS DATA SHEET

TPHG by Method NWTPHG

Page 1 of 1


Sample ID: LCS-121514

LAB CONTROL SAMPLE

Lab Sample ID: LCS-121514

LIMS ID: 14-26437

Matrix: Water

Data Release Authorized: 

Reported: 12/22/14

QC Report No: ZN59-Golder Associates

Project: Masterpark Lot C

Event: 073-93368-06-09A

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 12/15/14 09:33

Purge Volume: 5.0 mL

LCSD: 12/15/14 10:01

Instrument/Analyst LCS: PID3/ML

Dilution Factor LCS: 1.0

LCSD: PID3/ML

LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	1.05	1.00	105%	0.98	1.00	98.0%	6.9%

Reported in mg/L (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	111%	107%
Bromobenzene	111%	108%

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

Page 1 of 1

Sample ID: LCS-121514

LAB CONTROL SAMPLE

Lab Sample ID: LCS-121514

LIMS ID: 14-26437

Matrix: Water

Data Release Authorized: *AB*

Reported: 12/22/14

QC Report No: ZN59-Golder Associates

Project: Masterpark Lot C

Event: 073-93368-06-09A

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 12/15/14 09:33

Purge Volume: 5.0 mL

LCSD: 12/15/14 10:01

Instrument/Analyst LCS: PID3/ML

Dilution Factor LCS: 1.0

LCSD: PID3/ML

LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	8.09	7.00	116%	8.00	7.00	114%	1.1%
Toluene	55.5	49.4	112%	55.6	49.4	113%	0.2%
Ethylbenzene	13.4	12.3	109%	13.5	12.3	110%	0.7%
m,p-Xylene	44.8	40.0	112%	44.8	40.0	112%	0.0%
o-Xylene	17.0	15.3	111%	16.7	15.3	109%	1.8%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

BETX Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	111%	111%
Bromobenzene	108%	109%

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
 Page 1 of 1

Sample ID: LCS-121814
LAB CONTROL SAMPLE

Lab Sample ID: LCS-121814
 LIMS ID: 14-26438
 Matrix: Water
 Data Release Authorized: *R*
 Reported: 12/22/14

QC Report No: ZN59-Golder Associates
 Project: Masterpark Lot C
 Event: 073-93368-06-09A
 Date Sampled: NA
 Date Received: NA

Date Analyzed LCS: 12/18/14 07:53
 LCSD: 12/18/14 08:21
 Instrument/Analyst LCS: PID3/ML
 LCSD: PID3/ML
 Purge Volume: 5.0 mL
 Dilution Factor LCS: 1.0
 LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	0.99	1.00	99.0%	0.95	1.00	95.0%	4.1%

Reported in mg/L (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	114%	111%
Bromobenzene	113%	110%

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

Page 1 of 1

Sample ID: LCS-121814

LAB CONTROL SAMPLE

Lab Sample ID: LCS-121814

LIMS ID: 14-26438

Matrix: Water

Data Release Authorized: *AB*

Reported: 12/22/14

QC Report No: ZN59-Golder Associates

Project: Masterpark Lot C

Event: 073-93368-06-09A

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 12/18/14 07:53

Purge Volume: 5.0 mL

LCSD: 12/18/14 08:21

Instrument/Analyst LCS: PID3/ML

Dilution Factor LCS: 1.0

LCSD: PID3/ML

LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	7.11	7.00	102%	6.98	7.00	99.7%	1.8%
Toluene	52.2	49.4	106%	50.9	49.4	103%	2.5%
Ethylbenzene	12.6	12.3	102%	12.3	12.3	100%	2.4%
m,p-Xylene	42.2	40.0	106%	41.0	40.0	102%	2.9%
o-Xylene	15.7	15.3	103%	15.5	15.3	101%	1.3%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

BETX Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	109%	106%
Bromobenzene	108%	106%

ORGANICS ANALYSIS DATA SHEET

TPHG by Method NWTPHG

Page 1 of 1



Sample ID: MPLOTG-MW-17A-120514

MATRIX SPIKE

Lab Sample ID: ZN59E

LIMS ID: 14-26440

Matrix: Water

Data Release Authorized: *AB*

Reported: 12/22/14

QC Report No: ZN59-Golder Associates

Project: Masterpark Lot C

Event: 073-93368-06-09A

Date Sampled: 12/05/14

Date Received: 12/05/14

Date Analyzed MS: 12/15/14 15:36

Purge Volume: 5.0 mL

MSD: 12/15/14 16:04

Instrument/Analyst MS: PID3/ML

Dilution Factor MS: 1.0

MSD: PID3/ML

MSD: 1.0

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Gasoline Range Hydrocarbons < 0.10 U		0.62	1.00	62.0%	0.75	1.00	75.0%	19.0%

Reported in mg/L (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	MS	MSD
Trifluorotoluene	111%	111%
Bromobenzene	110%	108%

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
Page 1 of 1



Sample ID: MPLOT-C-MW-17A-120514
MATRIX SPIKE

Lab Sample ID: ZN59E

LIMS ID: 14-26440

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/22/14

QC Report No: ZN59-Golder Associates

Project: Masterpark Lot C

Event: 073-93368-06-09A

Date Sampled: 12/05/14

Date Received: 12/05/14

Date Analyzed MS: 12/15/14 15:36

MSD: 12/15/14 16:04

Instrument/Analyst MS: PID3/ML

MSD: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor MS: 1.0

MSD: 1.0

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Benzene	0.54	5.02	7.00	64.0%	6.10	7.00	79.4%	19.4%
Toluene	< 0.25 U	31.9	49.4	64.6%	39.4	49.4	79.8%	21.0%
Ethylbenzene	< 0.25 U	7.99	12.3	65.0%	9.37	12.3	76.2%	15.9%
m,p-Xylene	0.63	26.4	40.0	64.4%	31.1	40.0	76.2%	16.3%
o-Xylene	< 0.25 U	9.96	15.3	65.1%	12.0	15.3	78.4%	18.6%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

BETX Surrogate Recovery

	MS	MSD
Trifluorotoluene	108%	107%
Bromobenzene	109%	110%

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID
Extraction Method: SW3510C
Page 1 of 1

QC Report No: ZN59-Golder Associates
Project: Masterpark Lot C
073-93368-06-09A

Matrix: Water

Date Received: 12/05/14

Data Release Authorized: *MW*
Reported: 12/18/14

ARI ID	Sample ID	Analysis Date	DF	Range	Result	LOQ	DL
ZN59B 14-26437	MPLUTC-MW-22-120514	12/16/14 FID9	1.0	Diesel Motor Oil HC ID o-Terphenyl	0.86 < 0.20 U DRO 73.0%	0.10 0.20	0.02 0.04
ZN59C 14-26438	MPLUTC-MW-22-DUP-120514	12/16/14 FID9	1.0	Diesel Motor Oil HC ID o-Terphenyl	0.96 < 0.20 U DRO 75.2%	0.10 0.20	0.02 0.04
ZN59D 14-26439	PORT-MW-B-120514	12/16/14 FID9	1.0	Diesel Motor Oil HC ID o-Terphenyl	< 0.10 U < 0.20 U --- 75.2%	0.10 0.20	0.02 0.04
MB-121314 14-26440	Method Blank	12/16/14 FID9	1.0	Diesel Range Motor Oil Range HC ID o-Terphenyl	< 0.10 U < 0.20 U --- 95.4%	0.10 0.20	0.02 0.04
ZN59E 14-26440	MPLUTC-MW-17A-120514	12/16/14 FID9	1.0	Diesel Motor Oil HC ID o-Terphenyl	< 0.10 U < 0.20 U --- 85.9%	0.10 0.20	0.02 0.04

Reported in mg/L (ppm)

Diesel quantitation on total peaks in the range from C12 to C24.
Motor Oil quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ZN59-Golder Associates
Project: Masterpark Lot C
073-93368-06-09A

Client ID	OTER	TOT OUT
MPLOTG-MW-22-120514	73.0%	0
MPLOTG-MW-22-DUP-120514	75.2%	0
PORT-MW-B-120514	75.2%	0
MB-121314	95.4%	0
LCS-121314	73.0%	0
LCSD-121314	85.4%	0
MPLOTG-MW-17A-120514	85.9%	0
MPLOTG-MW-17A-120514 MS	80.5%	0
MPLOTG-MW-17A-120514 MSD	88.2%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3510C
Log Number Range: 14-26437 to 14-26440

ORGANICS ANALYSIS DATA SHEET

NWTPHD by GC/FID

Page 1 of 1

Sample ID: MPLOTC-MW-17A-120514

MS/MSD

Lab Sample ID: ZN59E

LIMS ID: 14-26440

Matrix: Water

Data Release Authorized: *MW*

Reported: 12/18/14

QC Report No: ZN59-Golder Associates

Project: Masterpark Lot C

073-93368-06-09A

Date Sampled: 12/05/14

Date Received: 12/05/14

Date Extracted MS/MSD: 12/13/14

Sample Amount MS: 500 mL

MSD: 500 mL

Date Analyzed MS: 12/16/14 13:53

Final Extract Volume MS: 1.0 mL

MSD: 12/16/14 14:14

MSD: 1.0 mL

Instrument/Analyst MS: FID9/VT

Dilution Factor MS: 1.00

MSD: FID9/VT

MSD: 1.00

Range	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Diesel	< 0.10 U	2.56	3.00	85.3%	2.74	3.00	91.3%	6.8%

TPHD Surrogate Recovery

	MS	MSD
o-Terphenyl	80.5%	88.2%

Results reported in mg/L

RPD calculated using sample concentrations per SW846.

ORGANICS ANALYSIS DATA SHEET

NWTPHD by GC/FID

Page 1 of 1

Sample ID: LCS-121314

LCS/LCSD

Lab Sample ID: LCS-121314

LIMS ID: 14-26440

Matrix: Water

Data Release Authorized: *WVW*

Reported: 12/18/14

QC Report No: ZN59-Golder Associates

Project: Masterpark Lot C

073-93368-06-09A

Date Sampled: NA

Date Received: NA

Date Extracted LCS/LCSD: 12/13/14

Sample Amount LCS: 500 mL

LCSD: 500 mL

Date Analyzed LCS: 12/16/14 11:26

Final Extract Volume LCS: 1.0 mL

LCSD: 12/16/14 11:47

LCSD: 1.0 mL

Instrument/Analyst LCS: FID9/VTs

Dilution Factor LCS: 1.00

LCSD: FID9/VTs

LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2.53	3.00	84.3%	2.41	3.00	80.3%	4.9%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	73.0%	85.4%

Results reported in mg/L

RPD calculated using sample concentrations per SW846.

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

Matrix: Water
Date Received: 12/05/14

ARI Job: ZN59
Project: Masterpark Lot C
073-93368-06-09A

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
14-26437-ZN59B	MPLOTG-MW-22-120514	500 mL	1.00 mL	12/13/14
14-26438-ZN59C	MPLOTG-MW-22-DUP-120500	500 mL	1.00 mL	12/13/14
14-26439-ZN59D	PORT-MW-B-120514	500 mL	1.00 mL	12/13/14
14-26440-121314MB1	Method Blank	500 mL	1.00 mL	12/13/14
14-26440-121314LCS1	Lab Control	500 mL	1.00 mL	12/13/14
14-26440-121314LCSD1	Lab Control Dup	500 mL	1.00 mL	12/13/14
14-26440-ZN59E	MPLOTG-MW-17A-120514	500 mL	1.00 mL	12/13/14
14-26440-ZN59EMS	MPLOTG-MW-17A-120514	500 mL	1.00 mL	12/13/14
14-26440-ZN59EMSD	MPLOTG-MW-17A-120514	500 mL	1.00 mL	12/13/14

APPENDIX B
SAMPLE INTEGRITY DATA SHEETS (SIDS)

SAMPLE INTEGRITY DATA SHEET

X06 14

Plant/Site Master Park Lot C Project No. 073-9668-06.09A

Site Location SeaTac, WA Sample ID MPLOT C-MW6-120314

Sampling Location At end of sample tubing

Low Flow Sampling

Technical Procedure Reference(s) App E – Compliance Monitoring Plant Plan (Golder, Nov 2011)

Type of Sampler QED Controller and Bladder Pump – Dedicated Tubing

Date 12/3/2014 Time 1340

Media Water Station MW-6

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

Static Water Level: — Free Product Thickness: none

Date & Time of Measurement: 12/3/2014 @ 9:53 – on WL below top of pump

Measurements are in feet below top of well casing.

Sample Intake Point:

Sample Description clear, no odor

Field Measurements on Sample (pH, conductivity, etc.)

See Field Parameters Sheet

<u>Aliquot Amount</u>	<u>Analysis</u>	<u>Container</u>	<u>Preservative</u>
(5) 40 mL	NWTPH-gasoline & BTEX	VOA vial	HCl
	EDB (ethylene dibromide)		
	N-hexane		
	Naphthalene		
(2) 500 mL	NWTPH-Dx WT	Amber Glass	none

Sampler (signature) [Signature] Date 12/3/2014

Supervisor (signature) [Signature] Date 12/10/2014

FIELD PARAMETERS SHEET

Well ID MW-6
Date 12/31/2014
Time Begin Purge 1302
Time Collect Sample 1340

(pH)

[illegible]

Comments:

* Blowing air from well.

Nitrogen Tank: 110 psi
Throttle: 50 psi
Cycle ID: 103 (10s/5s)
CPM: 4
Purge Rate: ~200 mL/min
PID: 0.0 ppm

Water level fluctuation with pump cycle: *n/a*

Sampler's Initials jsl

SAMPLE INTEGRITY DATA SHEET

Plant/Site Master Park Lot C Project No. 073-96668-06.09A
 Site Location SeaTac, WA Sample ID MPL0TC-MW-7-120414
 Sampling Location At end of sample tubing MPL0TC-FB-120414

Low Flow Sampling

Technical Procedure Reference(s) App E – Compliance Monitoring Plant Plan (Golder, Nov 2011)

Type of Sampler QED Controller and Bladder Pump – Dedicated Tubing

Date 12/4/2014 Time 1125 FB @ 1100

Media Water Station MW-7

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

Static Water Level: 47.95 Free Product Thickness: none

Date & Time of Measurement: 12/3/2014 @ 10:45

Measurements are in feet below top of well casing.

Sample Intake Point:

Sample Description clear, TPH odor, black specks

Field Measurements on Sample (pH, conductivity, etc.)

See Field Parameters Sheet

<u>Aliquot Amount</u>	<u>Analysis</u>	<u>Container</u>	<u>Preservative</u>
(5) 40 mL	NWTPH-gasoline & BTEX	VOA vial	HCl
	EDB (ethylene dibromide)		
	N-hexane		
	Naphthalene		
(2) 500 mL	NTPH-Dx WT	Amber Glass	none

Sampler (signature) [Signature]

Date 12/4/2014

Supervisor (signature) [Signature]

Date 12/10/2014

FIELD PARAMETERS SHEET

Well ID MW-7
Date 12/4/2014
Time Begin Purge 1045
Time Collect Sample 1125

(pH)

[illegible]

Comments:

Nitrogen Tank: 110 psi
Throttle: 40 psi
Cycle ID: 50 (20/10)
CPM: 2
Purge Rate: _____ mL/min
PID: 226.1 ppm peak

- airblowing from well
- TPH odor
- collected FB @ MW-7 @ 1100 by pouring lab-provided DI into bottle set MPTC-FB-120414

Water level fluctuation with pump cycle: *nla*

Sampler's Initials JS

SAMPLE INTEGRITY DATA SHEET

Plant/Site Master Park Lot C Project No. 073-96668-06.09A

Site Location SeaTac, WA Sample ID MPH0TC-MW-9-020314

Sampling Location At end of sample tubing

Low Flow Sampling

Technical Procedure Reference(s) App E – Compliance Monitoring Plant Plan (Golder, Nov 2011)

Type of Sampler QED Controller and Bladder Pump – Dedicated Tubing

Date 12/3/14 Time 1530

Media Water Station MW-9

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

Static Water Level: 51.68' Free Product Thickness: none

Date & Time of Measurement: 12/3/2014 @ 10:03

Measurements are in feet below top of well casing.

Sample Intake Point:

Sample Description clear, no odor

Field Measurements on Sample (pH, conductivity, etc.)

