



THE LEADER IN ENVIRONMENTAL TESTING



## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Seattle  
5755 8th Street East  
Tacoma, WA 98424  
Tel: (253)922-2310

TestAmerica Job ID: 580-84010-1

Client Project/Site: Portland Harbor Pre-Remedial Design

For:  
AECOM  
1111 Third Ave  
Suite 1600  
Seattle, Washington 98101

Attn: Amy Dahl

Kristine D. Allen

Authorized for release by:  
3/14/2019 5:08:50 PM  
Kristine Allen, Manager of Project Management  
(253)248-4970  
[kristine.allen@testamericainc.com](mailto:kristine.allen@testamericainc.com)

Designee for  
Elaine Walker, Project Manager II  
(253)248-4972  
[elaine.walker@testamericainc.com](mailto:elaine.walker@testamericainc.com)

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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# Case Narrative

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Job ID: 580-84010-1**

**Laboratory: TestAmerica Seattle**

Narrative

## CASE NARRATIVE

**Client: AECOM**

**Project: Portland Harbor Pre-Remedial Design**

**Report Number: 580-84010-1**

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**

The samples were received on 02/21/2019; the samples arrived in good condition, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 3.1° C, 3.9° C and 4.2° 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-WS-T01E-1902 (580-84010-6), PDI-WS-T01N-1902 (580-84010-7), PDI-WS-T01W-1902 (580-84010-8), PDI-WS-T02W-1902 (580-84010-9), PDI-WS-T02E-1902 (580-84010-10), PDI-WS-T02N-1902 (580-84010-11), PDI-WS-T03E-1902 (580-84010-12), PDI-WS-T03N-1902 (580-84010-13), PDI-WS-T03W-1902 (580-84010-14), PDI-WS-T04E-1902 (580-84010-15), PDI-WS-T04N-1902 (580-84010-16), PDI-WS-T04W-1902 (580-84010-17), PDI-WS-T05E-1902 (580-84010-18), PDI-WS-T05N-1902 (580-84010-19), PDI-WS-T05W-1902 (580-84010-20), Trip Blank-T01 (580-84010-21), Trip Blank-T02 (580-84010-22), Trip Blank-T03 (580-84010-23), Trip Blank-T04 (580-84010-24) and Trip Blank-T05 (580-84010-25) were analyzed for volatile organic compounds (GC-MS) in accordance with 8260C. The samples were analyzed on 02/22/2019 and 02/25/2019.

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

### **CHLORINATED HERBICIDES**

Samples PDI-WS-T01-1902 (580-84010-1), PDI-WS-T02-1902 (580-84010-2), PDI-WS-T03-1902 (580-84010-3), PDI-WS-T04-1902 (580-84010-4) and PDI-WS-T05-1902 (580-84010-5) were analyzed for chlorinated herbicides in accordance with EPA SW-846 8151A. The samples were prepared on 02/22/2019 and analyzed on 02/25/2019.

The LCS associated with PDI-WS-T01-1902 (580-84010-1), PDI-WS-T02-1902 (580-84010-2), PDI-WS-T03-1902 (580-84010-3), PDI-WS-T04-1902 (580-84010-4), PDI-WS-T05-1902 (580-84010-5) and (LCS 580-295047/2-A) recovered outside of control limits. No re-extraction was performed per client as samples are out of hold.

The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for batch preparation batch 580-295047 and analytical batch 580-295134 recovered outside control limits for the following analytes: MCPP.

# Case Narrative

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

## Job ID: 580-84010-1 (Continued)

### Laboratory: TestAmerica Seattle (Continued)

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

#### METALS (ICP)

Samples PDI-WS-T01-1902 (580-84010-1), PDI-WS-T02-1902 (580-84010-2), PDI-WS-T03-1902 (580-84010-3), PDI-WS-T04-1902 (580-84010-4) and PDI-WS-T05-1902 (580-84010-5) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 03/13/2019 and analyzed on 03/14/2019.

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

#### METALS (ICPMS)

Samples PDI-WS-T01-1902 (580-84010-1), PDI-WS-T02-1902 (580-84010-2), PDI-WS-T03-1902 (580-84010-3), PDI-WS-T04-1902 (580-84010-4) and PDI-WS-T05-1902 (580-84010-5) were analyzed for metals (ICPMS) in accordance with 6020A\_LL. The samples were prepared on 03/13/2019 and analyzed on 03/14/2019.

Zinc exceeded the RPD limit for the duplicate of sample PDI-WS-T01-1902DU (580-84010-1). The sample may not be homogeneous.

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

#### METALS (ICPMS)

Samples PDI-WS-T01-1902 (580-84010-1), PDI-WS-T02-1902 (580-84010-2), PDI-WS-T03-1902 (580-84010-3), PDI-WS-T04-1902 (580-84010-4) and PDI-WS-T05-1902 (580-84010-5) were analyzed for Metals (ICPMS) in accordance with 6020A\_LL. The samples were prepared on 03/07/2019 and analyzed on 03/08/2019.

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

#### TOTAL DISSOLVED SOLIDS

Samples PDI-WS-T01-1902 (580-84010-1), PDI-WS-T02-1902 (580-84010-2), PDI-WS-T03-1902 (580-84010-3), PDI-WS-T04-1902 (580-84010-4) and PDI-WS-T05-1902 (580-84010-5) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 02/22/2019.

