TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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TestAmerica Job ID: 580-83566-1
Client Project/Site: Portland Harbor Pre-Remedial Design

For:
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Attn: Amy Dahl

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Authorized for release by:
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Job ID: 580-83566-1

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE
Client: AECOM
Project: Portland Harbor Pre-Remedial Design
Report Number: 580-83566-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are an unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes within the calibration range of the instrument or that reduces the interferences thereby enabling the quantification of target analytes.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

Fourteen samples were received on 1/28/2019 2:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.6º C and 2.8º C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

VOLATILE ORGANIC COMPOUNDS (GC-MS)

Samples PDI-RB-PP-190127 (580-83566-1), PDI-WS-T06E-1901 (580-83566-3), PDI-WS-T06N-1901 (580-83566-4), PDI-WS-T06W-1901 (580-83566-5), PDI-WS-T07E-1901 (580-83566-7), PDI-WS-T07N-1901 (580-83566-8), PDI-WS-T07W-1901 (580-83566-9), PDI-WS-T07W-1901-D (580-83566-10), Trip Blank 07 (580-83566-11), Trip Blank 06 (580-83566-12) and Trip Blank (580-83566-14) were analyzed for volatile organic compounds (GC-MS) in accordance with 8260C. The samples were analyzed on 01/29/2019 and 01/30/2019.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CHLORINATED HERBICIDES

Samples PDI-RB-PP-190127 (580-83566-1), PDI-WS-T06-1901 (580-83566-2), PDI-WS-T07-1901 (580-83566-6) and PDI-WS-T07-1901-D (580-83566-13) were analyzed for chlorinated herbicides in accordance with EPA SW-846 8151A. The samples were prepared on 01/31/2019 and analyzed on 02/14/2019.

2,4-Dichlorophenylacetic acid failed the surrogate recovery criteria low for PDI-RB-PP-190127 (580-83566-1). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis were not performed.

MCPP exceeded the RPD limit for the MSD of sample PDI-WS-T06-1901MSD (580-83566-2) in batch 580-294645. The MS and MSD percent recoveries and the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) recoveries and precision were within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS (ICP)

Samples PDI-RB-PP-190127 (580-83566-1), PDI-WS-T06-1901 (580-83566-2), PDI-WS-T07-1901 (580-83566-6) and

Job ID: 580-83566-1 (Continued)

Laboratory: TestAmerica Seattle (Continued)

PDI-WS-T07-1901-D (580-83566-13) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 02/08/2019 and analyzed on 02/12/2019.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS (ICPMS)
Samples PDI-RB-PP-190127 (580-83566-1), PDI-WS-T06-1901 (580-83566-2), PDI-WS-T07-1901 (580-83566-6) and PDI-WS-T07-1901-D (580-83566-13) were analyzed for metals (ICPMS) in accordance with 6020A_LL. The samples were prepared on 02/08/2019 and analyzed on 02/12/2019.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS (ICPMS)
Samples PDI-RB-PP-190127 (580-83566-1), PDI-WS-T06-1901 (580-83566-2), PDI-WS-T07-1901 (580-83566-6) and PDI-WS-T07-1901-D (580-83566-13) were analyzed for Metals (ICPMS) in accordance with 6020A_LL. The samples were prepared and analyzed on 02/12/2019.

Arsenic and Zinc exceeded the RPD limit for the duplicate of sample PDI-WS-T06-1901DU (580-83566-2). The MS and MSD and the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) recoveries and precision were within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL DISSOLVED SOLIDS
Samples PDI-WS-T06-1901 (580-83566-2), PDI-WS-T07-1901 (580-83566-6) and PDI-WS-T07-1901-D (580-83566-13) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 02/01/2019.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL SUSPENDED SOLIDS
Samples PDI-WS-T06-1901 (580-83566-2), PDI-WS-T07-1901 (580-83566-6) and PDI-WS-T07-1901-D (580-83566-13) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 02/01/2019.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

HARDNESS
Samples PDI-RB-PP-190127 (580-83566-1), PDI-WS-T06-1901 (580-83566-2), PDI-WS-T07-1901 (580-83566-6) and PDI-WS-T07-1901-D (580-83566-13) were analyzed for Hardness in accordance with SM 2340B. The samples were analyzed on 02/13/2019.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
X	Surrogate is outside control limits
F2	MS/MSD RPD exceeds control limits
F4	MS/MSD RPD exceeds control limits due to sample size difference.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F5	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL. The data are considered valid because the absolute difference is less than the RL.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample ID: PDI-RB-PP-190127

Date Collected: 01/27/19 15:50
Date Received: 01/28/19 14:00

Lab Sample ID: 580-83566-1
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		3.0	0.50	ug/L			01/29/19 16:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*112*		*80 - 122*		*01/29/19 16:26*	*1*
Trifluorotoluene (Surr)	*89*		*80 - 120*		*01/29/19 16:26*	*1*
4-Bromofluorobenzene (Surr)	*106*		*80 - 125*		*01/29/19 16:26*	*1*
Dibromofluoromethane (Surr)	*98*		*77 - 120*		*01/29/19 16:26*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*80 - 126*		*01/29/19 16:26*	*1*

Method: 8151A - Herbicides (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
MCPP	ND		1.2	0.21	ug/L		01/31/19 08:56	02/14/19 19:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*1*	*X*	*44 - 145*	*01/31/19 08:56*	*02/14/19 19:06*	*1*

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.1	0.16	mg/L		02/08/19 10:20	02/12/19 11:04	1
Magnesium	ND		1.1	0.13	mg/L		02/08/19 10:20	02/12/19 11:04	1

Method: 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.20	ug/L		02/12/19 08:38	02/12/19 17:16	1
Chromium	ND		0.40	0.17	ug/L		02/12/19 08:38	02/12/19 17:16	1
Copper	ND		2.0	0.60	ug/L		02/12/19 08:38	02/12/19 17:16	1
Zinc	ND		7.0	1.9	ug/L		02/12/19 08:38	02/12/19 17:16	1

Method: 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.20	ug/L		02/08/19 10:20	02/12/19 15:29	1
Chromium	ND		0.40	0.17	ug/L		02/08/19 10:20	02/12/19 15:29	1
Copper	ND		2.0	0.60	ug/L		02/08/19 10:20	02/12/19 15:29	1
Zinc	**4.8**	**J**	7.0	1.9	ug/L		02/08/19 10:20	02/12/19 15:29	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Hardness as calcium carbonate	ND		1.1	1.1	mg/L			02/13/19 12:53	1