See Field Parameters Sheet

<u>Aliquot Amount</u>	<u>Analysis</u>	<u>Container</u>	<u>Preservative</u>
(5) 40 mL	NWTPH-gasoline & BTEX	VOA vial	HCl
	EDB (ethylene dibromide)		
	N-hexane		
	Naphthalene		
(2) 500 mL	NTPWPH-Dx WT	Amber Glass	none

Sampler (signature) [Signature]

Date 12/3/2014

Supervisor (signature) [Signature]

Date 12/10/2014

FIELD PARAMETERS SHEET

Well ID MW-9
 Date 12/3/2014
 Time Begin Purge 1450
 Time Collect Sample 1530

(pH)

Water Level feet bmp	Time	Volume Purged	pH	Conductivity (uS/cm)	Temp. (°C)	DO (mg/L)	Turbidity (NTU)
	1500		6.50	298.6	13.2	0.47	5.21
	1505		6.46	303	13.6	0.32	7.20
	1510		6.48	303	13.6	0.27	6.76
	1515		6.48	306	13.6	0.22	2.92
	1520		6.48	307	13.6	0.20	2.85
	1525		6.47	307	13.6	0.18	2.37
	1530						

Comments:

* Air blowing from well.

Nitrogen Tank: 110 psi
 Throttle: 60 psi
 Cycle ID: 103 (10/5)
 CPM: 4
 Purge Rate: 2240 mL/min
 PID: 1.9 ppm


Water level fluctuation with pump cycle: n/aSampler's Initials jsl

SAMPLE INTEGRITY DATA SHEET

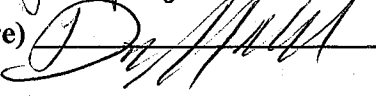
Plant/Site Master Park Lot C **Project No.** 073-96668-06.09A
Site Location SeaTac, WA **Sample ID** MPLOT-C-MW-12-120414
Sampling Location At end of sample tubing
Low Flow Sampling
Technical Procedure Reference(s) App E – Compliance Monitoring Plant Plan (Golder, Nov 2011)
Type of Sampler QED Controller and Bladder Pump – Dedicated Tubing
Date 12/4/2014 **Time** 1220
Media Water **Station** MW-12
Sample Type: grab time composite space composite
Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)
Static Water Level: 54.87' Free Product Thickness: none
Date & Time of Measurement: 12/3/2014 @ 10:53
Measurements are in feet below top of well casing.
Sample Intake Point:
Sample Description TPH odor, rust color + specks

Field Measurements on Sample (pH, conductivity, etc.) _____
See Field Parameters Sheet

<u>Aliquot Amount</u>	<u>Analysis</u>	<u>Container</u>	<u>Preservative</u>
(5) 40 mL	NWTPH-gasoline & BTEX	VOA vial	HCl
	EDB (ethylene dibromide)		
	N-hexane		
	Naphthalene		
(2) 500 mL	NTPWPH-Dx WT	Amber Glass	none

Sampler (signature) 

Date 12/4/2014

Supervisor (signature) 

Date 12/10/2014

FIELD PARAMETERS SHEET

Well ID MW-12
Date 12/4/2014
Time Begin Purge 1141
Time Collect Sample 1220

(pH)

[illegible]

Comments:

Nitrogen Tank: 110 psi
Throttle: 40 psi
Cycle ID: 50(20/10)
CPM: 2
Purge Rate: ~260 mL/min
PID: 0.0 ppm

- blowing air from well
- TPH odor, rusty brown, turbid.
- pump needs to be removed after each sampling event for cleaning to prevent iron buildup.

Water level fluctuation with pump cycle: *n/a*

Sampler's Initials jd

SAMPLE INTEGRITY DATA SHEET

Plant/Site Master Park Lot C Project No. 073-9668-06.09A
 Site Location SeaTac, WA Sample ID MPLC-MW-13-120414

Sampling Location At end of sample tubing
Low Flow Sampling

Technical Procedure Reference(s) App E – Compliance Monitoring Plant Plan (Golder, Nov 2011)

Type of Sampler QED Controller and Bladder Pump – Dedicated Tubing

Date 12/4/2014 Time 0945

Media Water Station MW-13

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

Static Water Level: 54.86' Free Product Thickness: none

Date & Time of Measurement: 12/3/2014 @ 10:14

Measurements are in feet below top of well casing.

Sample Intake Point:

Sample Description clear, no odor

Field Measurements on Sample (pH, conductivity, etc.)

See Field Parameters Sheet

<u>Aliquot Amount</u>	<u>Analysis</u>	<u>Container</u>	<u>Preservative</u>
(5) 40 mL	NWTPH-gasoline & BTEX	VOA vial	HCl
	EDB (ethylene dibromide)		
	N-hexane		
	Naphthalene		
(2) 500mL	NWTPH-DX	Amber Glass	None

Sampler (signature) [Signature]

Date [Signature]

Supervisor (signature) [Signature]

Date 12/10/2014

FIELD PARAMETERS SHEET

Well ID MW-13
Date 12/4/2014
Time Begin Purge 0857
Time Collect Sample 0945

(p4)

[illegible]

Comments:

Nitrogen Tank: 110 psi
Throttle: 50 psi
Cycle ID: 50 (20/10)
CPM: 2
Purge Rate: ~300 mL/min
PID: 0.0

- * air blowing from well
- readings stable but jumping around a bit - likely due to Treatment System air

Water level fluctuation with pump cycle: n/a

Sampler's Initials ysl

SAMPLE INTEGRITY DATA SHEET

Plant/Site Master Park Lot C **Project No.** 073-9668-06.09A
Site Location SeaTac, WA **Sample ID** MPL0TC-MW-17A - 120514
Sampling Location At end of sample tubing +MS/MSD
Low Flow Sampling
Technical Procedure Reference(s) App E – Compliance Monitoring Plant Plan (Golder, Nov 2011)
Type of Sampler QED Controller and Bladder Pump – Dedicated Tubing
Date 12/5/2014 **Time** 1320
Media Water **Station**
Sample Type: grab time composite space composite
Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)
Static Water Level: 84.18' **Free Product Thickness:** none
Date & Time of Measurement: 12/5/2014 @ 12:37
Measurements are in feet below top of well casing.
Sample Intake Point:
Sample Description clear, no odor, slightly cloudy
Field Measurements on Sample (pH, conductivity, etc.)
See Field Parameters Sheet

<u>Aliquot Amount</u>	<u>Analysis</u>	<u>Container</u>	<u>Preservative</u>
3x (5) 40 mL	NWTPH-gasoline & BTEX	VOA vial	HCl
	EDB (ethylene dibromide)		
	N-hexane		
	Naphthalene		
3x (2) 500 mL	NWTPH-DX	Ambic Glass	none

Sampler (signature) [Signature] **Date** 12/5/2014
Supervisor (signature) [Signature] **Date** 12/10/2014

FIELD PARAMETERS SHEET

Well ID MW-17A
 Date 12/5/2014
 Time Begin Purge 1238
 Time Collect Sample 1320

(pH)

Water Level feet bmp	Time	Volume Purged	pH	Conductivity (uS/cm)	Temp. (°C)	DO (mg/L)	Turbidity (NTU)
	1248		6.33	165.0	11.8	1.70	73.9
	1253		6.38	164.9	11.8	1.53	66.0
	1258		6.40	164.5	11.8	1.43	58.1
	1303		6.41	164.5	11.7	1.37	52.2
	1308		6.41	164.7	11.7	1.28	44.6
	1313		6.41	165.9	11.7	1.19	37.3
	1318		6.42	166.5	11.7	1.09	31.8

Comments:

-collected MS/MSD volume

Nitrogen Tank: 110 psi
 Throttle: 60 psi
 Cycle ID: 50 (20/10)
 CPM: 2
 Purge Rate: 2300 mL/min
 PID: 0.0

Water level fluctuation with pump cycle: n/a

Sampler's Initials JSL

SAMPLE INTEGRITY DATA SHEET

Plant/Site Master Park Lot C Project No. 073-9668-06.09A

Site Location SeaTac, WA Sample ID MPLOT-C-MW-18-120414

Sampling Location At end of sample tubing

Low Flow Sampling

Technical Procedure Reference(s) App E – Compliance Monitoring Plant Plan (Golder, Nov 2011)

Type of Sampler QED Controller and Bladder Pump – Dedicated Tubing

Date 12/4/2014 Time 10:35

Media Water Station MW-18

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

Static Water Level: 49.83' Free Product Thickness: none

Date & Time of Measurement: 12/3/2014 @ 10:29

Measurements are in feet below top of well casing.

Sample Intake Point: 54 ft below top of well casing

Sample Description clear, no odor is slightly TPH, slightly turbid

Field Measurements on Sample (pH, conductivity, etc.)

See Field Parameters Sheet

<u>Aliquot Amount</u>	<u>Analysis</u>	<u>Container</u>	<u>Preservative</u>
(5) 40 mL	NWTPH-gasoline & BTEX	VOA vial	HCl
	EDB (ethylene dibromide)		
	N-hexane		
	Naphthalene		
(2) 500 mL	NWTPH-Dx	Amber Glass	none

Sampler (signature) [Signature] Date 12/4/2014

Supervisor (signature) [Signature] Date 12/10/2014

(pH)

Comments:

Nitrogen Tank: 110 psi
Throttle: 40 psi
Cycle ID: 50(20/10)
CPM: 2
Purge Rate: ~260 mL/min
PID: 8.0 ppm *peak*

Water level fluctuation with pump cycle:

field_parameters.xlsxMasterPark

SAMPLE INTEGRITY DATA SHEET

Plant/Site Master Park Lot C Project No. 073-96668-06.09A ³³

Site Location SeaTac, WA Sample ID MPLOT-C-MW-19- 120314

Sampling Location At end of sample tubing

Low Flow Sampling

Technical Procedure Reference(s) App E – Compliance Monitoring Plant Plan (Golder, Nov 2011)

Type of Sampler QED Controller and Bladder Pump – Dedicated Tubing

Date 12/3/2014 Time 1440

Media Water Station MW-19

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

Static Water Level: 45.73 Free Product Thickness: none

Date & Time of Measurement: 12/3/2014 @ 10:37

Measurements are in feet below top of well casing.

Sample Intake Point: 50 ft below top of well casing

Sample Description clear, no odor

Field Measurements on Sample (pH, conductivity, etc.)

See Field Parameters Sheet

<u>Aliquot Amount</u>	<u>Analysis</u>	<u>Container</u>	<u>Preservative</u>
(5) 40 mL	NWTPH-gasoline & BTEX	VOA vial	HCl
	EDB (ethylene dibromide)		
	N-hexane		
	Naphthalene		
(2) 500 mL	NWTPH-Dx	Amber Glass	none

Sampler (signature) [Signature]

Date 12/3/2014

Supervisor (signature) [Signature]

Date 12/10/2014

FIELD PARAMETERS SHEET

Well ID MW-19
 Date 12/3/2014
 Time Begin Purge 1359
 Time Collect Sample 1440

(pH)

Water Level feet bmp	Time	Volume Purged	pH	Conductivity (uS/cm)	Temp. (°C)	DO (mg/L)	Turbidity (NTU)
	1409		6.79	369	13.4	0.37	3.79
	1414		6.81	371	13.3	0.96	2.52
	1419		6.82	374	13.4	0.49	1.28
	1424		6.81	374	13.4	0.34	1.53
	1429		6.82	376	13.4	0.26	1.75
	1434		6.83	378	13.4	0.23	0.69
	1439		6.82	380	13.3	0.20	0.86

Comments:

Nitrogen Tank: 110 psi
 Throttle: 50 psi
 Cycle ID: 50(20/10)
 CPM: 2
 Purge Rate: 1280 mL/min
 PID: 0.0 ppm

Water level fluctuation with pump cycle: n/a

Sampler's Initials JSI

SAMPLE INTEGRITY DATA SHEET

Plant/Site Master Park Lot C Project No. 073-95668-06.09A

Site Location SeaTac, WA Sample ID MPL0TC-MW-20-120314

Sampling Location At end of sample tubing

Low Flow Sampling

Technical Procedure Reference(s) App E – Compliance Monitoring Plant Plan (Golder, Nov 2011)

Type of Sampler QED Controller and Bladder Pump – Dedicated Tubing

Date 12/3/14 Time 1240

Media Water Station MW-20

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

Static Water Level: 106.53 Free Product Thickness: none

Date & Time of Measurement: 12/3/14 @ 12:01

Measurements are in feet below top of well casing.

Sample Intake Point: 111 ft below top of well casing

Sample Description clear, no odor

Field Measurements on Sample (pH, conductivity, etc.)

See Field Parameters Sheet

<u>Aliquot Amount</u>	<u>Analysis</u>	<u>Container</u>	<u>Preservative</u>
(5) 40 mL	NWTPH-gasoline & BTEX	VOA vial	HCl
	EDB (ethylene dibromide)		
	N-hexane		
	Naphthalene		
(2) 500 mL	NWTPH-Dx	Amber Glass	none

Sampler (signature) [Signature] Date 12/3/2014

Supervisor (signature) [Signature] Date 12/10/2014

FIELD PARAMETERS SHEET

Well ID MW-26
Date 12/3/2014
Time Begin Purge 12:03
Time Collect Sample 1240

(pH)

[illegible]

Comments:

Nitrogen Tank: 110 psi
Throttle: 70 psi
Cycle ID: 50 (20/10)
CPM: 2
Purge Rate: ~300 mL/min
PID: 0.0 ppm

Water level fluctuation with pump cycle: n/a

Sampler's Initials JSL

SAMPLE INTEGRITY DATA SHEET

Plant/Site Master Park Lot C Project No. 073-9³³668-06.09A

Site Location SeaTac, WA Sample ID MPL0TC-MW-21- 120314

Sampling Location At end of sample tubing

Low Flow Sampling

Technical Procedure Reference(s) App E – Compliance Monitoring Plant Plan (Golder, Nov 2011)

Type of Sampler QED Controller and Bladder Pump – Dedicated Tubing

Date 12/3/2014 Time 1150

Media Water Station MW-21

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

Static Water Level: 102.66' Free Product Thickness: 0 11:07 on 12/3/2014

Date & Time of Measurement: 11:07 on 12/3/2014

Measurements are in feet below top of well casing.

Sample Intake Point: 107 ft below top of well casing

Sample Description clear, no odor

Field Measurements on Sample (pH, conductivity, etc.)

See Field Parameters Sheet

<u>Aliquot Amount</u>	<u>Analysis</u>	<u>Container</u>	<u>Preservative</u>
(5) 40 mL	NWTPH-gasoline & BTEX	VOA vial	HCl
	EDB (ethylene dibromide)		
	N-hexane		
	Naphthalene		
(2) 500 mL	NWTPH-Dx	Amber Glass	none

Sampler (signature) [Signature] Date 12/3/2014

Supervisor (signature) [Signature] Date 12/10/2014

FIELD PARAMETERS SHEET

Well ID MW-21
Date 12/3/2014
Time Begin Purge 1112
Time Collect Sample 1150

(pH)

[illegible]

Comments:

* blowing

Nitrogen Tank: 110 psi
Throttle: 60 psi
Cycle ID: 50 (20/10)
CPM: 2
Purge Rate: 1260 mL/min
PID: 0.0 ppm

Water level fluctuation with pump cycle: n/a

Sampler's Initials jsl

SAMPLE INTEGRITY DATA SHEET

Plant/Site Master Park Lot C

Project No. 073-9668-06.09A

Site Location SeaTac, WA

Sample ID MPL0TC-MW-22-120514

Sampling Location At end of sample tubing

MPL0TC-MW-22-DUP-120514

Low Flow Sampling

Technical Procedure Reference(s) App E – Compliance Monitoring Plant Plan (Golder, Nov 2011)

Type of Sampler QED Controller and Bladder Pump – Dedicated Tubing

Date 12/5/2014

Time 1030/1035 (Dup)

Media Water

Station MW-22

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

Static Water Level: 82.90 Free Product Thickness:

Date & Time of Measurement: 12/5/14 @ 0953

Measurements are in feet below top of well casing.

Sample Intake Point: 89 ft below top of well casing

Sample Description Slight petroleum / HC odor
1st
no odor; no suction; some black particulates

Field Measurements on Sample (pH, conductivity, etc.)

See Field Parameters Sheet

<u>Aliquot Amount</u>	<u>Analysis</u>	<u>Container</u>	<u>Preservative</u>
(5 x 2) 40 mL	NWTPH-gasoline & BTEX	VOA vial	HCl
	EDB (ethylene dibromide)		
	N-hexane		
	Naphthalene		
(2) 500 mL	NWTPH-Dx	Amber Glass	none

Sampler (signature) [Signature]

Date 12/5/2014

Supervisor (signature) [Signature]

Date 12/10/2014

FIELD PARAMETERS SHEET

Well ID MW-22-120514

Date 12/5/2014

Time Begin Purge 0954

Time Collect Sample 1030/1035 (Dup)

(pH)

[illegible]

Comments:

Nitrogen Tank: 110 psi

Throttle: 55 65 psi

Cycle ID: 50(20110)

CPM: 2Purge Rate: ~300 mL/min

PID: 0.0 ppm

Water level fluctuation with pump cycle:

Sampler's Initials JSL/Amc

SAMPLE INTEGRITY DATA SHEET

Plant/Site Master Park Lot C Project No. 073-9668-06.09A ³³

Site Location SeaTac, WA Sample ID PORT-MW-B- 12514

Sampling Location At end of sample tubing

Low Flow Sampling

Technical Procedure Reference(s) App E – Compliance Monitoring Plant Plan (Golder, Nov 2011)

Type of Sampler QED Controller and Bladder Pump – Dedicated Tubing

Date 12/5/2014 Time 1200

Media Water Station PORT-MW-B

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

Static Water Level: 89.71' Free Product Thickness: none

Date & Time of Measurement: 12/5/2014 @ 11:22

Measurements are in feet below top of well casing.