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

#### TOTAL SUSPENDED SOLIDS

Samples PDI-WS-T01-1902 (580-84010-1), PDI-WS-T02-1902 (580-84010-2), PDI-WS-T03-1902 (580-84010-3), PDI-WS-T04-1902 (580-84010-4) and PDI-WS-T05-1902 (580-84010-5) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 02/22/2019.

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

#### HARDNESS

Samples PDI-WS-T01-1902 (580-84010-1), PDI-WS-T02-1902 (580-84010-2), PDI-WS-T03-1902 (580-84010-3), PDI-WS-T04-1902 (580-84010-4) and PDI-WS-T05-1902 (580-84010-5) were analyzed for Hardness in accordance with SM 2340B. The samples were analyzed on 03/12/2019.

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

# Definitions/Glossary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

## Qualifiers

### GC/MS Semi VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
*	RPD of the LCS and LCSD exceeds the control limits

### 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 Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T01-1902**

Date Collected: 02/18/19 20:15

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-1**

Matrix: Water

## Method: 8151A - Herbicides (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
MCPP	ND	*	1.1	0.19	ug/L	D	02/22/19 13:56	02/25/19 16:50	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
2,4-Dichlorophenylacetic acid	66		44 - 145				02/22/19 13:56	02/25/19 16:50	1

## Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	7.3		1.1	0.16	mg/L	D	03/13/19 15:36	03/14/19 11:58	1
Magnesium	2.5		1.1	0.13	mg/L		03/13/19 15:36	03/14/19 11:58	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.47	J	1.0	0.20	ug/L	D	03/07/19 11:11	03/08/19 13:38	1
Chromium	1.4		0.40	0.17	ug/L		03/07/19 11:11	03/08/19 13:38	1
Copper	2.4		2.0	0.60	ug/L		03/07/19 11:11	03/08/19 13:38	1
Zinc	4.7	J	7.0	1.9	ug/L		03/07/19 11:11	03/08/19 13:38	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.34	J	1.0	0.20	ug/L	D	03/13/19 15:36	03/14/19 11:23	1
Chromium	0.44		0.40	0.17	ug/L		03/13/19 15:36	03/14/19 11:23	1
Copper	1.2	J	2.0	0.60	ug/L		03/13/19 15:36	03/14/19 11:23	1
Zinc	2.3	J	7.0	1.9	ug/L		03/13/19 15:36	03/14/19 11:23	1

## Method: SM 2340B - Total Hardness (as CaCO<sub>3</sub>) by calculation - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Hardness as calcium carbonate	29		1.1	1.1	mg/L	D		03/12/19 11:02	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	49		10	10	mg/L	D		02/22/19 11:07	1
Total Suspended Solids	4.4		2.0	2.0	mg/L			02/22/19 14:10	1

# Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T02-1902**

Date Collected: 02/18/19 21:24

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-2**

Matrix: Water

## Method: 8151A - Herbicides (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
MCPP	ND	*	1.1	0.19	ug/L	D	02/22/19 13:56	02/25/19 17:12	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
2,4-Dichlorophenylacetic acid	79		44 - 145				02/22/19 13:56	02/25/19 17:12	1

## Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	7.5		1.1	0.16	mg/L	D	03/13/19 15:36	03/14/19 12:23	1
Magnesium	2.5		1.1	0.13	mg/L		03/13/19 15:36	03/14/19 12:23	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.47	J	1.0	0.20	ug/L	D	03/07/19 11:11	03/08/19 13:41	1
Chromium	1.4		0.40	0.17	ug/L		03/07/19 11:11	03/08/19 13:41	1
Copper	2.1		2.0	0.60	ug/L		03/07/19 11:11	03/08/19 13:41	1
Zinc	4.5	J	7.0	1.9	ug/L		03/07/19 11:11	03/08/19 13:41	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	D	03/13/19 15:36	03/14/19 11:55	1
Chromium	0.37	J	0.40	0.17	ug/L		03/13/19 15:36	03/14/19 11:55	1
Copper	1.2	J	2.0	0.60	ug/L		03/13/19 15:36	03/14/19 11:55	1
Zinc	3.4	J	7.0	1.9	ug/L		03/13/19 15:36	03/14/19 11:55	1

## Method: SM 2340B - Total Hardness (as CaCO<sub>3</sub>) by calculation - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Hardness as calcium carbonate	29		1.1	1.1	mg/L	D		03/12/19 11:02	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	43		10	10	mg/L	D		02/22/19 12:39	1
Total Suspended Solids	4.8		2.0	2.0	mg/L			02/22/19 14:10	1

TestAmerica Seattle

# Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T03-1902**

Date Collected: 02/18/19 11:31

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-3**

Matrix: Water

## Method: 8151A - Herbicides (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
MCPP	ND	*	1.1	0.19	ug/L	D	02/22/19 13:56	02/25/19 17:35	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
2,4-Dichlorophenylacetic acid	74		44 - 145				02/22/19 13:56	02/25/19 17:35	1

## Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	7.7		1.1	0.16	mg/L	D	03/13/19 15:36	03/14/19 12:26	1
Magnesium	2.6		1.1	0.13	mg/L		03/13/19 15:36	03/14/19 12:26	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.48	J	1.0	0.20	ug/L	D	03/07/19 11:11	03/08/19 13:45	1
Chromium	1.5		0.40	0.17	ug/L		03/07/19 11:11	03/08/19 13:45	1
Copper	2.1		2.0	0.60	ug/L		03/07/19 11:11	03/08/19 13:45	1
Zinc	4.7	J	7.0	1.9	ug/L		03/07/19 11:11	03/08/19 13:45	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.30	J	1.0	0.20	ug/L	D	03/13/19 15:36	03/14/19 11:58	1
Chromium	0.52		0.40	0.17	ug/L		03/13/19 15:36	03/14/19 11:58	1
Copper	1.2	J	2.0	0.60	ug/L		03/13/19 15:36	03/14/19 11:58	1
Zinc	2.3	J	7.0	1.9	ug/L		03/13/19 15:36	03/14/19 11:58	1

## Method: SM 2340B - Total Hardness (as CaCO<sub>3</sub>) by calculation - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Hardness as calcium carbonate	30		1.1	1.1	mg/L	D		03/12/19 11:02	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	57		10	10	mg/L	D		02/22/19 12:39	1
Total Suspended Solids	6.8		2.0	2.0	mg/L			02/22/19 14:10	1

# Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T04-1902**

Date Collected: 02/17/19 19:35

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-4**

Matrix: Water

## Method: 8151A - Herbicides (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
MCPP	ND	*	1.1	0.19	ug/L	D	02/22/19 13:56	02/25/19 17:57	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
2,4-Dichlorophenylacetic acid	67		44 - 145				02/22/19 13:56	02/25/19 17:57	1

## Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	7.6		1.1	0.16	mg/L	D	03/13/19 15:36	03/14/19 12:30	1
Magnesium	2.5		1.1	0.13	mg/L		03/13/19 15:36	03/14/19 12:30	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.54	J	1.0	0.20	ug/L	D	03/07/19 11:11	03/08/19 13:48	1
Chromium	1.9		0.40	0.17	ug/L		03/07/19 11:11	03/08/19 13:48	1
Copper	2.6		2.0	0.60	ug/L		03/07/19 11:11	03/08/19 13:48	1
Zinc	5.7	J	7.0	1.9	ug/L		03/07/19 11:11	03/08/19 13:48	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	D	03/13/19 15:36	03/14/19 12:02	1
Chromium	0.37	J	0.40	0.17	ug/L		03/13/19 15:36	03/14/19 12:02	1
Copper	1.1	J	2.0	0.60	ug/L		03/13/19 15:36	03/14/19 12:02	1
Zinc	2.7	J	7.0	1.9	ug/L		03/13/19 15:36	03/14/19 12:02	1

## Method: SM 2340B - Total Hardness (as CaCO<sub>3</sub>) by calculation - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Hardness as calcium carbonate	29		1.1	1.1	mg/L	D		03/12/19 11:02	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	37		10	10	mg/L	D		02/22/19 12:39	1
Total Suspended Solids	7.8		2.0	2.0	mg/L			02/22/19 14:10	1

TestAmerica Seattle

# Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T05-1902**

Date Collected: 02/18/19 19:17

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-5**

Matrix: Water

## Method: 8151A - Herbicides (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
MCPP	ND	*	1.1	0.19	ug/L	D	02/22/19 13:56	02/25/19 18:19	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
2,4-Dichlorophenylacetic acid	57		44 - 145				02/22/19 13:56	02/25/19 18:19	1

## Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	7.3		1.1	0.16	mg/L	D	03/13/19 15:36	03/14/19 12:33	1
Magnesium	2.4		1.1	0.13	mg/L		03/13/19 15:36	03/14/19 12:33	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.52	J	1.0	0.20	ug/L	D	03/07/19 11:11	03/08/19 13:52	1
Chromium	1.9		0.40	0.17	ug/L		03/07/19 11:11	03/08/19 13:52	1
Copper	2.4		2.0	0.60	ug/L		03/07/19 11:11	03/08/19 13:52	1
Zinc	5.4	J	7.0	1.9	ug/L		03/07/19 11:11	03/08/19 13:52	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	D	03/13/19 15:36	03/14/19 12:05	1
Chromium	0.47		0.40	0.17	ug/L		03/13/19 15:36	03/14/19 12:05	1
Copper	1.1	J	2.0	0.60	ug/L		03/13/19 15:36	03/14/19 12:05	1
Zinc	2.6	J	7.0	1.9	ug/L		03/13/19 15:36	03/14/19 12:05	1

## Method: SM 2340B - Total Hardness (as CaCO<sub>3</sub>) by calculation - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Hardness as calcium carbonate	28		1.1	1.1	mg/L	D		03/12/19 11:02	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	51		10	10	mg/L	D		02/22/19 12:39	1
Total Suspended Solids	9.8		2.0	2.0	mg/L			02/22/19 14:10	1

TestAmerica Seattle

# Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T01E-1902**

Date Collected: 02/18/19 18:45

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-6**

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			02/22/19 15:48	1
<b>Surrogate</b>									
Toluene-d8 (Surr)	104		80 - 122				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	99		80 - 120					02/22/19 15:48	1
4-Bromofluorobenzene (Surr)	102		80 - 125					02/22/19 15:48	1
Dibromofluoromethane (Surr)	101		77 - 120					02/22/19 15:48	1
1,2-Dichloroethane-d4 (Surr)	105		80 - 126					02/22/19 15:48	1

# Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T01N-1902**

Date Collected: 02/18/19 13:10

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-7**

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			02/22/19 16:13	1
<b>Surrogate</b>									
Toluene-d8 (Surr)	102		80 - 122				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	101		80 - 120					02/22/19 16:13	1
4-Bromofluorobenzene (Surr)	104		80 - 125					02/22/19 16:13	1
Dibromofluoromethane (Surr)	102		77 - 120					02/22/19 16:13	1
1,2-Dichloroethane-d4 (Surr)	107		80 - 126					02/22/19 16:13	1