Client Sample ID: PDI-WS-T06-1901

Date Collected: 01/27/19 10:40
Date Received: 01/28/19 14:00

Lab Sample ID: 580-83566-2

Matrix: Water

Method: 8151A - Herbicides (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
MCPP	ND	F2	1.3	0.22	ug/L		01/31/19 08:56	02/14/19 19:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*86*		*44 - 145*	*01/31/19 08:56*	*02/14/19 19:32*	*1*

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	6.7		1.1	0.16	mg/L		02/08/19 10:20	02/12/19 10:39	1
Magnesium	2.2		1.1	0.13	mg/L		02/08/19 10:20	02/12/19 10:39	1

Method: 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.35	J	1.0	0.20	ug/L		02/12/19 08:38	02/12/19 16:38	1
Chromium	0.65		0.40	0.17	ug/L		02/12/19 08:38	02/12/19 16:38	1
Copper	1.4	J	2.0	0.60	ug/L		02/12/19 08:38	02/12/19 16:38	1
Zinc	3.2	J	7.0	1.9	ug/L		02/12/19 08:38	02/12/19 16:38	1

Method: 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.39	J	1.0	0.20	ug/L		02/08/19 10:20	02/12/19 10:19	1
Chromium	0.75		0.40	0.17	ug/L		02/08/19 10:20	02/12/19 10:19	1
Copper	1.5	J	2.0	0.60	ug/L		02/08/19 10:20	02/12/19 10:19	1
Zinc	5.0	J	7.0	1.9	ug/L		02/08/19 10:20	02/12/19 10:19	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Hardness as calcium carbonate	26		1.1	1.1	mg/L			02/13/19 12:53	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	55		10	10	mg/L			02/01/19 13:21	1
Total Suspended Solids	2.4		2.0	2.0	mg/L			02/01/19 11:58	1

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-83566-1

Client Sample ID: PDI-WS-T06E-1901
Date Collected: 01/27/19 08:52
Date Received: 01/28/19 14:00

Lab Sample ID: 580-83566-3
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		3.0	0.50	ug/L			01/29/19 16:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*109*		*80 - 122*		*01/29/19 16:51*	*1*
Trifluorotoluene (Surr)	*94*		*80 - 120*		*01/29/19 16:51*	*1*
4-Bromofluorobenzene (Surr)	*99*		*80 - 125*		*01/29/19 16:51*	*1*
Dibromofluoromethane (Surr)	*94*		*77 - 120*		*01/29/19 16:51*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*80 - 126*		*01/29/19 16:51*	*1*

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-83566-1

Client Sample ID: PDI-WS-T06N-1901
Date Collected: 01/26/19 12:10
Date Received: 01/28/19 14:00

Lab Sample ID: 580-83566-4
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		3.0	0.50	ug/L			01/29/19 17:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*111*		*80 - 122*		*01/29/19 17:16*	*1*
Trifluorotoluene (Surr)	*89*		*80 - 120*		*01/29/19 17:16*	*1*
4-Bromofluorobenzene (Surr)	*99*		*80 - 125*		*01/29/19 17:16*	*1*
Dibromofluoromethane (Surr)	*91*		*77 - 120*		*01/29/19 17:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*80 - 126*		*01/29/19 17:16*	*1*

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-83566-1

Client Sample ID: PDI-WS-T06W-1901
Date Collected: 01/26/19 16:25
Date Received: 01/28/19 14:00

Lab Sample ID: 580-83566-5
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		3.0	0.50	ug/L			01/29/19 18:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*111*		*80 - 122*		*01/29/19 18:30*	*1*
Trifluorotoluene (Surr)	*93*		*80 - 120*		*01/29/19 18:30*	*1*
4-Bromofluorobenzene (Surr)	*102*		*80 - 125*		*01/29/19 18:30*	*1*
Dibromofluoromethane (Surr)	*96*		*77 - 120*		*01/29/19 18:30*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*80 - 126*		*01/29/19 18:30*	*1*

Client Sample ID: PDI-WS-T07-1901

Date Collected: 01/26/19 09:46
Date Received: 01/28/19 14:00

Lab Sample ID: 580-83566-6

Matrix: Water

Method: 8151A - Herbicides (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
MCPP	ND		1.2	0.21	ug/L		01/31/19 08:56	02/14/19 20:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*70*		*44 - 145*	*01/31/19 08:56*	*02/14/19 20:50*	*1*

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	6.5		1.1	0.16	mg/L		02/08/19 10:20	02/12/19 11:07	1
Magnesium	2.1		1.1	0.13	mg/L		02/08/19 10:20	02/12/19 11:07	1

Method: 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.64	J	1.0	0.20	ug/L		02/12/19 08:38	02/12/19 17:21	1
Chromium	0.83		0.40	0.17	ug/L		02/12/19 08:38	02/12/19 17:21	1
Copper	2.0		2.0	0.60	ug/L		02/12/19 08:38	02/12/19 17:21	1
Zinc	3.6	J	7.0	1.9	ug/L		02/12/19 08:38	02/12/19 17:21	1

Method: 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.31	J	1.0	0.20	ug/L		02/08/19 10:20	02/12/19 15:33	1
Chromium	0.54		0.40	0.17	ug/L		02/08/19 10:20	02/12/19 15:33	1
Copper	1.1	J	2.0	0.60	ug/L		02/08/19 10:20	02/12/19 15:33	1
Zinc	4.2	J	7.0	1.9	ug/L		02/08/19 10:20	02/12/19 15:33	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Hardness as calcium carbonate	25		1.1	1.1	mg/L			02/13/19 12:53	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	33		10	10	mg/L			02/01/19 13:21	1
Total Suspended Solids	4.0		2.0	2.0	mg/L			02/01/19 11:58	1

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-83566-1

Client Sample ID: PDI-WS-T07E-1901
Date Collected: 01/25/19 12:01
Date Received: 01/28/19 14:00

Lab Sample ID: 580-83566-7
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		3.0	0.50	ug/L			01/29/19 18:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*111*		*80 - 122*		*01/29/19 18:55*	*1*
Trifluorotoluene (Surr)	*90*		*80 - 120*		*01/29/19 18:55*	*1*
4-Bromofluorobenzene (Surr)	*101*		*80 - 125*		*01/29/19 18:55*	*1*
Dibromofluoromethane (Surr)	*95*		*77 - 120*		*01/29/19 18:55*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*80 - 126*		*01/29/19 18:55*	*1*

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-83566-1

Client Sample ID: PDI-WS-T07N-1901
Date Collected: 01/26/19 09:03
Date Received: 01/28/19 14:00