Sample Intake Point: 89 ft below top of well casing

Sample Description Moderately turbid, clear, no odor.
fl

Field Measurements on Sample (pH, conductivity, etc.)

See Field Parameters Sheet

<u>Aliquot Amount</u>	<u>Analysis</u>	<u>Container</u>	<u>Preservative</u>
(5) 40 mL	NWTPH-gasoline & BTEX	VOA vial	HCl
	EDB (ethylene dibromide)		
	N-hexane		
	Naphthalene		
(2) 500 mL	NWTPH-Dx	Amber Glass	none

Sampler (signature) [Signature]

Date 12/5/2014

Supervisor (signature) [Signature]

Date 12/10/2014

FIELD PARAMETERS SHEET

Well ID PORT-MW-B
Date 12/5/2014
Time Begin Purge 1124
Time Collect Sample 1200

(pH)

[illegible]

Comments:

Nitrogen Tank: 110 psi
Throttle: ~~55~~ 70 psi
Cycle ID: ~~5~~ 50 (20/10)
CPM: 2
Purge Rate: ~300 mL/min
PID: 0.2 ppm

Water level fluctuation with pump cycle: *nla*

Sampler's Initials jrl

APPENDIX C
DATA VALIDATION MEMORANDUM

DATA VALIDATION CHECKLIST

Project Name:	Masterpark Lot C – Seatac Development Site
Project Number:	073-93368.06.09A
Sample Identification(s):	Trip Blank-120314, MPLOT-MW-06-120314, MPLOT-MW-21-120314, MPLOT-MW-17A-120514, MPLOT-MW-19-120314, MPLOT-MW-09-120314, Trip Blank-120414, MPLOT-MW-13-120414, MPLOT-MW-18-120414, MPLOT-FB-120414, MPLOT-MW-07-120414, MPLOT-MW-12-120414, Trip Blank-120514, MPLOT-MW-20-120314, MPLOT-MW-22-120514, MPLOT-MW-22-DUP-120514, PORT-MW-B-120514
Sample Date(s):	12/3/2014, 12/4/2014 and 12/5/2014
Sample Team:	Jill Lamberts, Aaron Rydecki, Golder Associates
Sample Matrix:	Aqueous
Analyzing Laboratory:	Analytical Resources Inc (ARI) – Tukwila WA
Analyses:	NWTPH-Gx/BTEX, EPA 8260C (EDB, N-hexane, Naphthalene), NWPTH-Dx
Laboratory Report No.:	ZN09, ZN25 and ZN59

FIELD DATA PACKAGE DOCUMENTATION

Field Sampling Logs:	Reported		Performance Acceptable		Not Required
	NO	YES	NO	YES	
1. Sampling dates noted		X		X	
2. Sampling team indicated		X		X	
3. Sampling identification traceable to location collected		X		X	
4. Sample location		X		X	
5. Collection technique (bailer, pump, etc.)		X		X	
6. Sample container type		X		X	
7. Preservation methods		X		X	
8. Chain-of-custody form completed		X		X	
9. Required analytical methods requested		X		X	
10. Field sample logs completed properly and signed		X		X	
11. Number and type of field QC samples collected		X		X	
12. Field equipment calibration		X		X	
13. Field equipment decontamination		X		X	

QC – quality control

COMMENTS:

Performance was acceptable.

ANALYTICAL DATA PACKAGE DOCUMENTATION
GENERAL INFORMATION

	Reported		Performance Acceptable		Not Required
	NO	YES	NO	YES	
1. Sample results		X		X	
2. Parameters analyzed		X		X	
3. Method of analysis		X		X	
4. Reporting limits of analysis		X		X	
5. Sample collection date		X		X	
6. Laboratory sample received date		X		X	
7. Sample preparation/extraction date		X		X	
8. Sample analysis date		X		X	
9. Copy of chain-of-custody form signed by lab sample custodian		X		X	
10. Narrative summary of QA or sample problems provided		X		X	

QA – quality assurance

COMMENTS:

Performance was acceptable, with the following exceptions and/or notes:

- Cooler temperatures were all $4 \pm 2^{\circ}\text{C}$.
- 3 Trip Blanks, 12 samples, 1 field duplicate, and 1 field blank submitted per work plan.

ORGANIC ANALYSES

EDB, N-hexane, Naphthalene (EPA 8260C)	Reported		Performance Acceptable		Not Required
	NO	YES	NO	YES	
1. Holding times		X		X	
2. Reporting limits		X		X	
3. Blanks					
a. Method blanks		X	X		
b. Field blanks and Trip Blanks		X	X		
4. Laboratory control sample (LCS) %R		X	X		
5. Matrix spike (MS) %R		X	X		
6. LCS duplicate (LCSD) %R		X	X		
7. MS duplicate (MSD) %R		X	X		
8. MS / MSD RPD		X		X	
9. LCS / LCSD RPD		X		X	
10. Surrogate %R		X	X		
11. Laboratory Duplicate RPD	X				X
12. Field duplicate comparison		X		X	

%R – percent recovery

RPD – relative percent difference

COMMENTS:

Performance was acceptable, with the following exceptions and/or notes:

- SDG ZN09: The Continuing Calibration Standard (CCAL) analyzed on 12/11/2014 was out of control low for n-Hexane. All associated samples were re-analyzed, with the exception of the trip blank which had no sample remaining. No action taken other than to note; the re-analysis is in control. No action taken for sample Trip Blank-120314 since there was no n-Hexane detects in any of the samples.
- SDG ZN09: The n-Hexane LCS/LCSD analyzed on 12/11/2014 were out of control low due to the low CCAL noted above. No action taken other than to note.
- SDG ZN25: Surrogate d4-1,2-Dichloroethane (DCE) was out of control above the control limits for sample MPLOT-07-120414. The sample was re-analyzed with surrogate recoveries in control and both sets of data were included by the laboratory. No qualification is necessary for results that are non-detects. Detects are qualified as **estimated (J)**. EDB is non-detect for this sample so no qualification was necessary. Naphthalene is detected and is qualified as **estimated (J)**. No qualification is necessary for hexane as the analyte is not associated with the surrogate.
- SDG ZN25: n-Hexane for MPLOT-MW-07-120414 had to be analyzed at a dilution because initial analysis was qualified E by the lab (*Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte*). The reanalysis was within the instrument calibration range and is the result that should be reported. The initial result for naphthalene and n-hexane are qualified as **DNR** (do not report). The diluted result for naphthalene and n-hexane are reported. The diluted result for EDB for is also qualified as **DNR** and the initial result is reported for EDB.
- SDG ZN25: MPLOT-FB-120414 field blank (FB) contained n-hexane at 0.11 J µg/L. No action is typically taken for field blank contamination, unless gross contamination has occurred. Contamination is minimal (detected but less than the LOQ) and associated sample results for n-hexane are within the range of previous sampling events.

- SDG ZN59: The method blank analyzed on 12/16/2014 contained naphthalene. Lab qualified detections of naphthalene as 'B' (*analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample*). MB-121614A has naphthalene at 0.21 J µg/L. Qualify associated results that are less than the LOQ but greater than the DL as **non-detects (U)** at the LOQ value (PORT-MW-B-120514). Qualify associated results that are greater than the LOQ but less than 2X the LOQ as **estimated with a high bias (J+)** (no samples). No action for results that are greater than 2X the LOQ or less than the DL (no samples).
- SDG ZN59: Sample PORT-MW-B-120514 was re-analyzed for possible naphthalene carry over. Both sets of data were provided by the laboratory. The re-analysis is selected for reporting by the data validator. The initial analysis is qualified as **DNR** (do not report).
- SDG ZN59: The matrix spike (MS) and matrix spike duplicate (MSD) recovered out of the control limits low for n-hexane for sample MPLOT-C-MW-17A-120514. Qualify n-hexane result for MPLOT-C-MW-17A-120514 as **estimated but not detected (UJ)**.
- Trip Blank-120314, Trip Blank-120414, and Trip Blank-120514 had no detections.
- SDG ZN59: A field duplicate was collected and sample IDs were MPLOT-C-MW-22-120514 and MPLOT-C-MW-22-DUP-120514. Relative percent differences were <20% for all analytes or results were < 5X LOQ.
- SDG ZN25 and ZN59: Reporting limits were raised for EDB, naphthalene, and n-hexane in samples MPLOT-C-MW-07-120414 (diluted result), MPLOT-C-MW-22-120514, and MPLOT-C-MW-22-DUP-120514. Lab was contacted for more information and reported that the samples were analyzed at a dilution due to the presence of other non-target compounds. High levels of volatiles made a 20X dilution necessary to prevent instrument damage. No further action was taken other than to note.

ORGANIC ANALYSES

NWTPH-Dx (Diesel and Motor Oil)	Reported		Performance Acceptable		Not Required
	NO	YES	NO	YES	
1. Holding times		X	X		
2. Reporting limits		X		X	
3. Blanks					
a. Method blanks		X		X	
b. Field blanks		X		X	
4. Laboratory control sample (LCS) %R		X		X	
5. Matrix spike (MS) %R		X		X	
6. LCS duplicate (LCSD) %R		X		X	
7. MS duplicate (MSD) %R		X		X	
8. MS / MSD RPD		X		X	
9. LCS / LCSD RPD		X		X	
10. Surrogate %R		X		X	
11. Laboratory Duplicate RPD	X				X
12. Field duplicate comparison		X		X	

%R – percent recovery

RPD – relative percent difference

COMMENTS:

Performance was acceptable, with the following exceptions and/or notes:

- SDG ZN25: MPLOTG-FB-091114 field blank (FB) had no detections.
- SDG ZN25: Diesel for MPLOTG-MW-07-120414 had to be analyzed at a dilution because initial analysis was qualified E by the lab (*Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte*). The reanalysis was within the instrument calibration range and is the result that should be reported. The initial result is qualified as **DNR** (do not report). The diluted result for Motor Oil is also qualified as **DNR** to select the result with the lower detection limit.
- SDG ZN25: The motor oil result for samples MPLOTG-MW-07-120414 (initial result) was qualified by the lab as RRO (*indicates results of organics or additional hydrocarbons in ranges are not identifiable*). Qualify motor oil results as **estimated (J)**.
- SDG ZN25: The initial and diluted diesel result for sample MPLOTG-MW-07-120414 was qualified by the lab as DRO (*indicates results of organics or additional hydrocarbons in ranges are not identifiable*). Qualify diesel results as **estimated (J)**.
- SDG ZN59: The samples were originally extracted within the method holding time, but the extraction method blank vial cracked so the samples had to be re-extracted outside of the method recommended holding time. Samples were extracted at 8 days after sampling and the hold time is 7 days. Results are within range of previous sampling events, so no action was taken other than to note.
- SDG ZN59: The diesel result for samples MPLOTG-MW-22-120514 and MPLOTG-MW-22-DUP-120514 was qualified by the lab as DRO (*indicates results of organics or additional hydrocarbons in ranges are not identifiable*). Qualify diesel results as **estimated (J)**.
- SDG ZN59: A field duplicate was collected and sample IDs were MPLOTG-MW-22-120514 and MPLOTG-MW-22-DUP-120514. Relative percent differences (RPDs) were <20% or results were <5X RL for all analytes.

ORGANIC ANALYSES

NWTPH-Gx/BTEX (Gasoline, Benzene, Toluene, Ethylbenzene, m,p-Xylene, and o-Xylene)	Reported		Performance Acceptable		Not Required
	NO	YES	NO	YES	
1. Holding times		X		X	
2. Reporting limits		X		X	
3. Blanks					
a. Method blanks		X		X	
b. Field blanks and Trip Blanks		X		X	
4. Laboratory control sample (LCS) %R		X		X	
5. Matrix spike (MS) %R		X	X		
6. LCS duplicate (LCSD) %R		X		X	
7. MS duplicate (MSD) %R		X	X		
8. MS / MSD RPD		X		X	
9. LCS / LCSD RPD		X		X	
10. Surrogate %R		X		X	
11. Laboratory Duplicate RPD	X				X
12. Field duplicate comparison		X	X		

%R – percent recovery

RPD – relative percent difference

COMMENTS:

Performance was acceptable, with the following exceptions and/or notes:

- SDG ZN25: The continuing calibration standard (CCAL) analyzed on 12/8/2014 was out of control low. All associated samples were reanalyzed on 12/10/2014 with the exception of the trip blank which was consumed during the original analysis. No action taken other than to note; the re-analysis is in control. No action taken for sample Trip Blank-120414 since there was no indication of contamination introduced during travel and processing.
- SDG ZN59: The matrix spike and matrix spike duplicate were out of control below the control limits for sample MPLOT-MW-17A-120514. Qualify sample results for MPLOT-MW-17A-120514 as **estimated (J/UJ)**.
- MPLOT-FB-120414 field blank (FB), Trip Blank-120314, Trip Blank-120414, and Trip Blank-120514 had no detections.
- Sample results for Gasoline for samples MPLOT-MW-09-120314, MPLOT-MW-07-120414, MPLOT-MW-12-120514, MPLOT-MW-22-120514 (initial and dilution), MPLOT-MW-22-DUP-120514 (initial and dilution), and PORT-MW-B-120514 was qualified by lab as GAS (*indicates the presences of gasoline or weathered gasoline*). No further action was taken other than to note.
- SDG ZN59: Gasoline for MPLOT-MW-22-120514 had to be analyzed at a dilution because initial analysis was qualified E by the lab (*Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte*). The reanalysis was within the instrument calibration range and is the result that should be reported. The initial result is qualified as **DNR** (do not report) for gasoline, benzene, toluene, ethylbenzene, and m,p-xylene. The diluted result for o-xylene is qualified as **DNR** and the initial results are reported since it is the higher value. The diluted result for benzene, toluene, ethylbenzene, m,p-xylene, and gasoline was reported instead of the initial result since they were the higher values. The initial result for o-xylene was reported.
- SDG ZN59: Gasoline for sample MPLOT-MW-22-DUP-120514 had to be analyzed at a dilution because initial analysis was qualified E by the lab (*Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an*

accurate quantification of the analyte). The reanalysis was within the instrument calibration range and is the result that should be reported. The initial result is qualified as **DNR** (do not report) for gasoline, benzene, ethylbenzene, and m,p-xylene. The diluted results for toluene and o-xylene for the sample are qualified as **DNR** and the initial results are reported since it is the higher value. The diluted result for benzene, ethylbenzene, m,p-xylene, and gasoline was reported instead of the initial result since they were the higher values. The initial result for toluene and o-xylene were reported.

- SDG ZN59: A field duplicate was collected and sample IDs were MPLOT-MW-22-120514 and MPLOT-MW-22-DUP-120514. Relative percent differences (RPDs) were <20% or < 5X LOQ for all analytes, except for o-xylene, which had an RPD of 173%. Action for field duplicates is advisory only, and xylene data is reported on a total basis, for which the RPD was in control.
- SDG: Reporting limits were raised for GAS/BTEX for the diluted results for samples MPLOT-MW-07-120414, MPLOT-MW-22-120514 and MPLOT-MW-22-DUP-120514 due to high levels of GAS/BTEX in the sample which made a 20X dilution necessary to prevent instrument damage. No further action was taken other than to note.