TestAmerica Seattle

# Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T01W-1902**

Date Collected: 02/18/19 10:30

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-8**

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			02/22/19 16:38	1
<b>Surrogate</b>									
Toluene-d8 (Surr)	106		80 - 122				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	102		80 - 120					02/22/19 16:38	1
4-Bromofluorobenzene (Surr)	102		80 - 125					02/22/19 16:38	1
Dibromofluoromethane (Surr)	103		77 - 120					02/22/19 16:38	1
1,2-Dichloroethane-d4 (Surr)	108		80 - 126					02/22/19 16:38	1

# Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T02W-1902**

Date Collected: 02/18/19 16:14

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-9**

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			02/22/19 17:03	1
<b>Surrogate</b>									
Toluene-d8 (Surr)	105		80 - 122				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	103		80 - 120					02/22/19 17:03	1
4-Bromofluorobenzene (Surr)	102		80 - 125					02/22/19 17:03	1
Dibromofluoromethane (Surr)	103		77 - 120					02/22/19 17:03	1
1,2-Dichloroethane-d4 (Surr)	110		80 - 126					02/22/19 17:03	1

# Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T02E-1902**

**Lab Sample ID: 580-84010-10**

**Matrix: Water**

Date Collected: 02/18/19 19:19

Date Received: 02/21/19 12:55

## 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			02/22/19 17:28	1
<hr/>									
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	106		80 - 122					02/22/19 17:28	1
Trifluorotoluene (Surr)	101		80 - 120					02/22/19 17:28	1
4-Bromofluorobenzene (Surr)	105		80 - 125					02/22/19 17:28	1
Dibromofluoromethane (Surr)	102		77 - 120					02/22/19 17:28	1
1,2-Dichloroethane-d4 (Surr)	106		80 - 126					02/22/19 17:28	1

# Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T02N-1902**

Date Collected: 02/18/19 13:23

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-11**

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			02/22/19 17:53	1
<b>Surrogate</b>									
Toluene-d8 (Surr)	105		80 - 122				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	102		80 - 120					02/22/19 17:53	1
4-Bromofluorobenzene (Surr)	105		80 - 125					02/22/19 17:53	1
Dibromofluoromethane (Surr)	105		77 - 120					02/22/19 17:53	1
1,2-Dichloroethane-d4 (Surr)	109		80 - 126					02/22/19 17:53	1

# Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T03E-1902**

Date Collected: 02/17/19 14:47

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-12**

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			02/22/19 18:18	1
<b>Surrogate</b>									
Toluene-d8 (Surr)	102		80 - 122				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	102		80 - 120					02/22/19 18:18	1
4-Bromofluorobenzene (Surr)	99		80 - 125					02/22/19 18:18	1
Dibromofluoromethane (Surr)	102		77 - 120					02/22/19 18:18	1
1,2-Dichloroethane-d4 (Surr)	113		80 - 126					02/22/19 18:18	1

# Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T03N-1902**

Date Collected: 02/17/19 10:57

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-13**

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			02/22/19 18:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	106		80 - 122					02/22/19 18:43	1
Trifluorotoluene (Surr)	103		80 - 120					02/22/19 18:43	1
4-Bromofluorobenzene (Surr)	107		80 - 125					02/22/19 18:43	1
Dibromofluoromethane (Surr)	106		77 - 120					02/22/19 18:43	1
1,2-Dichloroethane-d4 (Surr)	107		80 - 126					02/22/19 18:43	1

# Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T03W-1902**

Date Collected: 02/18/19 09:55

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-14**

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			02/22/19 19:08	1
<b>Surrogate</b>									
Toluene-d8 (Surr)	103		80 - 122				Prepared	02/22/19 19:08	1
Trifluorotoluene (Surr)	100		80 - 120					02/22/19 19:08	1
4-Bromofluorobenzene (Surr)	107		80 - 125					02/22/19 19:08	1
Dibromofluoromethane (Surr)	100		77 - 120					02/22/19 19:08	1
1,2-Dichloroethane-d4 (Surr)	111		80 - 126					02/22/19 19:08	1

# Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T04E-1902**

Date Collected: 02/17/19 12:20

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-15**

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			02/22/19 19:33	1
<b>Surrogate</b>									
Toluene-d8 (Surr)	102		80 - 122				Prepared	02/22/19 19:33	1
Trifluorotoluene (Surr)	99		80 - 120					02/22/19 19:33	1
4-Bromofluorobenzene (Surr)	102		80 - 125					02/22/19 19:33	1
Dibromofluoromethane (Surr)	104		77 - 120					02/22/19 19:33	1
1,2-Dichloroethane-d4 (Surr)	113		80 - 126					02/22/19 19:33	1

# Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T04N-1902**

Date Collected: 02/17/19 16:34

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-16**

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			02/22/19 19:58	1
<b>Surrogate</b>									
Toluene-d8 (Surr)	101		80 - 122				Prepared	02/22/19 19:58	1
Trifluorotoluene (Surr)	99		80 - 120					02/22/19 19:58	1
4-Bromofluorobenzene (Surr)	101		80 - 125					02/22/19 19:58	1
Dibromofluoromethane (Surr)	101		77 - 120					02/22/19 19:58	1
1,2-Dichloroethane-d4 (Surr)	106		80 - 126					02/22/19 19:58	1

# Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T04W-1902**

Date Collected: 02/17/19 15:10

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-17**

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			02/22/19 20:23	1
<b>Surrogate</b>									
Toluene-d8 (Surr)	102		80 - 122				Prepared	02/22/19 20:23	1
Trifluorotoluene (Surr)	100		80 - 120					02/22/19 20:23	1
4-Bromofluorobenzene (Surr)	101		80 - 125					02/22/19 20:23	1
Dibromofluoromethane (Surr)	105		77 - 120					02/22/19 20:23	1
1,2-Dichloroethane-d4 (Surr)	108		80 - 126					02/22/19 20:23	1

TestAmerica Seattle

# Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T05E-1902**

**Lab Sample ID: 580-84010-18**

**Matrix: Water**

Date Collected: 02/17/19 16:05

Date Received: 02/21/19 12:55

## 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			02/22/19 20:48	1
<b>Surrogate</b>									
Toluene-d8 (Surr)	103		80 - 122				Prepared	02/22/19 20:48	1
Trifluorotoluene (Surr)	103		80 - 120					02/22/19 20:48	1
4-Bromofluorobenzene (Surr)	104		80 - 125					02/22/19 20:48	1
Dibromofluoromethane (Surr)	103		77 - 120					02/22/19 20:48	1
1,2-Dichloroethane-d4 (Surr)	107		80 - 126					02/22/19 20:48	1

# Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T05N-1902**

Date Collected: 02/17/19 15:50

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-19**

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			02/22/19 18:52	1
<b>Surrogate</b>									
Toluene-d8 (Surr)	99		80 - 122				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	101		80 - 120					02/22/19 18:52	1
4-Bromofluorobenzene (Surr)	100		80 - 125					02/22/19 18:52	1
Dibromofluoromethane (Surr)	104		77 - 120					02/22/19 18:52	1
1,2-Dichloroethane-d4 (Surr)	111		80 - 126					02/22/19 18:52	1

# Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T05W-1902**

Date Collected: 02/17/19 15:40

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-20**

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			02/22/19 19:17	1
<b>Surrogate</b>									
Toluene-d8 (Surr)	98		80 - 122				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	101		80 - 120					02/22/19 19:17	1
4-Bromofluorobenzene (Surr)	97		80 - 125					02/22/19 19:17	1
Dibromofluoromethane (Surr)	104		77 - 120					02/22/19 19:17	1
1,2-Dichloroethane-d4 (Surr)	112		80 - 126					02/22/19 19:17	1

# Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: Trip Blank-T01**

**Lab Sample ID: 580-84010-21**

Date Collected: 02/17/19 00:00

Matrix: Water

Date Received: 02/21/19 12:55

## 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			02/22/19 19:42	1
<b>Surrogate</b>									
Toluene-d8 (Surr)	100		80 - 122				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	100		80 - 120					02/22/19 19:42	1
4-Bromofluorobenzene (Surr)	100		80 - 125					02/22/19 19:42	1
Dibromofluoromethane (Surr)	103		77 - 120					02/22/19 19:42	1
1,2-Dichloroethane-d4 (Surr)	111		80 - 126					02/22/19 19:42	1

# Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: Trip Blank-T02**

**Lab Sample ID: 580-84010-22**

Date Collected: 02/17/19 00:00

Matrix: Water

Date Received: 02/21/19 12:55

## 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			02/22/19 20:07	1
<b>Surrogate</b>									
Toluene-d8 (Surr)	99		80 - 122				Prepared	02/22/19 20:07	1
Trifluorotoluene (Surr)	103		80 - 120					02/22/19 20:07	1
4-Bromofluorobenzene (Surr)	99		80 - 125					02/22/19 20:07	1
Dibromofluoromethane (Surr)	106		77 - 120					02/22/19 20:07	1
1,2-Dichloroethane-d4 (Surr)	110		80 - 126					02/22/19 20:07	1

# Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: Trip Blank-T03**

**Lab Sample ID: 580-84010-23**

Date Collected: 02/17/19 00:00

Matrix: Water

Date Received: 02/21/19 12:55

**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			02/22/19 20:32	1
<b>Surrogate</b>									
Toluene-d8 (Surr)	101		80 - 122				Prepared	02/22/19 20:32	1
Trifluorotoluene (Surr)	101		80 - 120					02/22/19 20:32	1
4-Bromofluorobenzene (Surr)	98		80 - 125					02/22/19 20:32	1
Dibromofluoromethane (Surr)	106		77 - 120					02/22/19 20:32	1
1,2-Dichloroethane-d4 (Surr)	111		80 - 126					02/22/19 20:32	1

# Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: Trip Blank-T04**

Date Collected: 02/17/19 00:00

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-24**

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			02/22/19 20:57	1
<b>Surrogate</b>									
Toluene-d8 (Surr)	98		80 - 122				Prepared	02/22/19 20:57	1
Trifluorotoluene (Surr)	100		80 - 120					02/22/19 20:57	1
4-Bromofluorobenzene (Surr)	97		80 - 125					02/22/19 20:57	1
Dibromofluoromethane (Surr)	104		77 - 120					02/22/19 20:57	1
1,2-Dichloroethane-d4 (Surr)	111		80 - 126					02/22/19 20:57	1

# Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: Trip Blank-T05**

Date Collected: 02/17/19 00:00

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-25**

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			02/25/19 18:10	1
<b>Surrogate</b>									
Toluene-d8 (Surr)	100		80 - 122				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	100		80 - 120					02/25/19 18:10	1
4-Bromofluorobenzene (Surr)	96		80 - 125					02/25/19 18:10	1
Dibromofluoromethane (Surr)	105		77 - 120					02/25/19 18:10	1
1,2-Dichloroethane-d4 (Surr)	112		80 - 126					02/25/19 18:10	1

# QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

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

**Lab Sample ID: MB 580-295018/5**

**Matrix: Water**

**Analysis Batch: 295018**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Ethylbenzene	ND		3.0	0.50	ug/L			02/22/19 10:33	1
<b>Surrogate</b>									
<i>Toluene-d8 (Surr)</i>									
		100	<i>Limits</i>						
			80 - 122						
<i>Trifluorotoluene (Surr)</i>									
		102	<i>Limits</i>						
			80 - 120						
<i>4-Bromofluorobenzene (Surr)</i>									
		97	<i>Limits</i>						
			80 - 125						
<i>Dibromofluoromethane (Surr)</i>									
		103	<i>Limits</i>						
			77 - 120						
<i>1,2-Dichloroethane-d4 (Surr)</i>									
		108	<i>Limits</i>						
			80 - 126						

**Lab Sample ID: LCS 580-295018/6**

**Matrix: Water**

**Analysis Batch: 295018**

Analyte	MB	MB	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
	Result	Qualifier							
Ethylbenzene	ND		10.0	9.56		ug/L		96	75 - 120
<b>Surrogate</b>									
<i>Toluene-d8 (Surr)</i>									
		99	<i>Limits</i>						
			80 - 122						
<i>Trifluorotoluene (Surr)</i>									
		99	<i>Limits</i>						
			80 - 120						
<i>4-Bromofluorobenzene (Surr)</i>									
		99	<i>Limits</i>						
<i>Dibromofluoromethane (Surr)</i>									
		103	<i>Limits</i>						
			77 - 120						
<i>1,2-Dichloroethane-d4 (Surr)</i>									
		107	<i>Limits</i>						
			80 - 126						

**Lab Sample ID: LCSD 580-295018/7**

**Matrix: Water**

**Analysis Batch: 295018**

Analyte	MB	MB	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
	Result	Qualifier									
Ethylbenzene	ND		10.0	9.91		ug/L		99	75 - 120	4	14
<b>Surrogate</b>											
<i>Toluene-d8 (Surr)</i>											
		102	<i>Limits</i>								
			80 - 122								
<i>Trifluorotoluene (Surr)</i>											
		99	<i>Limits</i>								
			80 - 120								
<i>4-Bromofluorobenzene (Surr)</i>											
		103	<i>Limits</i>								
<i>Dibromofluoromethane (Surr)</i>											
		102	<i>Limits</i>								
<i>1,2-Dichloroethane-d4 (Surr)</i>											
		109	<i>Limits</i>								
			80 - 126								

**Lab Sample ID: MB 580-295020/5**

**Matrix: Water**

**Analysis Batch: 295020**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Ethylbenzene	ND		3.0	0.50	ug/L			02/22/19 10:31	1
<b>Surrogate</b>									
<i>Toluene-d8 (Surr)</i>									
		104	<i>Limits</i>						
			80 - 122						
<i>Trifluorotoluene (Surr)</i>									
		105	<i>Limits</i>						
			80 - 120						

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

# QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

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

**Lab Sample ID: MB 580-295020/5**

**Matrix: Water**

**Analysis Batch: 295020**

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

Surrogate	MB	MB	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)		104			80 - 125			
Dibromofluoromethane (Surr)		103			77 - 120			
1,2-Dichloroethane-d4 (Surr)		105			80 - 126			

**Lab Sample ID: LCS 580-295020/6**

**Matrix: Water**

**Analysis Batch: 295020**

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

Analyte	MB	MB	Spike	LCS	LCS	Result	Qualifier	Unit	D	%Rec	%Rec.
			Added								
Ethylbenzene			10.0		10.4	10.4		ug/L		104	75 - 120

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

**Lab Sample ID: LCSD 580-295020/7**

**Matrix: Water**

**Analysis Batch: 295020**

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

Analyte	MB	MB	Spike	LCSD	LCSD	Result	Qualifier	Unit	D	%Rec	%Rec.	RPD
			Added									
Ethylbenzene			10.0		10.8	10.8		ug/L		108	75 - 120	4

Surrogate	LCSD	LCSD	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)		101			80 - 122
Trifluorotoluene (Surr)		100			80 - 120
4-Bromofluorobenzene (Surr)		104			80 - 125
Dibromofluoromethane (Surr)		100			77 - 120
1,2-Dichloroethane-d4 (Surr)		100			80 - 126

**Lab Sample ID: MB 580-295103/4**

**Matrix: Water**

**Analysis Batch: 295103**

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

Analyte	MB	MB	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene			ND		3.0	0.50	ug/L			02/25/19 12:42	1

Surrogate	MB	MB	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)		102			80 - 122			
Trifluorotoluene (Surr)		99			80 - 120			
4-Bromofluorobenzene (Surr)		93			80 - 125			
Dibromofluoromethane (Surr)		100			77 - 120			
1,2-Dichloroethane-d4 (Surr)		113			80 - 126			