Lab Sample ID: 580-83566-8
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		3.0	0.50	ug/L			01/29/19 19:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*105*		*80 - 122*		*01/29/19 19:20*	*1*
Trifluorotoluene (Surr)	*92*		*80 - 120*		*01/29/19 19:20*	*1*
4-Bromofluorobenzene (Surr)	*99*		*80 - 125*		*01/29/19 19:20*	*1*
Dibromofluoromethane (Surr)	*96*		*77 - 120*		*01/29/19 19:20*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*80 - 126*		*01/29/19 19:20*	*1*

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-83566-1

Client Sample ID: PDI-WS-T07W-1901
Date Collected: 01/25/19 10:21
Date Received: 01/28/19 14:00

Lab Sample ID: 580-83566-9
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		3.0	0.50	ug/L			01/29/19 19:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*109*		*80 - 122*		*01/29/19 19:45*	*1*
Trifluorotoluene (Surr)	*93*		*80 - 120*		*01/29/19 19:45*	*1*
4-Bromofluorobenzene (Surr)	*98*		*80 - 125*		*01/29/19 19:45*	*1*
Dibromofluoromethane (Surr)	*97*		*77 - 120*		*01/29/19 19:45*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*80 - 126*		*01/29/19 19:45*	*1*

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-83566-1

Client Sample ID: PDI-WS-T07W-1901-D
Date Collected: 01/25/19 10:21
Date Received: 01/28/19 14:00

Lab Sample ID: 580-83566-10
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		3.0	0.50	ug/L			01/29/19 20:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*109*		*80 - 122*		*01/29/19 20:10*	*1*
Trifluorotoluene (Surr)	*94*		*80 - 120*		*01/29/19 20:10*	*1*
4-Bromofluorobenzene (Surr)	*102*		*80 - 125*		*01/29/19 20:10*	*1*
Dibromofluoromethane (Surr)	*101*		*77 - 120*		*01/29/19 20:10*	*1*
1,2-Dichloroethane-d4 (Surr)	*107*		*80 - 126*		*01/29/19 20:10*	*1*

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-83566-1

Client Sample ID: Trip Blank 07
Date Collected: 01/25/19 00:00
Date Received: 01/28/19 14:00

Lab Sample ID: 580-83566-11
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		3.0	0.50	ug/L			01/29/19 20:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*110*		*80 - 122*		*01/29/19 20:35*	*1*
Trifluorotoluene (Surr)	*91*		*80 - 120*		*01/29/19 20:35*	*1*
4-Bromofluorobenzene (Surr)	*103*		*80 - 125*		*01/29/19 20:35*	*1*
Dibromofluoromethane (Surr)	*98*		*77 - 120*		*01/29/19 20:35*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*80 - 126*		*01/29/19 20:35*	*1*

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-83566-1

Client Sample ID: Trip Blank 06
Date Collected: 01/26/19 00:00
Date Received: 01/28/19 14:00

Lab Sample ID: 580-83566-12
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		3.0	0.50	ug/L			01/30/19 16:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*80 - 122*		*01/30/19 16:01*	*1*
Trifluorotoluene (Surr)	*96*		*80 - 120*		*01/30/19 16:01*	*1*
4-Bromofluorobenzene (Surr)	*100*		*80 - 125*		*01/30/19 16:01*	*1*
Dibromofluoromethane (Surr)	*105*		*77 - 120*		*01/30/19 16:01*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*80 - 126*		*01/30/19 16:01*	*1*

Client Sample ID: PDI-WS-T07-1901-D

Date Collected: 01/26/19 09:46
Date Received: 01/28/19 14:00

Lab Sample ID: 580-83566-13

Matrix: Water

Method: 8151A - Herbicides (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
MCPP	ND		1.3	0.22	ug/L		01/31/19 08:56	02/14/19 21:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*66*		*44 - 145*	*01/31/19 08:56*	*02/14/19 21:16*	*1*

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	6.5		1.1	0.16	mg/L		02/08/19 10:20	02/12/19 11:11	1
Magnesium	2.2		1.1	0.13	mg/L		02/08/19 10:20	02/12/19 11:11	1

Method: 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.57	J	1.0	0.20	ug/L		02/12/19 08:38	02/12/19 17:25	1
Chromium	0.79		0.40	0.17	ug/L		02/12/19 08:38	02/12/19 17:25	1
Copper	1.5	J	2.0	0.60	ug/L		02/12/19 08:38	02/12/19 17:25	1
Zinc	3.4	J	7.0	1.9	ug/L		02/12/19 08:38	02/12/19 17:25	1

Method: 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.28	J	1.0	0.20	ug/L		02/08/19 10:20	02/12/19 15:38	1
Chromium	0.52		0.40	0.17	ug/L		02/08/19 10:20	02/12/19 15:38	1
Copper	1.0	J	2.0	0.60	ug/L		02/08/19 10:20	02/12/19 15:38	1
Zinc	3.0	J	7.0	1.9	ug/L		02/08/19 10:20	02/12/19 15:38	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Hardness as calcium carbonate	25		1.1	1.1	mg/L			02/13/19 12:53	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	28		10	10	mg/L			02/01/19 13:21	1
Total Suspended Solids	4.4		2.0	2.0	mg/L			02/01/19 11:58	1

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-83566-1

Client Sample ID: Trip Blank
Date Collected: 01/25/19 00:00
Date Received: 01/28/19 14:00

Lab Sample ID: 580-83566-14
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		3.0	0.50	ug/L			01/30/19 16:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*80 - 122*		*01/30/19 16:26*	*1*
Trifluorotoluene (Surr)	*100*		*80 - 120*		*01/30/19 16:26*	*1*
4-Bromofluorobenzene (Surr)	*102*		*80 - 125*		*01/30/19 16:26*	*1*
Dibromofluoromethane (Surr)	*103*		*77 - 120*		*01/30/19 16:26*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*80 - 126*		*01/30/19 16:26*	*1*

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-293810/5
Matrix: Water
Analysis Batch: 293810

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		3.0	0.50	ug/L			01/29/19 09:53	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*111*		*80 - 122*		*01/29/19 09:53*	*1*
Trifluorotoluene (Surr)	*90*		*80 - 120*		*01/29/19 09:53*	*1*
4-Bromofluorobenzene (Surr)	*97*		*80 - 125*		*01/29/19 09:53*	*1*
Dibromofluoromethane (Surr)	*97*		*77 - 120*		*01/29/19 09:53*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*80 - 126*		*01/29/19 09:53*	*1*

Lab Sample ID: LCS 580-293810/6
Matrix: Water
Analysis Batch: 293810

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Ethylbenzene			10.0	9.57		ug/L		96	75 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*107*		*80 - 122*
Trifluorotoluene (Surr)	*94*		*80 - 120*
4-Bromofluorobenzene (Surr)	*102*		*80 - 125*
Dibromofluoromethane (Surr)	*94*		*77 - 120*
1,2-Dichloroethane-d4 (Surr)	*101*		*80 - 126*