DATA VALIDATION CHECKLIST

SUMMARY AND DATA QUALIFIER CODES


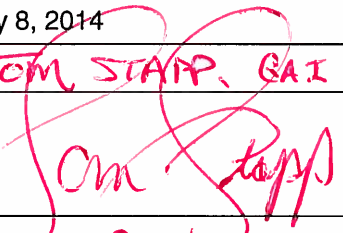
Project Name:	Masterpark Lot C – Seatac Development Site
Project Number:	073-93368.06.09A
Sample Identification(s):	Trip Blank-120314, MPLOT-MW-06-120314, MPLOT-MW-21-120314, MPLOT-MW-17A-120514, MPLOT-MW-19-120314, MPLOT-MW-09-120314, Trip Blank-120414, MPLOT-MW-13-120414, MPLOT-MW-18-120414, MPLOT-FB-120414, MPLOT-MW-07-120414, MPLOT-MW-12-120414, Trip Blank-120514, MPLOT-MW-20-120314, MPLOT-MW-22-120514, MPLOT-MW-22-DUP-120514, PORT-MW-B-120514
Sample Date(s):	12/3/2014, 12/4/2014 and 12/5/2014
Sample Team:	Jill Lamberts, Aaron Rydecki, Golder Associates
Sample Matrix:	Aqueous
Analyzing Laboratory:	Analytical Resources Inc (ARI) – Tukwila WA
Analyses:	NWTPH-Gx/BTEX, EPA 8260C (EDB, N-hexane, Naphthalene), NWPTH-Dx
Laboratory Report No.:	ZN09, ZN25 and ZN59

Reference

USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods
Data Review, EPA-540-R-08-01, June 2008

Sample ID	Analyte(s)	Result	Qualifier	Reason(s)
MPLOT-MW-07-120414	Naphthalene	20 µg/L	J, DNR	Surrogate out of control high. Sample reanalyzed at a dilution and diluted result is reported instead.
MPLOT-MW-07-120414	n-Hexane	150 E µg/L	DNR	Sample reanalyzed at a dilution and diluted result is reported instead.
MPLOT-MW-07-120414 DL	1,2-Dibromomethane	< 4.0 U µg/L	DNR	Report initial analysis for this analyte.
MPLOT-MW-07-120414 MPLOT-MW-07-120414 MPLOT-MW-07-120414 DL MPLOT-MW-22-120514 MPLOT-MW-22-DUP-120514	Diesel Motor Oil Diesel Diesel Diesel	11 E mg/L 0.32 mg/L 11 mg/L 0.86 mg/L 0.96 mg/L	J J J J J	Organics or additional hydrocarbons in ranges that are not identifiable.
MPLOT-MW-07-120414	Diesel	11 E mg/L	DNR	Sample reanalyzed at a dilution and diluted result is reported instead.
MPLOT-MW-07-120414	Motor Oil	< 2.0 U mg/L	DNR	Report initial analysis for this analyte.
PORT-MW-B-120514	1,2-Dibromomethane Naphthalene Hexane	< 0.20 U µg/L 0.63 µg/L 0.13 J µg/L	DNR DNR DNR	Report reanalysis of this sample.
PORT-MW-B-120514 RE	Naphthalene	0.47 J µg/L	< 0.50 U µg/L	Method blank contains naphthalene.
MPLOT-MW-17A-120514	n-Hexane Benzene Toluene Ethylbenzene m,p-Xylene o-Xylene Gasoline	< 0.20 U µg/L 0.54 µg/L < 0.25 U µg/L < 0.25 U µg/L 0.63 µg/L < 0.25 U µg/L < 0.10 U µg/L	UJ J UJ UJ J UJ UJ	MS/MSD out of control low.

Sample ID	Analyte(s)	Result	Qualifier	Reason(s)
MPLOT-MW-22-120514	Benzene Toluene Ethylbenzene m,p-Xylene Gasoline	8.4 µg/L 10 µg/L 590 µg/L 980 µg/L 15 E mg/L	DNR DNR DNR DNR DNR	Sample reanalyzed at a dilution and diluted result is reported instead.
MPLOT-MW-22-120514 DL	o-Xylene	< 2.5 U µg/L	DNR	Report initial analysis for this analyte.
MPLOT-MW-22-DUP-120514	Benzene Ethylbenzene m,p-Xylene Gasoline	8.6 µg/L 590 µg/L 970 µg/L 15 E mg/L	DNR DNR DNR DNR	Sample reanalyzed at a dilution and diluted result is reported instead.
MPLOT-MW-22-DUP-120514 DL	Toluene o-Xylene	9.7 µg/L < 2.5 U µg/L	DNR DNR	Report initial analysis for this analyte.

VALIDATION PERFORMED BY:	Jill Lamberts, Golder Associates
VALIDATOR'S SIGNATURE:	
DATE:	January 8, 2014
REVIEWED BY:	TOM STAPP, GAI
REVIEWER'S SIGNATURE	
DATE:	January 9, 2015

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 2N09	Turn-around Requested: Standard	Page: 1 of 1	
ARI Client Company: Golder	Phone: 425-883-0777	Date: 12/3/2014	Ice Present? 4
Client Contact: D. Morell / J. Lamberts		No. of Coolers: 1	Cooler Temps: 4.3



Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

Client Project Name: Master park lot C					Analysis Requested							Notes/Comments	
Client Project #: 073-93368-06-09A					<div> <div>NWTPH-Gx</div> <div>BTEX</div> <div>EDB by 8260 report to MDL</div> <div>N-Hexane</div> <div>Naphthalene</div> <div>NWTPH-Dx</div> </div>							No LL EDB required for this round.	
Sample ID	Date	Time	Matrix	No Containers	NWTPH-Gx	BTEX	EDB by 8260 report to MDL	N-Hexane	Naphthalene	NWTPH-Dx			
Trip Blank - 120314	12/3/14	-	W	2	X	X	X	X					
MPLOT- MW-21-120314		1150		7	X	X	X	X	X				
MPLOT- MW-24-120314		1240		7	X	X	X	X	X				
MPLOT- MW-06-120314		1340		7	X	X	X	X	X				
MPLOT- MW-19-120314		1440		7	X	X	X	X	X				
MPLOT- MW-09-120314		1530		7	X	X	X	X	X				
Comments/Special Instructions *Ecology EIM EDD Pls cc jlamberts@golder.com dmorell@golder.com					Relinquished by (Signature) <i>[Signature]</i>		Received by (Signature) <i>[Signature]</i>		Relinquished by (Signature)		Received by (Signature)		
					Printed Name J. Lamberts		Printed Name Angela Street		Printed Name		Printed Name		
					Company Golder		Company ART		Company		Company		
					Date & Time 12/3/2014 1602		Date & Time 12.3.14 1602		Date & Time		Date & Time		

Reviewed by J. Lamberts 1/7/2014

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Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.


**ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS**

 NWTPHD by GC/FID
 Extraction Method: SW3510C
 Page 1 of 1

 QC Report No: ZN09-Golder Associates
 Project: Master Park Lot C
 073-93368-06-09A

Matrix: Water

Date Received: 12/03/14

 Data Release Authorized: 
 Reported: 12/22/14

ARI ID	Sample ID	Analysis Date	DF	Range	Result	LOQ	DL
MB-121014 14-26152	Method Blank	12/20/14 FID3B	1.0	Diesel Range Motor Oil Range HC ID o-Terphenyl	< 0.10 U < 0.20 U --- 78.0%	0.10 0.20	0.02 0.04
ZN09B 14-26152	MPLOT-MW-21-120314	12/21/14 FID3B	1.0	Diesel Motor Oil HC ID o-Terphenyl	< 0.10 U < 0.20 U --- 93.3%	0.10 0.20	0.02 0.04
ZN09C 14-26153	MPLOT-MW-20-120314	12/21/14 FID3B	1.0	Diesel Motor Oil HC ID o-Terphenyl	< 0.10 U < 0.20 U --- 83.1%	0.10 0.20	0.02 0.04
ZN09D 14-26154	MPLOT-MW-06-120314	12/21/14 FID3B	1.0	Diesel Motor Oil HC ID o-Terphenyl	< 0.10 U < 0.20 U --- 59.9%	0.10 0.20	0.02 0.04
ZN09E 14-26155	MPLOT-MW-19-120314	12/21/14 FID3B	1.0	Diesel Motor Oil HC ID o-Terphenyl	< 0.10 U < 0.20 U --- 90.7%	0.10 0.20	0.02 0.04
ZN09F 14-26156	MPLOT-MW-09-120314	12/21/14 FID3B	1.0	Diesel Motor Oil HC ID o-Terphenyl	1.9 < 0.20 U DIESEL 76.1%	0.10 0.20	0.02 0.04

Reported in mg/L (ppm)

Diesel quantitation on total peaks in the range from C12 to C24.
 Motor Oil quantitation on total peaks in the range from C24 to C38.
 HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: Trip Blank-120314

Page 1 of 1

SAMPLE

Lab Sample ID: ZN09A

QC Report No: ZN09-Golder Associates

LIMS ID: 14-26151

Project: Master Park Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: *mm*

Date Sampled: 12/03/14

Reported: 12/18/14

Date Received: 12/03/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/12/14 00:52

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	91.6%
d8-Toluene	98.3%
Bromofluorobenzene	99.1%
d4-1,2-Dichlorobenzene	99.2%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPL0TC-MW-21-120314

Page 1 of 1

SAMPLE

Lab Sample ID: ZN09B


QC Report No: ZN09-Golder Associates

LIMS ID: 14-26152

Project: Master Park Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: 

Date Sampled: 12/03/14

Reported: 12/18/14

Date Received: 12/03/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/16/14 16:12

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	95.8%
d8-Toluene	99.1%
Bromofluorobenzene	97.3%
d4-1,2-Dichlorobenzene	101%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPL0TC-MW-20-120314

Page 1 of 1

SAMPLE

Lab Sample ID: ZN09C

QC Report No: ZN09-Golder Associates

LIMS ID: 14-26153

Project: Master Park Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: *MW*

Date Sampled: 12/03/14

Reported: 12/18/14

Date Received: 12/03/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/16/14 16:39

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	95.4%
d8-Toluene	99.0%
Bromofluorobenzene	95.0%
d4-1,2-Dichlorobenzene	101%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPL0TC-MW-06-120314

Page 1 of 1

SAMPLE

Lab Sample ID: ZN09D

QC Report No: ZN09-Golder Associates

LIMS ID: 14-26154

Project: Master Park Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: *MW*

Date Sampled: 12/03/14

Reported: 12/18/14

Date Received: 12/03/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/16/14 17:06

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	96.8%
d8-Toluene	98.9%
Bromofluorobenzene	96.7%
d4-1,2-Dichlorobenzene	99.5%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPL0TC-MW-19-120314

Page 1 of 1

SAMPLE

Lab Sample ID: ZN09E

QC Report No: ZN09-Golder Associates

LIMS ID: 14-26155

Project: Master Park Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: *MW*

Date Sampled: 12/03/14

Reported: 12/18/14

Date Received: 12/03/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/16/14 17:33

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	93.1%
d8-Toluene	100%
Bromofluorobenzene	97.9%
d4-1,2-Dichlorobenzene	99.5%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C
Page 1 of 1Sample ID: MPL0TC-MW-09-120314
SAMPLE

Lab Sample ID: ZN09F

LIMS ID: 14-26156

Matrix: Water

Data Release Authorized: *MW*

Reported: 12/18/14

QC Report No: ZN09-Golder Associates

Project: Master Park Lot C

073-93368-06-09A

Date Sampled: 12/03/14

Date Received: 12/03/14

Instrument/Analyst: NT3/PKC

Date Analyzed: 12/16/14 18:01

Sample Amount: 10.0 mL

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	44
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	100%
d8-Toluene	102%
Bromofluorobenzene	100%
d4-1,2-Dichlorobenzene	98.2%

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1

Sample ID: Trip Blank-120314
SAMPLE

Lab Sample ID: ZN09A

LIMS ID: 14-26151

Matrix: Water

Data Release Authorized: 

Reported: 12/08/14

QC Report No: ZN09-Golder Associates

Project: Master Park Lot C

Event: 073-93368-06-09A

Date Sampled: 12/03/14

Date Received: 12/03/14

Date Analyzed: 12/05/14 12:09

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	< 0.50 U
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	101%
Bromobenzene	96.5%

Gasoline Surrogate Recovery

Trifluorotoluene	100%
Bromobenzene	95.1%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1

Sample ID: MPlotC-MW-21-120314

SAMPLE

Lab Sample ID: ZN09B

LIMS ID: 14-26152

Matrix: Water

Data Release Authorized: 

Reported: 12/08/14

QC Report No: ZN09-Golder Associates

Project: Master Park Lot C

Event: 073-93368-06-09A

Date Sampled: 12/03/14

Date Received: 12/03/14

Date Analyzed: 12/05/14 13:33

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	< 0.50 U
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
-----------------------------	-------	------	----------	---------------

BETX Surrogate Recovery

Trifluorotoluene	98.5%
Bromobenzene	97.2%

Gasoline Surrogate Recovery

Trifluorotoluene	98.6%
Bromobenzene	94.3%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1


Sample ID: MPlotC-MW-20-120314

SAMPLE

Lab Sample ID: ZN09C

LIMS ID: 14-26153

Matrix: Water

Data Release Authorized: 

Reported: 12/08/14

QC Report No: ZN09-Golder Associates

Project: Master Park Lot C

Event: 073-93368-06-09A

Date Sampled: 12/03/14

Date Received: 12/03/14

Date Analyzed: 12/05/14 14:07

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	< 0.50 U
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	97.6%
Bromobenzene	95.7%

Gasoline Surrogate Recovery

Trifluorotoluene	100%
Bromobenzene	96.0%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1

Sample ID: MPLOTG-MW-06-120314

SAMPLE

Lab Sample ID: ZN09D

LIMS ID: 14-26154

Matrix: Water

Data Release Authorized: 

Reported: 12/08/14

QC Report No: ZN09-Golder Associates

Project: Master Park Lot C

Event: 073-93368-06-09A

Date Sampled: 12/03/14

Date Received: 12/03/14

Date Analyzed: 12/05/14 14:35

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	< 0.50 U
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	101%
Bromobenzene	95.8%

Gasoline Surrogate Recovery

Trifluorotoluene	98.6%
Bromobenzene	96.0%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1


Sample ID: MPlotC-MW-19-120314

SAMPLE

Lab Sample ID: ZN09E

LIMS ID: 14-26155

Matrix: Water

Data Release Authorized: 

Reported: 12/08/14

QC Report No: ZN09-Golder Associates

Project: Master Park Lot C

Event: 073-93368-06-09A

Date Sampled: 12/03/14

Date Received: 12/03/14

Date Analyzed: 12/05/14 15:59

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	< 0.50 U
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	98.6%
Bromobenzene	96.9%

Gasoline Surrogate Recovery

Trifluorotoluene	101%
Bromobenzene	98.1%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1

Sample ID: MPLOTG-MW-09-120314

SAMPLE

Lab Sample ID: ZN09F

LIMS ID: 14-26156

Matrix: Water

Data Release Authorized: *AB*

Reported: 12/08/14

QC Report No: ZN09-Golder Associates

Project: Master Park Lot C

Event: 073-93368-06-09A

Date Sampled: 12/03/14

Date Received: 12/03/14

Date Analyzed: 12/05/14 16:28

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	14
108-88-3	Toluene	0.014	0.25	2.8
100-41-4	Ethylbenzene	0.028	0.25	76
179601-23-1	m,p-Xylene	0.022	0.50	8.2
95-47-6	o-Xylene	0.027	0.25	0.56

Gasoline Range Hydrocarbons	0.057	0.10	4.1	GAS ID
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GAS

BETX Surrogate Recovery

Trifluorotoluene	104%
Bromobenzene	97.4%

Gasoline Surrogate Recovery

Trifluorotoluene	105%
Bromobenzene	102%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Chain of Custody Record & Laboratory Analysis Request

Please analyze under existing MSA b7wn Golder + AKI

ARI Assigned Number: 2N25	Turn-around Requested: Standard
ARI Client Company: Golder	Phone: 425-883-0777
Client Contact: D. Morell / J. Lamberts	
Client Project Name: Masterpark Lot C	
Client Project #: 073-93368-06-09A	Samplers: Lamberts

Page: 1	of 1
Date: 12/4/2014	Ice Present? Y
No. of Coolers: 1	Cooler Temps: 4.3



Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested						Notes/Comments	
					NWTPH-GX BTEx	EDB by 8260 * report to MDL	N-Hexane	Naphthalene	NWTPH-DX			
Trip Blank - 120414	12/4/14	-	W	2	X	X	X	X				
MPLDTC-MW-13-120414	1	0945	W	7	X	X	X	X	X			
MPLDTC-MW-18-120414	1	1035	W	7	X	X	X	X	X			
MPLDTC-MW-07-120414	1	1125	W	7	X	X	X	X	X			
MPLDTC-FB-120414	1	1100	W	7	X	X	X	X	X			
MPLDTC-MW-12-120414	1	1220	W	7	X	X	X	X	X			
Comments/Special Instructions * Ecology EIM EDD Pls cc JLamberts + D. Morell.	Relinquished by (Signature) <i>[Signature]</i>	Received by (Signature) <i>[Signature]</i>		Relinquished by (Signature) <i>[Signature]</i>		Received by (Signature) <i>[Signature]</i>						
	Printed Name: JLamberts	Printed Name: Jennifer Miller		Printed Name:		Printed Name:						
	Company: Golder	Company: AKI		Company:		Company:						
	Date & Time: 12/4/2014 1312	Date & Time: 12/4/14 1312		Date & Time:		Date & Time:						