TestAmerica Seattle

# QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

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

**Lab Sample ID: LCS 580-295103/5**

**Matrix: Water**

**Analysis Batch: 295103**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec.	Limits
Ethylbenzene	10.0	11.1		ug/L		111	75 - 120
<b>Surrogate</b>							
<b>LCS %Recovery Qualifier Limits</b>							
Toluene-d8 (Surr)	101						
Trifluorotoluene (Surr)	103						
4-Bromofluorobenzene (Surr)	107						
Dibromofluoromethane (Surr)	110						
1,2-Dichloroethane-d4 (Surr)	107						

**Lab Sample ID: LCSD 580-295103/6**

**Matrix: Water**

**Analysis Batch: 295103**

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec.	RPD	RPD Limit
Ethylbenzene	10.0	10.9		ug/L		109	75 - 120	1
<b>Surrogate</b>								
<b>LCSD %Recovery Qualifier Limits</b>								
Toluene-d8 (Surr)	101							
Trifluorotoluene (Surr)	102							
4-Bromofluorobenzene (Surr)	103							
Dibromofluoromethane (Surr)	100							
1,2-Dichloroethane-d4 (Surr)	109							

## Method: 8151A - Herbicides (GC/MS)

**Lab Sample ID: MB 580-295047/1-A**

**Matrix: Water**

**Analysis Batch: 295134**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 295047**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
MCPP	ND		1.0	0.17	ug/L		02/22/19 13:56	02/25/19 15:22	1
<b>Surrogate</b>									
<b>MB %Recovery Qualifier Limits</b>									
2,4-Dichlorophenylacetic acid	70		44 - 145				02/22/19 13:56	02/25/19 15:22	1

**Lab Sample ID: LCS 580-295047/2-A**

**Matrix: Water**

**Analysis Batch: 295134**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 295047**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec.	Limits
MCPP	5.00	2.46	*	ug/L		49	61 - 135
<b>Surrogate</b>							
<b>LCS %Recovery Qualifier Limits</b>							
2,4-Dichlorophenylacetic acid	52		44 - 145				

TestAmerica Seattle

# QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

## Method: 8151A - Herbicides (GC/MS) (Continued)

**Lab Sample ID:** LCSD 580-295047/3-A

**Matrix:** Water

**Analysis Batch:** 295134

**Client Sample ID:** Lab Control Sample Dup

**Prep Type:** Total/NA

**Prep Batch:** 295047

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	RPD	RPD Limit
MCPP	5.00	3.67	*	ug/L	73	61 - 135	40	35
<b>Surrogate</b>	<b>LCSD %Recovery</b>	<b>LCSD Qualifier</b>	<b>Limits</b>					
2,4-Dichlorophenylacetic acid	75		44 - 145					

## Method: 6010C - Metals (ICP)

**Lab Sample ID:** MB 580-296233/22-A

**Matrix:** Water

**Analysis Batch:** 296335

**Client Sample ID:** Method Blank

**Prep Type:** Total Recoverable

**Prep Batch:** 296233

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.1	0.16	mg/L		03/13/19 15:36	03/14/19 11:49	1
Magnesium	ND		1.1	0.13	mg/L		03/13/19 15:36	03/14/19 11:49	1

**Lab Sample ID:** LCS 580-296233/23-A

**Matrix:** Water

**Analysis Batch:** 296335

**Client Sample ID:** Lab Control Sample

**Prep Type:** Total Recoverable

**Prep Batch:** 296233

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Calcium	20.0	20.1		mg/L		100	80 - 120
Magnesium	20.0	20.2		mg/L		101	80 - 120

**Lab Sample ID:** LCSD 580-296233/24-A

**Matrix:** Water

**Analysis Batch:** 296335

**Client Sample ID:** Lab Control Sample Dup

**Prep Type:** Total Recoverable

**Prep Batch:** 296233

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Calcium	20.0	20.2		mg/L		101	80 - 120	1	20
Magnesium	20.0	20.3		mg/L		102	80 - 120	1	20

**Lab Sample ID:** 580-84010-1 MS

**Matrix:** Water

**Analysis Batch:** 296335

**Client Sample ID:** PDI-WS-T01-1902

**Prep Type:** Dissolved

**Prep Batch:** 296233

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Calcium	7.3		20.0	27.6		mg/L		101	75 - 125
Magnesium	2.5		20.0	23.0		mg/L		102	75 - 125

**Lab Sample ID:** 580-84010-1 MSD

**Matrix:** Water

**Analysis Batch:** 296335

**Client Sample ID:** PDI-WS-T01-1902

**Prep Type:** Dissolved

**Prep Batch:** 296233

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	RPD	Limit	
Calcium	7.3		20.0	28.0		mg/L		103	75 - 125	1	20
Magnesium	2.5		20.0	23.6		mg/L		105	75 - 125	2	20

TestAmerica Seattle

# QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

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

**Lab Sample ID: 580-84010-1 DU**

**Matrix: Water**

**Analysis Batch: 296335**

**Client Sample ID: PDI-WS-T01-1902**

**Prep Type: Dissolved**

**Prep Batch: 296233**

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier			0.3	
Calcium	7.3		7.30		mg/L			
Magnesium	2.5		2.49		mg/L		0.4	20