Lab Sample ID: LCSD 580-293810/7
Matrix: Water
Analysis Batch: 293810

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethylbenzene			10.0	9.13		ug/L		91	75 - 120	5	14

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*103*		*80 - 122*
Trifluorotoluene (Surr)	*95*		*80 - 120*
4-Bromofluorobenzene (Surr)	*96*		*80 - 125*
Dibromofluoromethane (Surr)	*96*		*77 - 120*
1,2-Dichloroethane-d4 (Surr)	*101*		*80 - 126*

Lab Sample ID: 580-83566-4 MS
Matrix: Water
Analysis Batch: 293810

Client Sample ID: PDI-WS-T06N-1901
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Ethylbenzene	ND		11.6	11.8		ug/L		102	75 - 120		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*102*		*80 - 122*
Trifluorotoluene (Surr)	*92*		*80 - 120*

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 580-83566-4 MS
Matrix: Water
Analysis Batch: 293810

Client Sample ID: PDI-WS-T06N-1901
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	100		80 - 125
Dibromofluoromethane (Surr)	92		77 - 120
1,2-Dichloroethane-d4 (Surr)	102		80 - 126

Lab Sample ID: 580-83566-4 MSD
Matrix: Water
Analysis Batch: 293810

Client Sample ID: PDI-WS-T06N-1901
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethylbenzene	ND		11.6	11.4		ug/L		98	75 - 120	4	35

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Toluene-d8 (Surr)	108		80 - 122
Trifluorotoluene (Surr)	93		80 - 120
4-Bromofluorobenzene (Surr)	104		80 - 125
Dibromofluoromethane (Surr)	96		77 - 120
1,2-Dichloroethane-d4 (Surr)	98		80 - 126

Lab Sample ID: MB 580-293914/5
Matrix: Water
Analysis Batch: 293914

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		3.0	0.50	ug/L			01/30/19 10:50	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	102		80 - 122		01/30/19 10:50	1
Trifluorotoluene (Surr)	103		80 - 120		01/30/19 10:50	1
4-Bromofluorobenzene (Surr)	100		80 - 125		01/30/19 10:50	1
Dibromofluoromethane (Surr)	103		77 - 120		01/30/19 10:50	1
1,2-Dichloroethane-d4 (Surr)	106		80 - 126		01/30/19 10:50	1

Lab Sample ID: LCS 580-293914/6
Matrix: Water
Analysis Batch: 293914

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Ethylbenzene			10.0	10.1		ug/L		101	75 - 120		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	102		80 - 122
Trifluorotoluene (Surr)	98		80 - 120
4-Bromofluorobenzene (Surr)	104		80 - 125
Dibromofluoromethane (Surr)	103		77 - 120
1,2-Dichloroethane-d4 (Surr)	104		80 - 126

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-293914/7
Matrix: Water
Analysis Batch: 293914

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethylbenzene			10.0	10.1		ug/L		101	75 - 120	0	14

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*99*		*80 - 122*
Trifluorotoluene (Surr)	*101*		*80 - 120*
4-Bromofluorobenzene (Surr)	*102*		*80 - 125*
Dibromofluoromethane (Surr)	*104*		*77 - 120*
1,2-Dichloroethane-d4 (Surr)	*105*		*80 - 126*

Method: 8151A - Herbicides (GC/MS)

Lab Sample ID: MB 580-293987/1-A
Matrix: Water
Analysis Batch: 294645

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 293987

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
MCPP	ND		1.0	0.17	ug/L		01/31/19 08:56	02/14/19 16:30	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*83*		*44 - 145*	*01/31/19 08:56*	*02/14/19 16:30*	*1*

Lab Sample ID: LCS 580-293987/2-A
Matrix: Water
Analysis Batch: 294645

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 293987

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
MCPP			5.00	3.63		ug/L		73	61 - 135

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*81*		*44 - 145*

Lab Sample ID: LCSD 580-293987/3-A
Matrix: Water
Analysis Batch: 294645

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 293987

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
MCPP			5.00	3.88		ug/L		78	61 - 135	7	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*88*		*44 - 145*

Lab Sample ID: 580-83566-2 MS
Matrix: Water
Analysis Batch: 294645

Client Sample ID: PDI-WS-T06-1901
Prep Type: Total/NA
Prep Batch: 293987

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
MCPP	ND	F2	6.19	3.92		ug/L		63	61 - 135

Surrogate	MS %Recovery	MS Qualifier	Limits
2,4-Dichlorophenylacetic acid	91		44 - 145

Lab Sample ID: 580-83566-2 MSD — **Client Sample ID: PDI-WS-T06-1901**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 294645 — **Prep Batch: 293987**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
MCPP	ND	F2	12.1	7.72	F4	ug/L		64	61 - 135	65	35

Surrogate	MSD %Recovery	MSD Qualifier	Limits
2,4-Dichlorophenylacetic acid	91		44 - 145

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 580-294396/18-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 294494 — **Prep Batch: 294396**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.1	0.16	mg/L		02/08/19 10:20	02/12/19 10:30	1
Magnesium	ND		1.1	0.13	mg/L		02/08/19 10:20	02/12/19 10:30	1

Lab Sample ID: LCS 580-294396/19-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 294494 — **Prep Batch: 294396**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	20.0	20.5		mg/L		103	80 - 120
Magnesium	20.0	20.4		mg/L		102	80 - 120

Lab Sample ID: LCSD 580-294396/20-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 294494 — **Prep Batch: 294396**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Calcium	20.0	20.7		mg/L		104	80 - 120	1	20
Magnesium	20.0	20.8		mg/L		104	80 - 120	2	20

Lab Sample ID: 580-83566-2 MS — **Client Sample ID: PDI-WS-T06-1901**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 294494 — **Prep Batch: 294396**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	6.7		20.0	27.3		mg/L		103	75 - 125
Magnesium	2.2		20.0	23.2		mg/L		105	75 - 125

Lab Sample ID: 580-83566-2 MSD — **Client Sample ID: PDI-WS-T06-1901**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 294494 — **Prep Batch: 294396**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Calcium	6.7		20.0	27.7		mg/L		105	75 - 125	1	20
Magnesium	2.2		20.0	23.1		mg/L		104	75 - 125	0	20

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: 580-83566-2 DU
Matrix: Water
Analysis Batch: 294494

Client Sample ID: PDI-WS-T06-1901
Prep Type: Dissolved
Prep Batch: 294396

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Calcium	6.7		6.89		mg/L		3	20
Magnesium	2.2		2.25		mg/L		1	20

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 580-294396/18-A
Matrix: Water
Analysis Batch: 294535