Reviewed by J. Lamberts 11/7/2014

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1


Sample ID: TripBlank-120414

SAMPLE

Lab Sample ID: ZN25A

LIMS ID: 14-26288

Matrix: Water

Data Release Authorized: 

Reported: 12/22/14

QC Report No: ZN25-Golder Associates

Project: Masterpark Lot C

Event: 673-93368-06-09A

Date Sampled: 12/04/14

Date Received: 12/04/14

Date Analyzed: 12/08/14 19:06

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	< 0.50 U
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	96.2%
Bromobenzene	93.4%

Gasoline Surrogate Recovery

Trifluorotoluene	97.2%
Bromobenzene	95.6%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1


Sample ID: MPlotC-MW-13-120414

SAMPLE

Lab Sample ID: ZN25B

LIMS ID: 14-26289

Matrix: Water

Data Release Authorized: 

Reported: 12/22/14

QC Report No: ZN25-Golder Associates

Project: Masterpark Lot C

Event: 673-93368-06-09A

Date Sampled: 12/04/14

Date Received: 12/04/14

Date Analyzed: 12/10/14 13:02

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	< 0.50 U
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	97.4%
Bromobenzene	94.4%

Gasoline Surrogate Recovery

Trifluorotoluene	94.9%
Bromobenzene	93.0%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1


Sample ID: MPLOTG-MW-18-120414

SAMPLE

Lab Sample ID: ZN25C

LIMS ID: 14-26290

Matrix: Water

Data Release Authorized: 

Reported: 12/22/14

QC Report No: ZN25-Golder Associates

Project: Masterpark Lot C

Event: 673-93368-06-09A

Date Sampled: 12/04/14

Date Received: 12/04/14

Date Analyzed: 12/10/14 13:30

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	0.69
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	0.63
179601-23-1	m,p-Xylene	0.022	0.50	0.93
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	93.9%
Bromobenzene	86.4%

Gasoline Surrogate Recovery

Trifluorotoluene	91.3%
Bromobenzene	92.2%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1

Sample ID: MPLOTG-MW-07-120414

SAMPLE

Lab Sample ID: ZN25D

LIMS ID: 14-26291

Matrix: Water

Data Release Authorized: 

Reported: 12/22/14

QC Report No: ZN25-Golder Associates

Project: Masterpark Lot C

Event: 673-93368-06-09A

Date Sampled: 12/04/14

Date Received: 12/04/14

Date Analyzed: 12/10/14 13:58

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 20.0

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.56	5.0	21
108-88-3	Toluene	0.28	5.0	66
100-41-4	Ethylbenzene	0.56	5.0	200
179601-23-1	m,p-Xylene	0.44	10	1,500
95-47-6	o-Xylene	0.54	5.0	7.2

Gasoline Range Hydrocarbons

1.1

2.0

26

GAS ID

GAS

BETX Surrogate Recovery

Trifluorotoluene	94.4%
Bromobenzene	90.4%

Gasoline Surrogate Recovery

Trifluorotoluene	98.5%
Bromobenzene	96.7%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1


Sample ID: MPLOTG-FB-120414

SAMPLE

Lab Sample ID: ZN25E

LIMS ID: 14-26292

Matrix: Water

Data Release Authorized: 

Reported: 12/22/14

QC Report No: ZN25-Golder Associates

Project: Masterpark Lot C

Event: 673-93368-06-09A

Date Sampled: 12/04/14

Date Received: 12/04/14

Date Analyzed: 12/10/14 14:27

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	< 0.50 U
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
-----------------------------	-------	------	----------	---------------

BETX Surrogate Recovery

Trifluorotoluene	93.1%
Bromobenzene	90.6%

Gasoline Surrogate Recovery

Trifluorotoluene	97.3%
Bromobenzene	96.1%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1


Sample ID: MPLOTG-MW-12-120414

SAMPLE

Lab Sample ID: ZN25F

LIMS ID: 14-26293

Matrix: Water

Data Release Authorized: 

Reported: 12/22/14

QC Report No: ZN25-Golder Associates

Project: Masterpark Lot C

Event: 673-93368-06-09A

Date Sampled: 12/04/14

Date Received: 12/04/14

Date Analyzed: 12/10/14 14:55

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	0.73
179601-23-1	m,p-Xylene	0.022	0.50	4.5
95-47-6	o-Xylene	0.027	0.25	1.5

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	96.5%
Bromobenzene	94.9%

Gasoline Surrogate Recovery

Trifluorotoluene	96.8%
Bromobenzene	95.6%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: TripBlank-120414

Page 1 of 1

SAMPLE

Lab Sample ID: ZN25A


QC Report No: ZN25-Golder Associates

LIMS ID: 14-26288

Project: Masterpark Lot C

Matrix: Water

673-93368-06-09A

Data Release Authorized: 

Date Sampled: 12/04/14

Reported: 12/19/14

Date Received: 12/04/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/12/14 13:02

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	89.6%
d8-Toluene	97.3%
Bromofluorobenzene	97.2%
d4-1,2-Dichlorobenzene	102%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPLOTG-MW-13-120414

Page 1 of 1

SAMPLE

Lab Sample ID: ZN25B


QC Report No: ZN25-Golder Associates

LIMS ID: 14-26289

Project: Masterpark Lot C

Matrix: Water

673-93368-06-09A

Data Release Authorized: 

Date Sampled: 12/04/14

Reported: 12/19/14

Date Received: 12/04/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/12/14 16:43

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	92.8%
d8-Toluene	96.8%
Bromofluorobenzene	96.5%
d4-1,2-Dichlorobenzene	99.1%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPLOTG-MW-18-120414

Page 1 of 1

SAMPLE

Lab Sample ID: ZN25C

QC Report No: ZN25-Golder Associates

LIMS ID: 14-26290

Project: Masterpark Lot C

Matrix: Water

673-93368-06-09A

Data Release Authorized: 

Date Sampled: 12/04/14

Reported: 12/19/14

Date Received: 12/04/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/12/14 17:10

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	0.10 J

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	91.8%
d8-Toluene	95.9%
Bromofluorobenzene	95.5%
d4-1,2-Dichlorobenzene	98.8%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPlotC-MW-07-120414

Page 1 of 1

SAMPLE

Lab Sample ID: ZN25D


QC Report No: ZN25-Golder Associates

LIMS ID: 14-26291

Project: Masterpark Lot C

Matrix: Water

673-93368-06-09A

Data Release Authorized: 

Date Sampled: 12/04/14

Reported: 12/19/14

Date Received: 12/04/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/12/14 17:37

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result	
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U	
91-20-3	Naphthalene	0.12	0.50	20	J DNR
110-54-3	Hexane	0.10	0.20	150 E	DNR

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	127%
d8-Toluene	103%
Bromofluorobenzene	106%
d4-1,2-Dichlorobenzene	98.6%

ORGANICS ANALYSIS DATA SHEET**Volatiles by Purge & Trap GC/MS-Method SW8260C****Sample ID: MPLOTG-MW-07-120414**

Page 1 of 1

DILUTION

Lab Sample ID: ZN25D


QC Report No: ZN25-Golder Associates

LIMS ID: 14-26291

Project: Masterpark Lot C

Matrix: Water

673-93368-06-09A

Data Release Authorized: 

Date Sampled: 12/04/14

Reported: 12/19/14

Date Received: 12/04/14

Instrument/Analyst: NT3/PKC

Sample Amount: 0.50 mL

Date Analyzed: 12/16/14 13:24

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result	
106-93-4	1,2-Dibromoethane	1.5	4.0	< 4.0 U	DNR
91-20-3	Naphthalene	2.4	10	180	
110-54-3	Hexane	1.9	4.0	170	

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	97.8%
d8-Toluene	98.7%
Bromofluorobenzene	97.8%
d4-1,2-Dichlorobenzene	98.8%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPLOTG-FB-120414

Page 1 of 1

SAMPLE

Lab Sample ID: ZN25E

QC Report No: ZN25-Golder Associates

LIMS ID: 14-26292

Project: Masterpark Lot C

Matrix: Water

673-93368-06-09A

Data Release Authorized: 

Date Sampled: 12/04/14

Reported: 12/19/14

Date Received: 12/04/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/16/14 13:51

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	0.11 J

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	97.4%
d8-Toluene	99.5%
Bromofluorobenzene	98.0%
d4-1,2-Dichlorobenzene	99.6%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPLOTG-MW-12-120414

Page 1 of 1

SAMPLE

Lab Sample ID: ZN25F


QC Report No: ZN25-Golder Associates

LIMS ID: 14-26293

Project: Masterpark Lot C

Matrix: Water

673-93368-06-09A

Data Release Authorized: 

Date Sampled: 12/04/14

Reported: 12/19/14

Date Received: 12/04/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/12/14 18:32

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	0.68
110-54-3	Hexane	0.10	0.20	0.18 J

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	90.0%
d8-Toluene	98.1%
Bromofluorobenzene	96.3%
d4-1,2-Dichlorobenzene	101%

**ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS**

 NWT PHD by GC/FID
 Extraction Method: SW3510C
 Page 1 of 1

 QC Report No: ZN25-Golder Associates
 Project: Masterpark Lot C
 673-93368-06-09A

Matrix: Water

Date Received: 12/04/14

 Data Release Authorized: *WW*
 Reported: 12/22/14

ARI ID	Sample ID	Analysis Date	DF	Range	Result	LOQ	DL
MB-121114 14-26289	Method Blank	12/18/14 FID3B	1.0	Diesel Range Motor Oil Range HC ID o-Terphenyl	< 0.10 U < 0.20 U --- 75.4%	0.10 0.20	0.02 0.04
ZN25B 14-26289	MPLUTC-MW-13-120414	12/18/14 FID3B	1.0	Diesel Motor Oil HC ID o-Terphenyl	0.31 < 0.20 U DIESEL 64.3%	0.10 0.20	0.02 0.04
ZN25C 14-26290	MPLUTC-MW-18-120414	12/18/14 FID3B	1.0	Diesel Motor Oil HC ID o-Terphenyl	0.24 < 0.20 U DIESEL 65.7%	0.10 0.20	0.02 0.04
ZN25D 14-26291	MPLUTC-MW-07-120414	12/18/14 FID3B	1.0	Diesel Motor Oil HC ID o-Terphenyl	11 E J DNR 0.32 J DRO/RRO 92.5%	0.10 0.20	0.02 0.04
ZN25D DL 14-26291	MPLUTC-MW-07-120414	12/19/14 FID3B	10	Diesel Motor Oil HC ID o-Terphenyl	11 J < 2.0 U DNR DRO 85.6%	1.0 2.0	0.22 0.44
ZN25E 14-26292	MPLUTC-FB-120414	12/18/14 FID3B	1.0	Diesel Motor Oil HC ID o-Terphenyl	< 0.10 U < 0.20 U --- 93.3%	0.10 0.20	0.02 0.04
ZN25F 14-26293	MPLUTC-MW-12-120414	12/18/14 FID3B	1.0	Diesel Motor Oil HC ID o-Terphenyl	0.20 < 0.20 U DIESEL 73.6%	0.10 0.20	0.02 0.04

Reported in mg/L (ppm)

Diesel quantitation on total peaks in the range from C12 to C24.

Motor Oil quantitation on total peaks in the range from C24 to C38.

HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

Chain of Custody Record & Laboratory Analysis Request

Please analyze under existing MSA btm Boulder & ARZ



Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

ARI Assigned Number:		Turn-around Requested:			Page: 1 of 1	
ARI Client Company: <u>Golder</u>		Phone: <u>425 883 0772</u>			Date: <u>12/5/2014</u>	Ice Present? <u>Y</u>
Client Contact: <u>D. Morell / J. Lamberts</u>					No. of Coolers: <u>1</u>	Cooler Temps: <u>4.7</u>
Client Project Name: <u>Masterpark Lot C</u>					Analysis Requested	
Client Project #: <u>073-93368-06-09A</u>		Samplers: <u>Lamberts, Rydecki</u>			<u>NWTPH-GW</u>	<u>Notes/Comments</u>
Sample ID	Date	Time	Matrix	No. Containers	<u>EDB by 8260 report to MDL</u>	
Trip Blank-120514	12/5/14	-	W	2	<u>Naphthalene</u>	
MPLOT-C-MW-22-120514		<u>1030</u> 1000		7	<u>Nitrobenzene</u>	
MPLOT-C-MW-22-DUP-120514		1035		7	<u>Nitrobenzene</u>	
PORT-MW-B-120514		1200		7	<u>Nitrobenzene</u>	
MPLOT-C-MW-17A-120514		1320		21	<u>Nitrobenzene</u>	
<u>END OF SAMPLING EVENT</u>						
Comments/Special Instructions						
Relinquished by: (Signature) <u>J. Lamberts</u>		Received by: (Signature) <u>Taylor Anderson</u>		Relinquished by: (Signature)		Received by: (Signature)
Printed Name: <u>J. Lamberts</u>		Printed Name: <u>Taylor Anderson</u>		Printed Name:		Printed Name:
Company: <u>Golder</u>		Company: <u>ARZ</u>		Company:		Company:
Date & Time: <u>12/5/2014 1555</u>		Date & Time: <u>12-5-14 1535</u>		Date & Time:		Date & Time:

Reviewed by J. Lamberts 1/7/2014

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

2159:000002

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: TripBlank-120514

Page 1 of 1

SAMPLE

Lab Sample ID: ZN59A

QC Report No: ZN59-Golder Associates

LIMS ID: 14-26436

Project: Masterpark Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: *WVW*

Date Sampled: 12/05/14

Reported: 12/29/14

Date Received: 12/05/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/12/14 13:29

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	< 0.50 U
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	92.1%
d8-Toluene	97.5%
Bromofluorobenzene	96.8%
d4-1,2-Dichlorobenzene	98.6%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPL0TC-MW-22-120514

Page 1 of 1

SAMPLE

Lab Sample ID: ZN59B

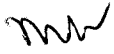
QC Report No: ZN59-Golder Associates

LIMS ID: 14-26437

Project: Masterpark Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: 

Date Sampled: 12/05/14

Reported: 12/29/14

Date Received: 12/05/14

Instrument/Analyst: NT3/PKC

Sample Amount: 0.50 mL

Date Analyzed: 12/12/14 19:56

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	1.5	4.0	< 4.0 U
91-20-3	Naphthalene	2.4	10	380
110-54-3	Hexane	1.9	4.0	7.2

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	90.6%
d8-Toluene	97.9%
Bromofluorobenzene	96.0%
d4-1,2-Dichlorobenzene	99.9%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPL0TC-MW-22-DUP-120514

Page 1 of 1

SAMPLE

Lab Sample ID: ZN59C

QC Report No: ZN59-Golder Associates

LIMS ID: 14-26438

Project: Masterpark Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: *MW*

Date Sampled: 12/05/14

Reported: 12/29/14

Date Received: 12/05/14

Instrument/Analyst: NT3/PKC

Sample Amount: 0.50 mL

Date Analyzed: 12/12/14 20:26

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	1.5	4.0	< 4.0 U
91-20-3	Naphthalene	2.4	10	370
110-54-3	Hexane	1.9	4.0	7.8

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	90.0%
d8-Toluene	98.6%
Bromofluorobenzene	97.4%
d4-1,2-Dichlorobenzene	100%


ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C
Page 1 of 1Sample ID: PORT-MW-B-120514
SAMPLE

Lab Sample ID: ZN59D

LIMS ID: 14-26439

Matrix: Water

Data Release Authorized: 

Reported: 12/29/14

QC Report No: ZN59-Golder Associates

Project: Masterpark Lot C

073-93368-06-09A

Date Sampled: 12/05/14

Date Received: 12/05/14

Instrument/Analyst: NT3/PKC

Date Analyzed: 12/12/14 18:59

Sample Amount: 10.0 mL

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result	
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U	DNR
91-20-3	Naphthalene	0.12	0.50	0.63	DNR
110-54-3	Hexane	0.10	0.20	0.13 J	DNR

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	88.9%
d8-Toluene	97.4%
Bromofluorobenzene	95.2%
d4-1,2-Dichlorobenzene	101%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: PORT-MW-B-120514

Page 1 of 1

REANALYSIS

Lab Sample ID: ZN59D

QC Report No: ZN59-Golder Associates

LIMS ID: 14-26439

Project: Masterpark Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: *MW*

Date Sampled: 12/05/14

Reported: 12/29/14

Date Received: 12/05/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/16/14 14:18

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	0.47 U < 0.50 U
110-54-3	Hexane	0.10	0.20	< 0.20 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	94.5%
d8-Toluene	98.2%
Bromofluorobenzene	95.0%
d4-1,2-Dichlorobenzene	102%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MPlotC-MW-17A-120514