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 294396

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.20	ug/L		02/08/19 10:20	02/12/19 10:07	1
Chromium	ND		0.40	0.17	ug/L		02/08/19 10:20	02/12/19 10:07	1
Copper	ND		2.0	0.60	ug/L		02/08/19 10:20	02/12/19 10:07	1
Zinc	ND		7.0	1.9	ug/L		02/08/19 10:20	02/12/19 10:07	1

Lab Sample ID: LCS 580-294396/19-A
Matrix: Water
Analysis Batch: 294535

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 294396

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1000	1080		ug/L		108	80 - 120
Chromium	1000	1070		ug/L		107	80 - 120
Copper	1000	1070		ug/L		107	80 - 120
Zinc	1000	1030		ug/L		103	80 - 120

Lab Sample ID: LCSD 580-294396/20-A
Matrix: Water
Analysis Batch: 294535

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 294396

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	1000	1050		ug/L		105	80 - 120	3	20
Chromium	1000	1040		ug/L		104	80 - 120	3	20
Copper	1000	1050		ug/L		105	80 - 120	2	20
Zinc	1000	1020		ug/L		102	80 - 120	1	20

Lab Sample ID: MB 580-294456/21-A
Matrix: Water
Analysis Batch: 294535

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 294456

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.20	ug/L		02/12/19 08:38	02/12/19 16:20	1
Chromium	ND		0.40	0.17	ug/L		02/12/19 08:38	02/12/19 16:20	1
Copper	ND		2.0	0.60	ug/L		02/12/19 08:38	02/12/19 16:20	1
Zinc	ND		7.0	1.9	ug/L		02/12/19 08:38	02/12/19 16:20	1

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 580-294456/22-A
Matrix: Water
Analysis Batch: 294535

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 294456

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1000	1020		ug/L		102	80 - 120
Chromium	1000	990		ug/L		99	80 - 120
Copper	1000	994		ug/L		99	80 - 120
Zinc	1000	978		ug/L		98	80 - 120

Lab Sample ID: LCSD 580-294456/23-A
Matrix: Water
Analysis Batch: 294535

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 294456

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	1000	1020		ug/L		102	80 - 120	0	20
Chromium	1000	989		ug/L		99	80 - 120	0	20
Copper	1000	1000		ug/L		100	80 - 120	1	20
Zinc	1000	1010		ug/L		101	80 - 120	3	20

Lab Sample ID: 580-83566-2 MS
Matrix: Water
Analysis Batch: 294535

Client Sample ID: PDI-WS-T06-1901
Prep Type: Total Recoverable
Prep Batch: 294456

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.35	J	1000	1040		ug/L		104	80 - 120
Chromium	0.65		1000	1020		ug/L		102	80 - 120
Copper	1.4	J	1000	1040		ug/L		104	80 - 120
Zinc	3.2	J	1000	1020		ug/L		102	80 - 120

Lab Sample ID: 580-83566-2 MSD
Matrix: Water
Analysis Batch: 294535

Client Sample ID: PDI-WS-T06-1901
Prep Type: Total Recoverable
Prep Batch: 294456

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	0.35	J	1000	1070		ug/L		107	80 - 120	3	20
Chromium	0.65		1000	1050		ug/L		105	80 - 120	3	20
Copper	1.4	J	1000	1060		ug/L		106	80 - 120	2	20
Zinc	3.2	J	1000	1020		ug/L		102	80 - 120	0	20

Lab Sample ID: 580-83566-2 DU
Matrix: Water
Analysis Batch: 294535

Client Sample ID: PDI-WS-T06-1901
Prep Type: Total Recoverable
Prep Batch: 294456

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	0.35	J	0.497	J F5	ug/L		34	20
Chromium	0.65		0.720		ug/L		11	20
Copper	1.4	J	1.48	J	ug/L		3	20
Zinc	3.2	J	3.92	J F5	ug/L		21	20

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: 580-83566-2 MS
Matrix: Water
Analysis Batch: 294535

Client Sample ID: PDI-WS-T06-1901
Prep Type: Dissolved
Prep Batch: 294396

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.39	J	1000	1100		ug/L		110	80 - 120
Chromium	0.75		1000	1080		ug/L		108	80 - 120
Copper	1.5	J	1000	1100		ug/L		110	80 - 120
Zinc	5.0	J	1000	1070		ug/L		106	80 - 120

Lab Sample ID: 580-83566-2 MSD
Matrix: Water
Analysis Batch: 294535

Client Sample ID: PDI-WS-T06-1901
Prep Type: Dissolved
Prep Batch: 294396

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	0.39	J	1000	1040		ug/L		103	80 - 120	6	20
Chromium	0.75		1000	1010		ug/L		101	80 - 120	7	20
Copper	1.5	J	1000	1020		ug/L		102	80 - 120	7	20
Zinc	5.0	J	1000	962		ug/L		96	80 - 120	10	20

Lab Sample ID: 580-83566-2 DU
Matrix: Water
Analysis Batch: 294535

Client Sample ID: PDI-WS-T06-1901
Prep Type: Dissolved
Prep Batch: 294396

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	0.39	J	0.357	J	ug/L		10	20
Chromium	0.75		0.847		ug/L		12	20
Copper	1.5	J	1.37	J	ug/L		8	20
Zinc	5.0	J	4.31	J	ug/L		15	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 580-294072/1
Matrix: Water
Analysis Batch: 294072

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	10	mg/L			02/01/19 13:21	1

Lab Sample ID: LCS 580-294072/2
Matrix: Water
Analysis Batch: 294072

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	982		mg/L		98	80 - 120

Lab Sample ID: 580-83566-2 DU
Matrix: Water
Analysis Batch: 294072

Client Sample ID: PDI-WS-T06-1901
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	55		59.0		mg/L		7	20

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: 580-83566-13 DU
Matrix: Water
Analysis Batch: 294072

Client Sample ID: PDI-WS-T07-1901-D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	28			33.0		mg/L				16	20

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 580-294066/1
Matrix: Water
Analysis Batch: 294066

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		2.0	2.0	mg/L			02/01/19 11:58	1

Lab Sample ID: LCS 580-294066/2
Matrix: Water
Analysis Batch: 294066

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Suspended Solids			27.6	24.8		mg/L		90	70.6 - 120		

Lab Sample ID: 580-83566-2 DU
Matrix: Water
Analysis Batch: 294066

Client Sample ID: PDI-WS-T06-1901
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Suspended Solids	2.4			2.40		mg/L				0	20

Client Sample ID: PDI-RB-PP-190127

Lab Sample ID: 580-83566-1

Date Collected: 01/27/19 15:50

Matrix: Water

Date Received: 01/28/19 14:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	293810	01/29/19 16:26	CJ	TAL SEA
Total/NA	Prep	8151A			293987	01/31/19 08:56	JSM	TAL SEA
Total/NA	Analysis	8151A		1	294645	02/14/19 19:06	KFS	TAL SEA
Dissolved	Prep	3005A			294396	02/08/19 10:20	T1H	TAL SEA
Dissolved	Analysis	6010C		1	294494	02/12/19 11:04	HJM	TAL SEA
Dissolved	Prep	3005A			294396	02/08/19 10:20	T1H	TAL SEA
Dissolved	Analysis	6020B		1	294535	02/12/19 15:29	FCW	TAL SEA
Total Recoverable	Prep	3005A			294456	02/12/19 08:38	T1H	TAL SEA
Total Recoverable	Analysis	6020B		1	294535	02/12/19 17:16	FCW	TAL SEA
Dissolved	Analysis	SM 2340B		1	294558	02/13/19 12:53	R1K	TAL SEA

Client Sample ID: PDI-WS-T06-1901

Lab Sample ID: 580-83566-2

Date Collected: 01/27/19 10:40

Matrix: Water

Date Received: 01/28/19 14:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			293987	01/31/19 08:56	JSM	TAL SEA
Total/NA	Analysis	8151A		1	294645	02/14/19 19:32	KFS	TAL SEA
Dissolved	Prep	3005A			294396	02/08/19 10:20	T1H	TAL SEA
Dissolved	Analysis	6010C		1	294494	02/12/19 10:39	HJM	TAL SEA
Dissolved	Prep	3005A			294396	02/08/19 10:20	T1H	TAL SEA
Dissolved	Analysis	6020B		1	294535	02/12/19 10:19	FCW	TAL SEA
Total Recoverable	Prep	3005A			294456	02/12/19 08:38	T1H	TAL SEA
Total Recoverable	Analysis	6020B		1	294535	02/12/19 16:38	FCW	TAL SEA
Dissolved	Analysis	SM 2340B		1	294558	02/13/19 12:53	R1K	TAL SEA
Total/NA	Analysis	SM 2540C		1	294072	02/01/19 13:21	R1K	TAL SEA
Total/NA	Analysis	SM 2540D		1	294066	02/01/19 11:58	EMM	TAL SEA

Client Sample ID: PDI-WS-T06E-1901

Lab Sample ID: 580-83566-3

Date Collected: 01/27/19 08:52

Matrix: Water

Date Received: 01/28/19 14:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	293810	01/29/19 16:51	CJ	TAL SEA

Client Sample ID: PDI-WS-T06N-1901

Lab Sample ID: 580-83566-4

Date Collected: 01/26/19 12:10

Matrix: Water

Date Received: 01/28/19 14:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	293810	01/29/19 17:16	CJ	TAL SEA

Lab Chronicle

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-83566-1

Client Sample ID: PDI-WS-T06W-1901

Lab Sample ID: 580-83566-5
Date Collected: 01/26/19 16:25
Matrix: Water
Date Received: 01/28/19 14:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	293810	01/29/19 18:30	CJ	TAL SEA

Client Sample ID: PDI-WS-T07-1901

Lab Sample ID: 580-83566-6
Date Collected: 01/26/19 09:46
Matrix: Water
Date Received: 01/28/19 14:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			293987	01/31/19 08:56	JSM	TAL SEA
Total/NA	Analysis	8151A		1	294645	02/14/19 20:50	KFS	TAL SEA
Dissolved	Prep	3005A			294396	02/08/19 10:20	T1H	TAL SEA
Dissolved	Analysis	6010C		1	294494	02/12/19 11:07	HJM	TAL SEA
Dissolved	Prep	3005A			294396	02/08/19 10:20	T1H	TAL SEA
Dissolved	Analysis	6020B		1	294535	02/12/19 15:33	FCW	TAL SEA
Total Recoverable	Prep	3005A			294456	02/12/19 08:38	T1H	TAL SEA
Total Recoverable	Analysis	6020B		1	294535	02/12/19 17:21	FCW	TAL SEA
Dissolved	Analysis	SM 2340B		1	294558	02/13/19 12:53	R1K	TAL SEA
Total/NA	Analysis	SM 2540C		1	294072	02/01/19 13:21	R1K	TAL SEA
Total/NA	Analysis	SM 2540D		1	294066	02/01/19 11:58	EMM	TAL SEA

Client Sample ID: PDI-WS-T07E-1901

Lab Sample ID: 580-83566-7
Date Collected: 01/25/19 12:01
Matrix: Water
Date Received: 01/28/19 14:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	293810	01/29/19 18:55	CJ	TAL SEA

Client Sample ID: PDI-WS-T07N-1901

Lab Sample ID: 580-83566-8
Date Collected: 01/26/19 09:03
Matrix: Water
Date Received: 01/28/19 14:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	293810	01/29/19 19:20	CJ	TAL SEA

Client Sample ID: PDI-WS-T07W-1901

Lab Sample ID: 580-83566-9
Date Collected: 01/25/19 10:21
Matrix: Water
Date Received: 01/28/19 14:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	293810	01/29/19 19:45	CJ	TAL SEA

Lab Chronicle

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-83566-1

Client Sample ID: PDI-WS-T07W-1901-D

Lab Sample ID: 580-83566-10
Matrix: Water
Date Collected: 01/25/19 10:21
Date Received: 01/28/19 14:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	293810	01/29/19 20:10	CJ	TAL SEA

Client Sample ID: Trip Blank 07

Lab Sample ID: 580-83566-11
Matrix: Water
Date Collected: 01/25/19 00:00
Date Received: 01/28/19 14:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	293810	01/29/19 20:35	CJ	TAL SEA

Client Sample ID: Trip Blank 06

Lab Sample ID: 580-83566-12
Matrix: Water
Date Collected: 01/26/19 00:00
Date Received: 01/28/19 14:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	293914	01/30/19 16:01	TL1	TAL SEA

Client Sample ID: PDI-WS-T07-1901-D

Lab Sample ID: 580-83566-13
Matrix: Water
Date Collected: 01/26/19 09:46
Date Received: 01/28/19 14:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			293987	01/31/19 08:56	JSM	TAL SEA
Total/NA	Analysis	8151A		1	294645	02/14/19 21:16	KFS	TAL SEA
Dissolved	Prep	3005A			294396	02/08/19 10:20	T1H	TAL SEA
Dissolved	Analysis	6010C		1	294494	02/12/19 11:11	HJM	TAL SEA
Dissolved	Prep	3005A			294396	02/08/19 10:20	T1H	TAL SEA
Dissolved	Analysis	6020B		1	294535	02/12/19 15:38	FCW	TAL SEA
Total Recoverable	Prep	3005A			294456	02/12/19 08:38	T1H	TAL SEA
Total Recoverable	Analysis	6020B		1	294535	02/12/19 17:25	FCW	TAL SEA
Dissolved	Analysis	SM 2340B		1	294558	02/13/19 12:53	R1K	TAL SEA
Total/NA	Analysis	SM 2540C		1	294072	02/01/19 13:21	R1K	TAL SEA
Total/NA	Analysis	SM 2540D		1	294066	02/01/19 11:58	EMM	TAL SEA