Page 1 of 1

SAMPLE

Lab Sample ID: ZN59E

QC Report No: ZN59-Golder Associates

LIMS ID: 14-26440

Project: Masterpark Lot C

Matrix: Water

073-93368-06-09A

Data Release Authorized: *MW*

Date Sampled: 12/05/14

Reported: 12/29/14

Date Received: 12/05/14

Instrument/Analyst: NT3/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/12/14 19:27

Purge Volume: 10.0 mL

CAS Number	Analyte	DL	LOQ	Result
106-93-4	1,2-Dibromoethane	0.07	0.20	< 0.20 U
91-20-3	Naphthalene	0.12	0.50	2.8
110-54-3	Hexane	0.10	0.20	< 0.20 U UJ

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	90.7%
d8-Toluene	98.5%
Bromofluorobenzene	97.2%
d4-1,2-Dichlorobenzene	102%

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1

Sample ID: TripBlank-120514

SAMPLE

Lab Sample ID: ZN59A

LIMS ID: 14-26436

Matrix: Water

Data Release Authorized:

Reported: 12/22/14

QC Report No: ZN59-Golder Associates

Project: Masterpark Lot C

Event: 073-93368-06-09A

Date Sampled: 12/05/14

Date Received: 12/05/14

Date Analyzed: 12/15/14 13:17

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	< 0.50 U
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.057	0.10	< 0.10 U	GAS ID ---
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BETX Surrogate Recovery

Trifluorotoluene	104%
Bromobenzene	104%

Gasoline Surrogate Recovery

Trifluorotoluene	108%
Bromobenzene	107%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1

Sample ID: MPLOTG-MW-22-120514

SAMPLE

Lab Sample ID: ZN59B

LIMS ID: 14-26437

Matrix: Water

Data Release Authorized: 

Reported: 12/22/14

QC Report No: ZN59-Golder Associates

Project: Masterpark Lot C

Event: 073-93368-06-09A

Date Sampled: 12/05/14

Date Received: 12/05/14

Date Analyzed: 12/15/14 13:45

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	8.4
108-88-3	Toluene	0.014	0.25	10
100-41-4	Ethylbenzene	0.028	0.25	590
179601-23-1	m,p-Xylene	0.022	0.50	980
95-47-6	o-Xylene	0.027	0.25	3.4

DNR
DNR
DNR
DNR

Gasoline Range Hydrocarbons 0.057 0.10

15 E

GAS ID

GAS

DNR

BETX Surrogate Recovery

Trifluorotoluene	107%
Bromobenzene	101%

Gasoline Surrogate Recovery

Trifluorotoluene	111%
Bromobenzene	101%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1

Sample ID: MPlotC-MW-22-120514

DILUTION

Lab Sample ID: ZN59B

LIMS ID: 14-26437

Matrix: Water

Data Release Authorized: 

Reported: 12/22/14

QC Report No: ZN59-Golder Associates

Project: Masterpark Lot C

Event: 073-93368-06-09A

Date Sampled: 12/05/14

Date Received: 12/05/14

Date Analyzed: 12/18/14 16:12

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 10.0

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.28	2.5	8.7
108-88-3	Toluene	0.14	2.5	11
100-41-4	Ethylbenzene	0.28	2.5	740
179601-23-1	m,p-Xylene	0.22	5.0	1,100
95-47-6	o-Xylene	0.27	2.5	< 2.5 U

DNR

Gasoline Range Hydrocarbons	0.057	1.0	16
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GAS ID

GAS

BETX Surrogate Recovery

Trifluorotoluene	98.8%
Bromobenzene	99.2%

Gasoline Surrogate Recovery

Trifluorotoluene	106%
Bromobenzene	104%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG


Page 1 of 1

Sample ID: MPLOT-MW-22-DUP-120514
SAMPLE

Lab Sample ID: ZN59C

LIMS ID: 14-26438

Matrix: Water

Data Release Authorized: 

Reported: 12/22/14

QC Report No: ZN59-Golder Associates

Project: Masterpark Lot C

Event: 073-93368-06-09A

Date Sampled: 12/05/14

Date Received: 12/05/14

Date Analyzed: 12/15/14 14:12

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result	
71-43-2	Benzene	0.028	0.25	8.6	DNR
108-88-3	Toluene	0.014	0.25	10	
100-41-4	Ethylbenzene	0.028	0.25	590	DNR
179601-23-1	m,p-Xylene	0.022	0.50	970	DNR
95-47-6	o-Xylene	0.027	0.25	< 0.25 U	

Gasoline Range Hydrocarbons	0.057	0.10	15 E	GAS ID GAS DNR
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BETX Surrogate Recovery

Trifluorotoluene	109%
Bromobenzene	108%

Gasoline Surrogate Recovery

Trifluorotoluene	113%
Bromobenzene	101%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1


Sample ID: MPLOTG-MW-22-DUP-120514

DILUTION

Lab Sample ID: ZN59C

LIMS ID: 14-26438

Matrix: Water

Data Release Authorized: 

Reported: 12/22/14

QC Report No: ZN59-Golder Associates

Project: Masterpark Lot C

Event: 073-93368-06-09A

Date Sampled: 12/05/14

Date Received: 12/05/14

Date Analyzed: 12/18/14 16:40

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 10.0

CAS Number	Analyte	DL	LOQ	Result	
71-43-2	Benzene	0.28	2.5	8.9	
108-88-3	Toluene	0.14	2.5	9.7	DNR
100-41-4	Ethylbenzene	0.28	2.5	700	
179601-23-1	m,p-Xylene	0.22	5.0	1,100	
95-47-6	o-Xylene	0.27	2.5	< 2.5 U	DNR
Gasoline Range Hydrocarbons		0.057	1.0	16	GAS ID GAS

BETX Surrogate Recovery

Trifluorotoluene	103%
Bromobenzene	106%

Gasoline Surrogate Recovery

Trifluorotoluene	112%
Bromobenzene	111%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1


Sample ID: PORT-MW-B-120514

SAMPLE

Lab Sample ID: ZN59D

LIMS ID: 14-26439

Matrix: Water

Data Release Authorized: 

Reported: 12/22/14

QC Report No: ZN59-Golder Associates

Project: Masterpark Lot C

Event: 073-93368-06-09A

Date Sampled: 12/05/14

Date Received: 12/05/14

Date Analyzed: 12/15/14 14:40

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	< 0.25 U
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	1.1
179601-23-1	m,p-Xylene	0.022	0.50	1.0
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

Gasoline Range Hydrocarbons

0.057

0.10

0.11

GAS ID

GAS

BETX Surrogate Recovery

Trifluorotoluene	107%
Bromobenzene	108%

Gasoline Surrogate Recovery

Trifluorotoluene	109%
Bromobenzene	110%

BETX values reported in µg/L (ppb)

Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1

Sample ID: MPLOTG-MW-17A-120514

SAMPLE

Lab Sample ID: ZN59E

LIMS ID: 14-26440

Matrix: Water

Data Release Authorized: 

Reported: 12/22/14

QC Report No: ZN59-Golder Associates

Project: Masterpark Lot C

Event: 073-93368-06-09A

Date Sampled: 12/05/14

Date Received: 12/05/14

Date Analyzed: 12/15/14 15:08

Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	DL	LOQ	Result
71-43-2	Benzene	0.028	0.25	0.54
108-88-3	Toluene	0.014	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.028	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.022	0.50	0.63
95-47-6	o-Xylene	0.027	0.25	< 0.25 U

GAS ID

Gasoline Range Hydrocarbons 0.057 0.10 < 0.10 U

--- UJ

BETX Surrogate Recovery

Trifluorotoluene	102%
Bromobenzene	99.5%

Gasoline Surrogate Recovery

Trifluorotoluene	99.3%
Bromobenzene	101%

BETX values reported in µg/L (ppb)
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID
Extraction Method: SW3510C
Page 1 of 1

QC Report No: ZN59-Golder Associates
Project: Masterpark Lot C
073-93368-06-09A

Matrix: Water

Date Received: 12/05/14

Data Release Authorized: *MW*
Reported: 12/18/14

ARI ID	Sample ID	Analysis Date	DF	Range	Result	LOQ	DL
ZN59B 14-26437	MPLUTC-MW-22-120514	12/16/14 FID9	1.0	Diesel Motor Oil HC ID o-Terphenyl	0.86 J < 0.20 U DRO 73.0%	0.10 0.20	0.02 0.04
ZN59C 14-26438	MPLUTC-MW-22-DUP-120514	12/16/14 FID9	1.0	Diesel Motor Oil HC ID o-Terphenyl	0.96 J < 0.20 U DRO 75.2%	0.10 0.20	0.02 0.04
ZN59D 14-26439	PORT-MW-B-120514	12/16/14 FID9	1.0	Diesel Motor Oil HC ID o-Terphenyl	< 0.10 U < 0.20 U --- 75.2%	0.10 0.20	0.02 0.04
MB-121314 14-26440	Method Blank	12/16/14 FID9	1.0	Diesel Range Motor Oil Range HC ID o-Terphenyl	< 0.10 U < 0.20 U --- 95.4%	0.10 0.20	0.02 0.04
ZN59E 14-26440	MPLUTC-MW-17A-120514	12/16/14 FID9	1.0	Diesel Motor Oil HC ID o-Terphenyl	< 0.10 U < 0.20 U --- 85.9%	0.10 0.20	0.02 0.04

Reported in mg/L (ppm)

Diesel quantitation on total peaks in the range from C12 to C24.

Motor Oil quantitation on total peaks in the range from C24 to C38.

HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

APPENDIX D
SUMMARY DATA TABLES AND TREND GRAPHS

SUMMARY DATA TABLES

**Table D-1: Summary of Groundwater Sampling Results - Well MW-06
Sea-Tac Development Site, Seatac WA**

Date Sampled ^c	Field Parameters								Analytical Data									
	TOC Elevation (feet msl)	Depth to Water (feet btoc)	Groundwater Elevation (feet msl)	pH (standard units)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	NWTPH-Gasoline (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	EDB (ethylene dibromide) (µg/L) ^f	N-hexane (µg/L)	Naphthalene (µg/L)	NWTPH-Diesel (mg/L)	NWTPH-Motor Oil (mg/L)
19-Mar-10	369.68	60.03	309.65	5.96	13.5	409	0.87	3.75	< 0.10	< 1.0	< 1.0	< 1.0	< 1.0	< 0.0096	< 1.0	< 5.0	-	-
11-Feb-14	369.68	59.03	310.65	6.13	12.1	139	0.91	16.4	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.08	< 0.20	< 0.50	< 0.10	< 0.20
28-May-14	369.68	-	-	6.14	14.3	454	1.03	3.71	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.07	< 0.20 UJ	< 0.50	< 0.10	< 0.20
10-Sep-14	369.68	-	-	6.27	15.9	312.0	1.52	11.8	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.07	< 0.20	< 0.50	< 0.10	< 0.20
3-Dec-14	369.68	-	-	6.27	13.6	314	2.14	6.75	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.07	< 0.20	< 0.50	< 0.10	< 0.20
Clean-up Level	MTCA Method A for Groundwater (unrestricted landuse)								0.8 ^d /1.0 ^e	5 ^g	1000 ^g	700 ^g	1000 ^h	0.01 ^h	NSA	160	0.5	0.5
	MTCA Method B for Groundwater (unrestricted landuse)								NSA	5 ⁱ	640	800	1600	0.022	480	160	NSA	NSA

Notes:

feet bgs	Feet below ground surface	-	Not measured or not available
feet bmp	Feet below measuring point		Result exceeds Clean-up Level (CUL)
feet msl	Feet above mean sea level	mg/L	Milligrams per liter
^a	Well not surveyed, elevation estimated.	µg/L	Micrograms per liter
^b	IAS/SVE in operation. Suction may be affecting WLs.	NTU	Nephelometric Turbidity Unit
^c	Water levels collected at various times prior to sampling (see Table 1). Date/time is sampling time.	µmhos/cm	Micromhos per centimeter
^d	When benzene is present.	<	Analyte not detected above the reporting limit shown
^e	When benzene is not present.	MTCA	Model Toxics Control Act
^{f,*}	Reported at Method Detection Limit (MDL). The MDL is greater than the MTCA CULs.	MCL	Maximum Containment Level
^g	Inclusive of 40 CFR 141.61 Federal Law for drinking water MCLs	NSA	No Standard Available
^h	Value is more protective than Federal MCLs.	TOC	Top of casing inside PVC well
ⁱ	MTCA 173-340-705(5): Adjustments to cleanup levels based on applicable laws.	°C	Degrees Celsius
^j	Turbidity out of range. Well was purged using a bailer.	J	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
[*]	Reported at the Limit of Quantitation (LOQ). The LOQ is less than MTCA CULs.	UJ	The constituent was analyzed for, but was not detected above the reported sample quantitation limit; however, the value reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
		J+	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result may be biased high.
		B	Analyte detected in an associated Method Blank at a concentration greater than one-half of laboratory's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

**Table D-2: Summary of Groundwater Sampling Results - Well MW-07
Sea-Tac Development Site, Seatac WA**

	Field Parameters								Analytical Data									
Date Sampled ^c	TOC Elevation (feet msl)	Depth to Water (feet btoc)	Groundwater Elevation (feet msl)	pH (standard units)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	NWTPH-Gasoline (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	EDB (ethylene dibromide) (µg/L) ^f	N-hexane (µg/L)	Naphthalene (µg/L)	NWTPH-Diesel (mg/L)	NWTPH-Motor Oil (mg/L)
18-Mar-10	358.70	48.69	310.01	6.61	13.3	354	1.41	5.18	26	230	1,100	360	4630	0.010	160	210	-	-
13-Feb-14	358.69	47.72	310.97	6.56	14.3	131	0.35	3.87	29	25	110	180	2022	< 3.8	190	220	11 J	< 0.20
29-May-14	358.69	47.65	311.04	6.65	16.4	379	0.13	2.84	27	14	80	190	1811	< 1.5	140	210 B	11 J	< 0.20
11-Sep-14	358.69	47.95	310.74	6.73	16.5	373	0.35	2.28	36	17	81	260	2110	< 0.028	280	300 B J	11	0.41 J
4-Dec-14	358.69	47.95	310.74	6.70	15.7	333	0.20	2.95	26	21	66	200	1507	< 0.07	170	180	11 J	0.32 J
Clean-up Level	MTCA Method A for Groundwater (unrestricted landuse)								0.8 ^d /1.0 ^e	5 ^g	1000 ^g	700 ^g	1000 ^h	0.01 ^h	NSA	160	0.5	0.5
	MTCA Method B for Groundwater (unrestricted landuse)								NSA	5 ⁱ	640	800	1600	0.022	480	160	NSA	NSA

Notes:

feet bgs	Feet below ground surface	-	Not measured or not available
feet bmp	Feet below measuring point		Result exceeds Clean-up Level (CUL)
feet msl	Feet above mean sea level	mg/L	Milligrams per liter
^a	Well not surveyed, elevation estimated.	µg/L	Micrograms per liter
^b	IAS/SVE in operation. Suction may be affecting WLs.	NTU	Nephelometric Turbidity Unit
^c	Water levels collected at various times prior to sampling (see Table 1). Date/time is sampling time.	µmhos/cm	Micromhos per centimeter
^d	When benzene is present.	<	Analyte not detected above the reporting limit shown
^e	When benzene is not present.	MTCA	Model Toxics Control Act
^f	Reported at Method Detection Limit (MDL). The MDL is greater than the MTCA CULs.	MCL	Maximum Containment Level
^g	Inclusive of 40 CFR 141.61 Federal Law for drinking water MCLs	NSA	No Standard Available
^h	Value is more protective than Federal MCLs.	TOC	Top of casing inside PVC well
ⁱ	MTCA 173-340-705(5): Adjustments to cleanup levels based on applicable laws.	°C	Degrees Celsius
^j	Turbidity out of range. Well was purged using a bailer.	J	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
[*]	Reported at the Limit of Quantitation (LOQ). The LOQ is less than MTCA CULs.	UJ	The constituent was analyzed for, but was not detected above the reported sample quantitation limit; however, the value reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
		J+	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result may be biased high.
		B	Analyte detected in an associated Method Blank at a concentration greater than one-half of laboratory's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