Client Sample ID: Trip Blank

Lab Sample ID: 580-83566-14
Matrix: Water
Date Collected: 01/25/19 00:00
Date Received: 01/28/19 14:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	293914	01/30/19 16:26	TL1	TAL SEA

Laboratory References:

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: AECOM
TestAmerica Job ID: 580-83566-1
Project/Site: Portland Harbor Pre-Remedial Design

Laboratory: TestAmerica Seattle

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-024	02-28-19
ANAB	DoD / DOE		L2236	01-19-22
ANAB	ISO/IEC 17025		L2236	01-19-22
California	State Program	9	2901	11-05-19
Montana (UST)	State Program	8	N/A	04-30-20
Nevada	State Program	9	WA000502019-1	07-31-19
Oregon	NELAP	10	WA100007	11-05-19
US Fish & Wildlife	Federal		LE058448-0	07-31-19
USDA	Federal		P330-14-00126	02-10-20
Washington	State Program	10	C553	02-17-20

Sample Summary

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-83566-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-83566-1	PDI-RB-PP-190127	Water	01/27/19 15:50	01/28/19 14:00
580-83566-2	PDI-WS-T06-1901	Water	01/27/19 10:40	01/28/19 14:00
580-83566-3	PDI-WS-T06E-1901	Water	01/27/19 08:52	01/28/19 14:00
580-83566-4	PDI-WS-T06N-1901	Water	01/26/19 12:10	01/28/19 14:00
580-83566-5	PDI-WS-T06W-1901	Water	01/26/19 16:25	01/28/19 14:00
580-83566-6	PDI-WS-T07-1901	Water	01/26/19 09:46	01/28/19 14:00
580-83566-7	PDI-WS-T07E-1901	Water	01/25/19 12:01	01/28/19 14:00
580-83566-8	PDI-WS-T07N-1901	Water	01/26/19 09:03	01/28/19 14:00
580-83566-9	PDI-WS-T07W-1901	Water	01/25/19 10:21	01/28/19 14:00
580-83566-10	PDI-WS-T07W-1901-D	Water	01/25/19 10:21	01/28/19 14:00
580-83566-11	Trip Blank 07	Water	01/25/19 00:00	01/28/19 14:00
580-83566-12	Trip Blank 06	Water	01/26/19 00:00	01/28/19 14:00
580-83566-13	PDI-WS-T07-1901-D	Water	01/26/19 09:46	01/28/19 14:00
580-83566-14	Trip Blank	Water	01/25/19 00:00	01/28/19 14:00

580-83566 Chain of Custody

SURFACE WATER
CHAIN OF CUSTODY

America-Seattle	Project Contact: Amy Dahl / Chelsey Cook	Site Contact: Jennifer Ray	Date: 1/28/19
5-8th-Street-East	Tel: (206) 438-2261 / (206) 438-2010	Laboratory Contact: Elaine-Walker	Carrier:
oma, WA 98424-1317	Analysis Turnaround Time		COC No: 1
253-922-2310 F 253-922-5047	Calendar (C) or Work Days (W) _____		_____ of _____ pag
Client Contact	[x] 21 days		
OM	[ ] Other _____		
3rd Ave Suite 1600			
le, WA 98101			
e: (206) 438-2700 Fax: 1+(866) 495-5288			
ct Name: Portland Harbor Pre-Remedial gn Investigation and Baseline Sampling			
and, OR			
ct #: 60566335 Study: Surface Water			

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	Ethylbenzene, EPA 8260C	MCPP, EPA Method 8151A	Metals (Total), EPA Method 6020B-LL	Total Suspended Solids, Standard Method 2540D	Total Dissolved Solids, Standard Method 2540C	Metals (Dissolved) + Hardness as CaCO3, EPA Method 6020B-LL	Sample Specific N
RB-PP-190127	1/27/2019	15:50	W	RB	MT	10		6	2	1			1	
WS-T 06 - 19 01	1/27/2019	10:40	W	MS/MSD	MT	~~14~~			6	3	1	1	3	
WS-T 06 E - 19 01	1/27/2019	8:52	W		MT	3		3						
WS-T 06 N - 19 01	1/26/2019	12:10	W	MS/MSD	MT	9		9						
WS-T 06 W - 19 01	1/26/2019	16:25	W		MT	3		3						
WS-T 07 - 19 01	1/26/2019	9:46	W		MT	6			2	1	1	1	1	
WS-T 07 E - 19 01	1/25/2019	12:01	W		MT	3		3						
WS-T 07 N - 19 01	1/26/2019	9:03	W		~~MT~~ ED	3		3						
WS-T 07 W - 19 01	1/25/2019	10:21	W		~~MT~~ ED	3		3						
WS-T 07 W - 19 01 D	1/25/2019	10:21	W		~~MT~~ ED	3		3	2					
Blank 07 -						~~14~~		~~14~~						
Blank 06 -						~~16~~		~~16~~						

ainer Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Column
ervative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid
on: D = Dissolved, PRT = Particulate, T = Total (unfiltered)

Sample Disposal
[ ] Return To Client [X] isposal By Lab [X] rchive For 12 Months

l Instructions/QC Requirements & Comments:

0.6, 2.8

uished by:	Company: Accom	Date/Time: 1/28/19 1320	Received by:	Company: M-E	Date/Time: 1/28/19 +
uished by:	Company: M.E.	Date/Time: 1/28/19 1400	Received by:	Company:	Date/Time:
uished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

Page 33 of 37

2/21/2019

SURFACE WATER
CHAIN OF CUSTODY

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 **Ph:** 253-922-2310 F 253-922-5047	**Project Contact: Amy Dahl / Chelsey Cook** **Tel: (206) 438-2261 / (206) 438-2010**	**Site Contact: Jennifer Ray** **Laboratory Contact: Elaine-Walker**	**Date: 1/28/19** **Carrier:**
Client Contact AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1+(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Surface Water	**Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ [x] 21 days [ ] Other _____		COC No: 1 _____ of _____ pages

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	Ethylbenzene, EPA 8260C	MCPP, EPA Method 8151A	Metals (Total), EPA Method 6020B-LL	Total Suspended Solids, Standard Method 2540D	Total Dissolved Solids, Standard Method 2540C	Metals (Dissolved) + Hardness as $CaCO_3$, EPA Method 6020B-LL	Sample Specific Notes:
PDI-WS-T 07-19-01-D	1/26/19	0946	W		MT	6			2	1	1	1	1	
~~PDI-WS-T~~ TRIPBLANK			W			2		2						
~~PDI-WS-T~~ RIN2P-190227														
PDI-WS-T														
PDI-WS-T														
PDI-WS-T														
PDI-WS-T														
PDI-WS-T														
PDI-WS-T														
PDI-WS-T														
PDI-WS-T														
PDI-WS-T														

Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Column

Preservative: HCl = Hydrochloric Acid, H_3PO_4 = Phosphoric Acid, HNO_3 = Nitric Acid

Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)

Sample Disposal

[ ] Return To Client [X] Disposal By Lab [X] Archive For 12 Months

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company: AECOM	Date/Time: 1/28/19 1320	Received by:	Company: M.E.	Date/Time: 1/28/19 1320
Relinquished by:	Company: M.E.	Date/Time: 1/28/19 1400	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

580-83566 Chain of Custody

TestAmerica-Seattle			
5755-8th-Street-East			
Tacoma, WA 98424-1317			
Ph: 253-922-2310 F 253-922-5047			

SURFACE WATER CHAIN OF CUSTODY

Client Contact	**Project Contact: Amy Dahl / Chelsey Cook**	**Site Contact: Jennifer Ray**	**Date: 1/28/19**	COC No: 1
AECOM	**Tel: (206) 438-2261 / (206) 438-2010**	**Laboratory Contact: Elaine-Walker**	**Carrier:**	____ of ____ pages
1111 3rd Ave Suite 1600	**Analysis Turnaround Time**			
Seattle, WA 98101	Calendar (C) or Work Days (W) ______			
Phone: (206) 438-2700 Fax: 1+(866) 495-5288				
Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling	[✓ x] 21 days			
Portland, OR	☐ Other ______			
Project #: 60566335 Study: Surface Water				

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	Ethylbenzene, EPA 8260C	MCPP, EPA Method 8151A	Metals (Total), EPA Method 6020B-LL	Total Suspended Solids, Standard Method 2540D	Total Dissolved Solids, Standard Method 2540C	Metals (Dissolved) + Hardness as CaCO3, EPA Method 6020B-LL	Sample Specific Notes:
PDI-RB-PP-190127	1/27/2019	15:50	W	RB	MT	10		6	2	1			1	
PDI-WS-T 06 - 19 01	1/27/2019	10:40	W	MS/MSD	MT	~~8~~ 14			~~6~~	3	1	1	3	
PDI-WS-T 06 E - 19 01	1/27/2019	8:52	W		MT	3		3						
PDI-WS-T 06 N - 19 01	1/26/2019	12:10	W	MS/MSD	MT	9		9						
PDI-WS-T 06 W - 19 01	1/26/2019	16:25	W		MT	3		3						
PDI-WS-T 07 . - 19 01	1/26/2019	9.46	W		MT	6			2	1	1	1	1	
PDI-WS-T 07 E - 19 01	1/25/2019	12:01	W		MT	3		3						
PDI-WS-T 07 N - 19 01	1/26/2019	9:03	W		~~MT~~ ED	3		3						
PDI-WS-T 07 W - 19 01	1/25/2019	10:21	W		~~MT~~ ED	3		3						
PDI-WS-T 07 W - 19 01 D	1/25/2019	10:21	W		~~MT~~ ED	3		3	~~2~~					
Trip Blank 07 -						~~2~~ 4		~~3~~ 4						
Trip Blank 06 -						~~2~~ 6		~~3~~ 6						

Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Column

Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid

Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)

Sample Disposal
☐ *Return To Client* [✓ X] *Disposal By Lab* [✓ X] *Archive For 12 Months*

Special Instructions/QC Requirements & Comments:

0.6, 2.8

Relinquished by: [illegible]	Company: Aecom	Date/Time: 1/28/19 1320	Received by: [illegible]	Company: M-E	Date/Time: 1/28/19 ~~1230~~ 1320
Relinquished by: [illegible]	Company: M.E.	Date/Time: 1/28/19 1400	Received by: [illegible]	Company: TAPOR	Date/Time: 1/28/19 1400
Relinquished by: [illegible]	Company: TAPOR	Date/Time: 1/28/19 1700	Received by: Tom [illegible]	Company: TA-Sea	Date/Time: 1/29/19 0925

IR5 -1.6/-1.6, 0.3/0.3

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5755-8th-Street-East	
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Ph: 253-922-2310 F 253-922-5047	

SURFACE WATER
CHAIN OF CUSTODY

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AECOM	**Tel: (206) 438-2261 / (206) 438-2010**	**Laboratory Contact: Elaine-Walker**	**Carrier:**	____ of ____ pages
1111 3rd Ave Suite 1600	**Analysis Turnaround Time**			
Seattle, WA 98101	Calendar (C) or Work Days (W) ________			
Phone: (206) 438-2700 Fax: 1+(866) 495-5288	[x] 21 days			
Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling	[ ] Other ________			
Portland, OR				
Project #: 60566335 Study: Surface Water				

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	Ethylbenzene, EPA 8260C	MCPP, EPA Method 8151A	Metals (Total), EPA Method 6020B-LL	Total Suspended Solids, Standard Method 2540D	Total Dissolved Solids, Standard Method 2540C	Metals (Dissolved) + Hardness as CaCO3, EPA Method 6020B-LL			Sample Specific Notes:
PDI-WS-T 07-19 01-D	1/26/19	0946	W		MT	6			2	1	1	1	1			
~~PDI-WS-T~~ TRIP BLANK			W			2		2								
PDI-~~WS-T RB-SP-190127~~																
PDI-WS-T -																
PDI-WS-T -																
PDI-WS-T -																
PDI-WS-T -																
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Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)

Sample Disposal

[ ] Return To Client [X] Disposal By Lab [X] Archive For **12** Months

Special Instructions/QC Requirements & Comments:

Relinquished by: [signature]	Company: AECOM	Date/Time: 1/28/19 / 1320	Received by: [signature]	Company: M.E.	Date/Time: 1/28/19 1320
Relinquished by: [signature]	Company: M.E.	Date/Time: 1/28/19 1400	Received by: [signature]	Company: TAPOK	Date/Time: 1/28/19 1400
Relinquished by: [signature]	Company: TAPOK	Date/Time: 1/28/19 1700	Received by: Tom Bl[illegible]	Company:	Date/Time: 1/29/19 0925

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-83566-1

Login Number: 83566
List Number: 1
Creator: O'Connell, Jason I

List Source: TestAmerica Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	