**Table D-3: Summary of Groundwater Sampling Results - Well MW-09
Sea-Tac Development Site, Seatac WA**

	Field Parameters								Analytical Data									
Date Sampled ^c	TOC Elevation (feet msl)	Depth to Water (feet btoc)	Groundwater Elevation (feet msl)	pH (standard units)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	NWTPH-Gasoline (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	EDB (ethylene dibromide) (µg/L) ^f	N-hexane (µg/L)	Naphthalene (µg/L)	NWTPH-Diesel (mg/L)	NWTPH-Motor Oil (mg/L)
19-Mar-10	362.14	52.30	309.84	6.19	14.2	294	0.13	7.18	16	170	65	400	1434	0.016	100	160	-	-
12-Feb-14	362.13	51.45	310.68	6.49	12.6	99.5	0.28	3.10	7.5	30	8.1	150	98.0	< 0.08	16	120	1.6 J	< 0.20
29-May-14	362.13	51.41	310.72	6.44	15.0	295	0.14	1.01	7.8	32	9.4	170	111.6	< 0.37	5.60	92 B	2.3 J	< 0.20
10-Sep-14	362.13	51.68	-	6.49	15.7	310	0.20	3.85	5.6	17	4.6	100	47.2	< 0.010*	< 0.20	74	2.8	< 0.20
3-Dec-14	362.13	51.68	-	6.47	13.6	307	0.18	2.37	4.1	14	2.8	76	8.8	< 0.07	< 0.20	44	1.9	< 0.20
Clean-up Level	MTCA Method A for Groundwater (unrestricted landuse)								0.8 ^d /1.0 ^e	5 ^g	1000 ^g	700 ^g	1000 ^h	0.01 ^h	NSA	160	0.5	0.5
	MTCA Method B for Groundwater (unrestricted landuse)								NSA	5 ⁱ	640	800	1600	0.022	480	160	NSA	NSA

Notes:

feet bgs	Feet below ground surface	-	Not measured or not available
feet bmp	Feet below measuring point		Result exceeds Clean-up Level (CUL)
feet msl	Feet above mean sea level	mg/L	Milligrams per liter
^a	Well not surveyed, elevation estimated.	µg/L	Micrograms per liter
^b	IAS/SVE in operation. Suction may be affecting WLs.	NTU	Nephelometric Turbidity Unit
^c	Water levels collected at various times prior to sampling (see Table 1). Date/time is sampling time.	µmhos/cm	Micromhos per centimeter
^d	When benzene is present.	<	Analyte not detected above the reporting limit shown
^e	When benzene is not present.	MTCA	Model Toxics Control Act
^f	Reported at Method Detection Limit (MDL). The MDL is greater than the MTCA CULs.	MCL	Maximum Containment Level
^g	Inclusive of 40 CFR 141.61 Federal Law for drinking water MCLs	NSA	No Standard Available
^h	Value is more protective than Federal MCLs.	TOC	Top of casing inside PVC well
ⁱ	MTCA 173-340-705(5): Adjustments to cleanup levels based on applicable laws.	°C	Degrees Celsius
^j	Turbidity out of range. Well was purged using a bailer.	J	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
[*]	Reported at the Limit of Quantitation (LOQ). The LOQ is less than MTCA CULs.	UJ	The constituent was analyzed for, but was not detected above the reported sample quantitation limit; however, the value reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
		J+	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result may be biased high.
		B	Analyte detected in an associated Method Blank at a concentration greater than one-half of laboratory's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

**Table D-4: Summary of Groundwater Sampling Results - Well MW-12
Sea-Tac Development Site, Seatac WA**

	Field Parameters								Analytical Data									
Date Sampled ^c	TOC Elevation (feet msl)	Depth to Water (feet btoc)	Groundwater Elevation (feet msl)	pH (standard units)	Temperature (°C)	Conductivity (umhos/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	NWTPH-Gasoline (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	EDB (ethylene dibromide) (µg/L) ^f	N-hexane (µg/L)	Naphthalene (µg/L)	NWTPH-Diesel (mg/L)	NWTPH-Motor Oil (mg/L)
15-Mar-10	364.88	54.99	309.89	6.38	14.5	472	0.03	40.8	36	230	2,400	1,300	5140	0.16	210	520	-	-
13-Feb-14	364.83	55.02	309.81	7.76	14.1	125	10.50	3.43	8.6	79	410	79	970	< 3.8	< 10	25	1.1 J	< 0.20
29-May-14	364.83	51.58	313.25	7.87	16.7	252	11.77	5.99	0.12	2.0	4.3	1.6	4.2	< 0.07	< 0.20	< 0.50	0.34 J	< 0.20
11-Sep-14	364.83	54.87	309.96	8.04	18.1	255	11.80	38.8	0.11	2.5	2.6	1.5	5.3	< 0.010*	0.78	0.53 B J+	0.35	< 0.20
4-Dec-14	364.83	54.87	309.96	8.04	15.1	258	11.51	153	< 0.10	< 0.25	< 0.25	0.73	6.0	< 0.07	0.18 J	0.68	0.20	< 0.20
Clean-up Level	MTCA Method A for Groundwater (unrestricted landuse)								0.8 ^d /1.0 ^e	5 ^g	1000 ^g	700 ^g	1000 ^h	0.01 ^h	NSA	160	0.5	0.5
	MTCA Method B for Groundwater (unrestricted landuse)								NSA	5 ⁱ	640	800	1600	0.022	480	160	NSA	NSA

Notes:

feet bgs	Feet below ground surface	-	Not measured or not available
feet bmp	Feet below measuring point		Result exceeds Clean-up Level (CUL)
feet msl	Feet above mean sea level	mg/L	Milligrams per liter
^a	Well not surveyed, elevation estimated.	µg/L	Micrograms per liter
^b	IAS/SVE in operation. Suction may be affecting WLs.	NTU	Nephelometric Turbidity Unit
^c	Water levels collected at various times prior to sampling (see Table 1). Date/time is sampling time.	µmhos/cm	Micromhos per centimeter
^d	When benzene is present.	<	Analyte not detected above the reporting limit shown
^e	When benzene is not present.	MTCA	Model Toxics Control Act
^f	Reported at Method Detection Limit (MDL). The MDL is greater than the MTCA CULs.	MCL	Maximum Containment Level
^g	Inclusive of 40 CFR 141.61 Federal Law for drinking water MCLs	NSA	No Standard Available
^h	Value is more protective than Federal MCLs.	TOC	Top of casing inside PVC well
ⁱ	MTCA 173-340-705(5): Adjustments to cleanup levels based on applicable laws.	°C	Degrees Celsius
^j	Turbidity out of range. Well was purged using a bailer.	J	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
[*]	Reported at the Limit of Quantitation (LOQ). The LOQ is less than MTCA CULs.	UJ	The constituent was analyzed for, but was not detected above the reported sample quantitation limit; however, the value reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
		J+	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result may be biased high.
		B	Analyte detected in an associated Method Blank at a concentration greater than one-half of laboratory's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

**Table D-5: Summary of Groundwater Sampling Results - Well MW-13
Sea-Tac Development Site, Seatac WA**

	Field Parameters								Analytical Data									
Date Sampled ^c	TOC Elevation (feet msl)	Depth to Water (feet btoc)	Groundwater Elevation (feet msl)	pH (standard units)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	NWTPH-Gasoline (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	EDB (ethylene dibromide) (µg/L) ^f	N-hexane (µg/L)	Naphthalene (µg/L)	NWTPH-Diesel (mg/L)	NWTPH-Motor Oil (mg/L)
19-Mar-10	365.42	55.66	309.76	6.28	12.8	271	0.16	72.1	33	14	230	890	4500	0.029	130	410	-	-
12-Feb-14	365.42	54.35	311.07	6.57	13.2	73.3	1.41	4.28	14	< 0.25	3.90	240	2070	< 0.08	< 0.20	33	1.4 J	< 0.20
29-May-14	365.42	55.62	309.80	6.84	14.7	182	10.59	4.24	0.14	< 0.25	< 0.25	0.85	18.54	< 0.07	0.11 J	< 0.50	0.32	< 0.20
10-Sep-14	365.42	54.86	310.56	7.06	14.9	137	11.06	2.41	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.010*	< 0.20	< 0.50	0.29	< 0.20
4-Dec-14	365.42	54.86	310.56	7.06	13.9	163	10.10	2.32	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.07	< 0.20	< 0.50	0.31	< 0.20
Clean-up Level	MTCA Method A for Groundwater (unrestricted landuse)								0.8 ^d /1.0 ^e	5 ^g	1000 ^g	700 ^g	1000 ^h	0.01 ^h	NSA	160	0.5	0.5
	MTCA Method B for Groundwater (unrestricted landuse)								NSA	5 ⁱ	640	800	1600	0.022	480	160	NSA	NSA

Notes:

feet bgs	Feet below ground surface	-	Not measured or not available
feet bmp	Feet below measuring point		Result exceeds Clean-up Level (CUL)
feet msl	Feet above mean sea level	mg/L	Milligrams per liter
^a	Well not surveyed, elevation estimated.	µg/L	Micrograms per liter
^b	IAS/SVE in operation. Suction may be affecting WLs.	NTU	Nephelometric Turbidity Unit
^c	Water levels collected at various times prior to sampling (see Table 1). Date/time is sampling time.	µmhos/cm	Micromhos per centimeter
^d	When benzene is present.	<	Analyte not detected above the reporting limit shown
^e	When benzene is not present.	MTCA	Model Toxics Control Act
^f	Reported at Method Detection Limit (MDL). The MDL is greater than the MTCA CULs.	MCL	Maximum Containment Level
^g	Inclusive of 40 CFR 141.61 Federal Law for drinking water MCLs	NSA	No Standard Available
^h	Value is more protective than Federal MCLs.	TOC	Top of casing inside PVC well
ⁱ	MTCA 173-340-705(5): Adjustments to cleanup levels based on applicable laws.	°C	Degrees Celsius
^j	Turbidity out of range. Well was purged using a bailer.	J	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
[*]	Reported at the Limit of Quantitation (LOQ). The LOQ is less than MTCA CULs.	UJ	The constituent was analyzed for, but was not detected above the reported sample quantitation limit; however, the value reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
		J+	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result may be biased high.
		B	Analyte detected in an associated Method Blank at a concentration greater than one-half of laboratory's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

**Table D-6: Summary of Groundwater Sampling Results - Well MW-17A
Sea-Tac Development Site, Seatac WA**

Date Sampled ^c	Field Parameters								Analytical Data									
	TOC Elevation (feet msl)	Depth to Water (feet btoc)	Groundwater Elevation (feet msl)	pH (standard units)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	NWTPH-Gasoline (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	EDB (ethylene dibromide) (µg/L) ^f	N-hexane (µg/L)	Naphthalene (µg/L)	NWTPH-Diesel (mg/L)	NWTPH-Motor Oil (mg/L)
17-Mar-10	385.81	76.29	309.52	6.51	9.3	145	0.52	142.0	1.70	< 1.0	< 1.0	4	27	< 0.0095	< 1.0	63	-	-
11-Feb-14	394.00	83.80	310.20	6.36	11.3	82.5	1.06	137.0	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.08	< 0.20	0.74	< 0.10	< 0.20
29-May-14	394.00	84.00	310.00	6.22	12.2	175	2.06	39.7	< 0.10	0.25	< 0.25	< 0.25	< 0.50	< 0.07	< 0.20	0.62 J+	< 0.10	< 0.20
10-Sep-14	394.00	84.18	309.82	6.28	12.4	162	1.42	18.8	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.07	< 0.20	0.64 J	< 0.10	< 0.20
5-Dec-14	394.00	84.18	309.82	6.42	11.7	167	1.09	31.8	< 0.10 UJ	0.54 J	< 0.25 UJ	< 0.25 UJ	0.63 J	< 0.07	< 0.20 UJ	2.8	< 0.10	< 0.20
Clean-up Level	MTCA Method A for Groundwater (unrestricted landuse)								0.8 ^g /1.0 ^e	5 ^g	1000 ^g	700 ^g	1000 ^h	0.01 ^h	NSA	160	0.5	0.5
	MTCA Method B for Groundwater (unrestricted landuse)								NSA	5 ⁱ	640	800	1600	0.022	480	160	NSA	NSA

Notes:

feet bgs	Feet below ground surface	-	Not measured or not available
feet bmp	Feet below measuring point		Result exceeds Clean-up Level (CUL)
feet msl	Feet above mean sea level	mg/L	Milligrams per liter
^a	Well not surveyed, elevation estimated.	µg/L	Micrograms per liter
^b	IAS/SVE in operation. Suction may be affecting WLs.	NTU	Nephelometric Turbidity Unit
^c	Water levels collected at various times prior to sampling (see Table 1). Date/time is sampling time.	µmhos/cm	Micromhos per centimeter
^d	When benzene is present.	<	Analyte not detected above the reporting limit shown
^e	When benzene is not present.	MTCA	Model Toxics Control Act
^f	Reported at Method Detection Limit (MDL). The MDL is greater than the MTCA CULs.	MCL	Maximum Containment Level
^g	Inclusive of 40 CFR 141.61 Federal Law for drinking water MCLs	NSA	No Standard Available
^h	Value is more protective than Federal MCLs.	TOC	Top of casing inside PVC well
ⁱ	MTCA 173-340-705(5): Adjustments to cleanup levels based on applicable laws.	°C	Degrees Celsius
^j	Turbidity out of range. Well was purged using a bailer.	J	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
[*]	Reported at the Limit of Quantitation (LOQ). The LOQ is less than MTCA CULs.	UJ	The constituent was analyzed for, but was not detected above the reported sample quantitation limit; however, the value reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
		J+	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result may be biased high.
		B	Analyte detected in an associated Method Blank at a concentration greater than one-half of laboratory's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

**Table D-7: Summary of Groundwater Sampling Results - Well MW-18
Sea-Tac Development Site, Seatac WA**

Date Sampled ^c	Field Parameters								Analytical Data									
	TOC Elevation (feet msl)	Depth to Water (feet btoc)	Groundwater Elevation (feet msl)	pH (standard units)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	NWTPH-Gasoline (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	EDB (ethylene dibromide) (µg/L) ^f	N-hexane (µg/L)	Naphthalene (µg/L)	NWTPH-Diesel (mg/L)	NWTPH-Motor Oil (mg/L)
18-Mar-10	360.45	50.58	309.87	6.69	14.2	586	0.11	5.39	52	2,600	6,000	1,700	6690	2.5	350	420	-	-
12-Feb-14	360.45	49.01	311.44	7.62	13.8	175	8.11	2.89	1.0	27	13	17	91.3	< 0.08	1.1	4.0	0.77 J	<0.20
29-May-14	360.45	49.75	310.70	7.98	15.2	369	10.60	7.95	0.14	6.6	1.5	4.7	9.2	< 0.07	0.64	0.84 J+	0.33 J	<0.20
11-Sep-14	360.45	49.83	310.62	8.23	15.2	498	11.23	13.1	< 0.10	0.72	0.27	0.40	0.72	< 0.010*	< 0.20	< 0.50	0.14	< 0.20
4-Dec-14	360.45	49.83	310.62	7.84	14.4	470	10.78	81.6	< 0.10	0.69	< 0.25	0.63	0.93	< 0.07	0.10 J	< 0.50	0.24	< 0.20
Clean-up Level	MTCA Method A for Groundwater (unrestricted landuse)								0.8 ^g /1.0 ^e	5 ^g	1000 ^g	700 ^g	1000 ^h	0.01 ^h	NSA	160	0.5	0.5
	MTCA Method B for Groundwater (unrestricted landuse)								NSA	5 ⁱ	640	800	1600	0.022	480	160	NSA	NSA

Notes:

feet bgs	Feet below ground surface	-	Not measured or not available
feet bmp	Feet below measuring point		Result exceeds Clean-up Level (CUL)
feet msl	Feet above mean sea level	mg/L	Milligrams per liter
^a	Well not surveyed, elevation estimated.	µg/L	Micrograms per liter
^b	IAS/SVE in operation. Suction may be affecting WLs.	NTU	Nephelometric Turbidity Unit
^c	Water levels collected at various times prior to sampling (see Table 1). Date/time is sampling time.	µmhos/cm	Micromhos per centimeter
^d	When benzene is present.	<	Analyte not detected above the reporting limit shown
^e	When benzene is not present.	MTCA	Model Toxics Control Act
^f	Reported at Method Detection Limit (MDL). The MDL is greater than the MTCA CULs.	MCL	Maximum Containment Level
^g	Inclusive of 40 CFR 141.61 Federal Law for drinking water MCLs	NSA	No Standard Available
^h	Value is more protective than Federal MCLs.	TOC	Top of casing inside PVC well
ⁱ	MTCA 173-340-705(5): Adjustments to cleanup levels based on applicable laws.	°C	Degrees Celsius
^j	Turbidity out of range. Well was purged using a bailer.	J	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
[*]	Reported at the Limit of Quantitation (LOQ). The LOQ is less than MTCA CULs.	UJ	The constituent was analyzed for, but was not detected above the reported sample quantitation limit; however, the value reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
		J+	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result may be biased high.
		B	Analyte detected in an associated Method Blank at a concentration greater than one-half of laboratory's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

**Table D-8: Summary of Groundwater Sampling Results - Well MW-19
Sea-Tac Development Site, Seatac WA**

Date Sampled ^c	Field Parameters								Analytical Data									
	TOC Elevation (feet msl)	Depth to Water (feet btoc)	Groundwater Elevation (feet msl)	pH (standard units)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	NWTPH-Gasoline (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	EDB (ethylene dibromide) (µg/L) ^f	N-hexane (µg/L)	Naphthalene (µg/L)	NWTPH-Diesel (mg/L)	NWTPH-Motor Oil (mg/L)
18-Mar-10	356.61	46.60	310.01	7.04	12.5	275	0.07	84.0	1.3	8.90	1.8	43	6.0	< 0.0096	2.8	< 5.0	-	-
11-Feb-14	356.61	45.46	311.15	6.98	12.7	105	0.15	3.20	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.08	4.3	< 0.50	< 0.10	< 0.20
29-May-14	356.61	45.74	310.87	6.96	13.7	290	0.04	0.42	< 0.10	< 0.25	0.40	< 0.25	0.58	< 0.07	0.3	< 0.50	< 0.10	< 0.20
10-Sep-14	356.61	45.73	310.88	6.93	14.5	379	0.16	0.30	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.07	< 0.20	< 0.50	< 0.10	< 0.20
3-Dec-14	356.61	45.73	310.88	6.82	13.3	380	0.20	0.86	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.07	< 0.20	< 0.50	< 0.10	< 0.20
Clean-up Level	MTCA Method A for Groundwater (unrestricted landuse)								0.8 ^g /1.0 ^e	5 ^g	1000 ^g	700 ^g	1000 ^h	0.01 ^h	NSA	160	0.5	0.5
	MTCA Method B for Groundwater (unrestricted landuse)								NSA	5 ⁱ	640	800	1600	0.022	480	160	NSA	NSA

Notes:

feet bgs	Feet below ground surface	-	Not measured or not available
feet bmp	Feet below measuring point		Result exceeds Clean-up Level (CUL)
feet msl	Feet above mean sea level	mg/L	Milligrams per liter
^a	Well not surveyed, elevation estimated.	µg/L	Micrograms per liter
^b	IAS/SVE in operation. Suction may be affecting WLs.	NTU	Nephelometric Turbidity Unit
^c	Water levels collected at various times prior to sampling (see Table 1). Date/time is sampling time.	µmhos/cm	Micromhos per centimeter
^d	When benzene is present.	<	Analyte not detected above the reporting limit shown
^e	When benzene is not present.	MTCA	Model Toxics Control Act
^f	Reported at Method Detection Limit (MDL). The MDL is greater than the MTCA CULs.	MCL	Maximum Containment Level
^g	Inclusive of 40 CFR 141.61 Federal Law for drinking water MCLs	NSA	No Standard Available
^h	Value is more protective than Federal MCLs.	TOC	Top of casing inside PVC well
ⁱ	MTCA 173-340-705(5): Adjustments to cleanup levels based on applicable laws.	°C	Degrees Celsius
^j	Turbidity out of range. Well was purged using a bailer.	J	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
[*]	Reported at the Limit of Quantitation (LOQ). The LOQ is less than MTCA CULs.	UJ	The constituent was analyzed for, but was not detected above the reported sample quantitation limit; however, the value reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
		J+	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result may be biased high.
		B	Analyte detected in an associated Method Blank at a concentration greater than one-half of laboratory's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

**Table D-9: Summary of Groundwater Sampling Results - Well MW-20
Sea-Tac Development Site, Seatac WA**

Date Sampled ^c	Field Parameters								Analytical Data									
	TOC Elevation (feet msl)	Depth to Water (feet btoc)	Groundwater Elevation (feet msl)	pH (standard units)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	NWTPH-Gasoline (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	EDB (ethylene dibromide) (µg/L) ^f	N-hexane (µg/L)	Naphthalene (µg/L)	NWTPH-Diesel (mg/L)	NWTPH-Motor Oil (mg/L)
17-Mar-10	430.98	121.79	309.19	6.63	10.8	359	4.82	4.37	< 0.10	< 1.0	< 1.0	< 1.0	< 1.0	< 0.0095	< 1.0	< 5.0	-	-
20-Mar-14	416.61	106.13	310.48	6.74	11.4	377	7.82	3.32	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.07	< 0.20	< 0.50 UJ	< 0.10	< 0.20
29-May-14	416.61	106.66	309.95	6.73	12.3	257	6.37	0.82	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.07	< 0.20	< 0.50	< 0.10	< 0.20
10-Sep-14	416.61	106.53	310.08	6.83	13.2	355	7.55	0.69	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.07	< 0.20	< 0.50	< 0.10	< 0.20
3-Dec-14	416.61	106.53	310.08	6.79	12.4	355	7.67	1.30	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.07	< 0.20	< 0.50	< 0.10	< 0.20
Clean-up Level	MTCA Method A for Groundwater (unrestricted landuse)								0.8 ^g /1.0 ^e	5 ^g	1000 ^g	700 ^g	1000 ^h	0.01 ^h	NSA	160	0.5	0.5
	MTCA Method B for Groundwater (unrestricted landuse)								NSA	5 ⁱ	640	800	1600	0.022	480	160	NSA	NSA

Notes:

feet bgs	Feet below ground surface	-	Not measured or not available
feet bmp	Feet below measuring point		Result exceeds Clean-up Level (CUL)
feet msl	Feet above mean sea level	mg/L	Milligrams per liter
^a	Well not surveyed, elevation estimated.	µg/L	Micrograms per liter
^b	IAS/SVE in operation. Suction may be affecting WLs.	NTU	Nephelometric Turbidity Unit
^c	Water levels collected at various times prior to sampling (see Table 1). Date/time is sampling time.	µmhos/cm	Micromhos per centimeter
^d	When benzene is present.	<	Analyte not detected above the reporting limit shown
^e	When benzene is not present.	MTCA	Model Toxics Control Act
^f	Reported at Method Detection Limit (MDL). The MDL is greater than the MTCA CULs.	MCL	Maximum Containment Level
^g	Inclusive of 40 CFR 141.61 Federal Law for drinking water MCLs	NSA	No Standard Available
^h	Value is more protective than Federal MCLs.	TOC	Top of casing inside PVC well
ⁱ	MTCA 173-340-705(5): Adjustments to cleanup levels based on applicable laws.	°C	Degrees Celsius
^j	Turbidity out of range. Well was purged using a bailer.	J	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
[*]	Reported at the Limit of Quantitation (LOQ). The LOQ is less than MTCA CULs.	UJ	The constituent was analyzed for, but was not detected above the reported sample quantitation limit; however, the value reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
		J+	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result may be biased high.
		B	Analyte detected in an associated Method Blank at a concentration greater than one-half of laboratory's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

**Table D-10: Summary of Groundwater Sampling Results - Well MW-21
Sea-Tac Development Site, Seatac WA**

Date Sampled ^c	Field Parameters								Analytical Data									
	TOC Elevation (feet msl)	Depth to Water (feet btoc)	Groundwater Elevation (feet msl)	pH (standard units)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	NWTPH-Gasoline (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	EDB (ethylene dibromide) (µg/L) ^f	N-hexane (µg/L)	Naphthalene (µg/L)	NWTPH-Diesel (mg/L)	NWTPH-Motor Oil (mg/L)
17-Mar-10	390.79	81.26	309.53	5.97	11.5	257	3.21	5.13	< 0.10	< 1.0	< 1.0	< 1.0	< 1.0	< 0.0096	< 1.0	< 5.0	-	-
11-Feb-14	412.85	102.34	310.51	6.09	11.9	110	6.31	11.2	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.08	< 0.20	< 0.50	< 0.10	< 0.20
29-May-14	412.85	102.61	310.24	6.15	12.5	277	6.28	1.71	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.07	< 0.20	< 0.50	< 0.10	< 0.20
10-Sep-14	412.85	102.66	310.19	6.15	13.5	283	6.25	1.95	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.07	< 0.20	< 0.50	< 0.10	< 0.20
3-Dec-14	412.85	102.66	310.19	6.20	12.3	304	5.54	13.1	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.07	< 0.20	< 0.50	< 0.10	< 0.20
Clean-up Level	MTCA Method A for Groundwater (unrestricted landuse)								0.8 ^g /1.0 ^e	5 ^g	1000 ^g	700 ^g	1000 ^h	0.01 ^h	NSA	160	0.5	0.5
	MTCA Method B for Groundwater (unrestricted landuse)								NSA	5 ⁱ	640	800	1600	0.022	480	160	NSA	NSA

Notes:

feet bgs	Feet below ground surface	-	Not measured or not available
feet bmp	Feet below measuring point		Result exceeds Clean-up Level (CUL)
feet msl	Feet above mean sea level	mg/L	Milligrams per liter
^a	Well not surveyed, elevation estimated.	µg/L	Micrograms per liter
^b	IAS/SVE in operation. Suction may be affecting WLs.	NTU	Nephelometric Turbidity Unit
^c	Water levels collected at various times prior to sampling (see Table 1). Date/time is sampling time.	µmhos/cm	Micromhos per centimeter
^d	When benzene is present.	<	Analyte not detected above the reporting limit shown
^e	When benzene is not present.	MTCA	Model Toxics Control Act
^f	Reported at Method Detection Limit (MDL). The MDL is greater than the MTCA CULs.	MCL	Maximum Containment Level
^g	Inclusive of 40 CFR 141.61 Federal Law for drinking water MCLs	NSA	No Standard Available
^h	Value is more protective than Federal MCLs.	TOC	Top of casing inside PVC well
ⁱ	MTCA 173-340-705(5): Adjustments to cleanup levels based on applicable laws.	°C	Degrees Celsius
^j	Turbidity out of range. Well was purged using a bailer.	J	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
[*]	Reported at the Limit of Quantitation (LOQ). The LOQ is less than MTCA CULs.	UJ	The constituent was analyzed for, but was not detected above the reported sample quantitation limit; however, the value reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
		J+	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result may be biased high.
		B	Analyte detected in an associated Method Blank at a concentration greater than one-half of laboratory's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

Table D-11: Summary of Groundwater Sampling Results - Well MW-22
Sea-Tac Development Site, Seatac WA

Date Sampled ^c	Field Parameters								Analytical Data									
	TOC Elevation (feet msl)	Depth to Water (feet btoc)	Groundwater Elevation (feet msl)	pH (standard units)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	NWTPH-Gasoline (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	EDB (ethylene dibromide) (µg/L) ^f	N-hexane (µg/L)	Naphthalene (µg/L)	NWTPH-Diesel (mg/L)	NWTPH-Motor Oil (mg/L)
16-Mar-10	393.31	83.63	309.68	6.65	12.5	586	0.25	82.0	15	23	74	1400	2420	< 0.0095	15	380	-	-
20-Mar-14	393.31	82.93	310.38	6.68	12.2	381	0.87	64.8	17	5.7	12	990	1503	< 0.07	7.8	400 J	1.2 J	< 0.20
28-May-14	393.31	82.72	310.59	6.73	13.2	383	0.30	2.26	18	3.9	9.7	940	1900	< 0.07	8.6	420 B	1.7 J	< 0.20
12-Sep-14	393.31	82.98	310.33	6.81	13.7	423	0.29	1.03	16	4.8	9.3	690	1103	< 1.5	9.8	460 B J	1.1 J	< 0.20
5-Dec-14	393.31	82.98	310.33	6.81	12.8	378	0.26	3.71	16	8.7	11	740	1103	< 1.5	7.2	380	0.86 J	< 0.20
Clean-up Level	MTCA Method A for Groundwater (unrestricted landuse)								0.8 ^d /1.0 ^e	5 ^g	1000 ^g	700 ^g	1000 ^h	0.01 ^h	NSA	160	0.5	0.5
	MTCA Method B for Groundwater (unrestricted landuse)								NSA	5 ⁱ	640	800	1600	0.022	480	160	NSA	NSA

Notes:

feet bgs	Feet below ground surface	-	Not measured or not available
feet bmp	Feet below measuring point		Result exceeds Clean-up Level (CUL)
feet msl	Feet above mean sea level	mg/L	Milligrams per liter
^a	Well not surveyed, elevation estimated.	µg/L	Micrograms per liter
^b	IAS/SVE in operation. Suction may be affecting WLs.	NTU	Nephelometric Turbidity Unit
^c	Water levels collected at various times prior to sampling (see Table 1). Date/time is sampling time.	µmhos/cm	Micromhos per centimeter
^d	When benzene is present.	<	Analyte not detected above the reporting limit shown
^e	When benzene is not present.	MTCA	Model Toxics Control Act
^f	Reported at Method Detection Limit (MDL). The MDL is greater than the MTCA CULs.	MCL	Maximum Containment Level
^g	Inclusive of 40 CFR 141.61 Federal Law for drinking water MCLs	NSA	No Standard Available
^h	Value is more protective than Federal MCLs.	TOC	Top of casing inside PVC well
ⁱ	MTCA 173-340-705(5): Adjustments to cleanup levels based on applicable laws.	°C	Degrees Celsius
^j	Turbidity out of range. Well was purged using a bailer.	J	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
[*]	Reported at the Limit of Quantitation (LOQ). The LOQ is less than MTCA CULs.	UJ	The constituent was analyzed for, but was not detected above the reported sample quantitation limit; however, the value reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
		J+	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result may be biased high.
		B	Analyte detected in an associated Method Blank at a concentration greater than one-half of laboratory's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

**Table D-12: Summary of Groundwater Sampling Results - Well PORT-MW-B
Sea-Tac Development Site, Seatac WA**

	Field Parameters								Analytical Data									
Date Sampled ^c	TOC Elevation (feet msl)	Depth to Water (feet btoc)	Groundwater Elevation (feet msl)	pH (standard units)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	NWTPH-Gasoline (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	EDB (ethylene dibromide) (µg/L) ^f	N-hexane (µg/L)	Naphthalene (µg/L)	NWTPH-Diesel (mg/L)	NWTPH-Motor Oil (mg/L)
3-Aug-11	400.00	-	-	-	-	-	-	-	0.20	1.3	< 1.0	13	3.4	< 0.01	< 1.0	13	0.28	< 0.25
20-Mar-14	400.00	89.70	310.30	6.55	12.3	267	6.16	- ^j	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.07	< 0.20	< 0.50 UJ	< 0.10	< 0.20
28-May-14	400.00	89.50	310.50	6.50	14.2	317	4.63	98.3	< 0.10	< 0.25	< 0.25	< 0.25	< 0.50	< 0.07	< 0.20	< 0.50	< 0.10	< 0.20
12-Sep-14	400.00	89.71	310.29	6.56	14.0	266	3.56	6.2	< 0.10	< 0.25	< 0.25	1.1	1.9	< 0.07	< 0.20	< 0.50	< 0.10	< 0.20
5-Dec-14	400.00	89.71	310.29	6.57	12.6	265	4.07	84.1	0.11	< 0.25	< 0.25	1.1	1.0	< 0.07	< 0.20	< 0.50	< 0.10	< 0.20
Clean-up Level	MTCA Method A for Groundwater (unrestricted landuse)								0.8 ^d /1.0 ^e	5 ^g	1000 ^g	700 ^g	1000 ^h	0.01 ^h	NSA	160	0.5	0.5
	MTCA Method B for Groundwater (unrestricted landuse)								NSA	5 ⁱ	640	800	1600	0.022	480	160	NSA	NSA

Notes:

feet bgs	Feet below ground surface	-	Not measured or not available
feet bmp	Feet below measuring point		Result exceeds Clean-up Level (CUL)
feet msl	Feet above mean sea level	mg/L	Milligrams per liter
^a	Well not surveyed, elevation estimated.	µg/L	Micrograms per liter
^b	IAS/SVE in operation. Suction may be affecting WLs.	NTU	Nephelometric Turbidity Unit
^c	Water levels collected at various times prior to sampling (see Table 1). Date/time is sampling time.	µmhos/cm	Micromhos per centimeter
^d	When benzene is present.	<	Analyte not detected above the reporting limit shown
^e	When benzene is not present.	MTCA	Model Toxics Control Act
^f	Reported at Method Detection Limit (MDL). The MDL is greater than the MTCA CULs.	MCL	Maximum Containment Level
^g	Inclusive of 40 CFR 141.61 Federal Law for drinking water MCLs	NSA	No Standard Available
^h	Value is more protective than Federal MCLs.	TOC	Top of casing inside PVC well
ⁱ	MTCA 173-340-705(5): Adjustments to cleanup levels based on applicable laws.	°C	Degrees Celsius
^j	Turbidity out of range. Well was purged using a bailer.	J	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
[*]	Reported at the Limit of Quantitation (LOQ). The LOQ is less than MTCA CULs.	UJ	The constituent was analyzed for, but was not detected above the reported sample quantitation limit; however, the value reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
		J+	The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result may be biased high.
		B	Analyte detected in an associated Method Blank at a concentration greater than one-half of laboratory's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

SUMMARY TREND GRAPHS