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

**Lab Sample ID: MB 580-295753/22-A**

**Matrix: Water**

**Analysis Batch: 295933**

**Client Sample ID: Method Blank**

**Prep Type: Total Recoverable**

**Prep Batch: 295753**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		1.0	0.20	ug/L		03/07/19 11:11	03/08/19 12:16	1
Chromium	ND		0.40	0.17	ug/L		03/07/19 11:11	03/08/19 12:16	1
Copper	ND		2.0	0.60	ug/L		03/07/19 11:11	03/08/19 12:16	1
Zinc	ND		7.0	1.9	ug/L		03/07/19 11:11	03/08/19 12:16	1

**Lab Sample ID: LCS 580-295753/23-A**

**Matrix: Water**

**Analysis Batch: 295933**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total Recoverable**

**Prep Batch: 295753**

Analyte	MB	MB	Spike	LCS	LCS	Unit	D	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier			%Rec	
Arsenic	ND		1000	946		ug/L		95	80 - 120
Chromium	ND		1000	968		ug/L		97	80 - 120
Copper	ND		1000	991		ug/L		99	80 - 120
Zinc	ND		1000	973		ug/L		97	80 - 120

**Lab Sample ID: LCSD 580-295753/24-A**

**Matrix: Water**

**Analysis Batch: 295933**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total Recoverable**

**Prep Batch: 295753**

Analyte	MB	MB	Spike	LCSD	LCSD	Unit	D	%Rec.	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier			%Rec			
Arsenic	ND		1000	959		ug/L		96	80 - 120	1	20
Chromium	ND		1000	961		ug/L		96	80 - 120	1	20
Copper	ND		1000	993		ug/L		99	80 - 120	0	20
Zinc	ND		1000	966		ug/L		97	80 - 120	1	20

**Lab Sample ID: MB 580-296233/22-A**

**Matrix: Water**

**Analysis Batch: 296312**

**Client Sample ID: Method Blank**

**Prep Type: Total Recoverable**

**Prep Batch: 296233**

Analyte	MB	MB	Spike	LCSD	LCSD	Unit	D	%Rec.	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier			%Rec			
Arsenic	ND		1.0	0.20	ug/L						
Chromium	ND		0.40	0.17	ug/L						
Copper	ND		2.0	0.60	ug/L						
Zinc	ND		7.0	1.9	ug/L						

TestAmerica Seattle

# QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

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

**Lab Sample ID: LCS 580-296233/23-A**

**Matrix: Water**

**Analysis Batch: 296312**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total Recoverable**

**Prep Batch: 296233**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limit
Arsenic	1000	1030		ug/L		103	80 - 120
Chromium	1000	1050		ug/L		105	80 - 120
Copper	1000	1040		ug/L		104	80 - 120
Zinc	1000	1020		ug/L		102	80 - 120

**Lab Sample ID: LCSD 580-296233/24-A**

**Matrix: Water**

**Analysis Batch: 296312**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total Recoverable**

**Prep Batch: 296233**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	RPD	Limit
Arsenic	1000	1050		ug/L		105	80 - 120	2 20
Chromium	1000	1080		ug/L		108	80 - 120	2 20
Copper	1000	1060		ug/L		106	80 - 120	2 20
Zinc	1000	1030		ug/L		103	80 - 120	1 20

**Lab Sample ID: 580-84010-1 MS**

**Matrix: Water**

**Analysis Batch: 296312**

**Client Sample ID: PDI-WS-T01-1902**

**Prep Type: Dissolved**

**Prep Batch: 296233**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limit
Arsenic	0.34	J	1000	998		ug/L		100	80 - 120
Chromium	0.44		1000	1040		ug/L		104	80 - 120
Copper	1.2	J	1000	1040		ug/L		103	80 - 120
Zinc	2.3	J	1000	1010		ug/L		101	80 - 120

**Lab Sample ID: 580-84010-1 MSD**

**Matrix: Water**

**Analysis Batch: 296312**

**Client Sample ID: PDI-WS-T01-1902**

**Prep Type: Dissolved**

**Prep Batch: 296233**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	RPD	Limit
Arsenic	0.34	J	1000	995		ug/L		99	80 - 120	0 20
Chromium	0.44		1000	1020		ug/L		102	80 - 120	2 20
Copper	1.2	J	1000	1020		ug/L		102	80 - 120	2 20
Zinc	2.3	J	1000	991		ug/L		99	80 - 120	2 20

**Lab Sample ID: 580-84010-1 DU**

**Matrix: Water**

**Analysis Batch: 296312**

**Client Sample ID: PDI-WS-T01-1902**

**Prep Type: Dissolved**

**Prep Batch: 296233**

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D		RPD	Limit
Arsenic	0.34	J		0.306	J	ug/L			10	20
Chromium	0.44			0.449		ug/L			1	20
Copper	1.2	J		1.19	J	ug/L			2	20
Zinc	2.3	J		3.03	J F5	ug/L			27	20

TestAmerica Seattle

# QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

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

**Lab Sample ID: MB 580-295014/1**

**Matrix: Water**

**Analysis Batch: 295014**

**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			02/22/19 11:07	1

**Lab Sample ID: LCS 580-295014/2**

**Matrix: Water**

**Analysis Batch: 295014**

**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	938		mg/L		94	80 - 120

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

**Lab Sample ID: MB 580-295049/1**

**Matrix: Water**

**Analysis Batch: 295049**

**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			02/22/19 14:10	1

**Lab Sample ID: LCS 580-295049/2**

**Matrix: Water**

**Analysis Batch: 295049**

**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	25.2		mg/L		91	70.6 - 120

# Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T01-1902**

**Date Collected: 02/18/19 20:15**

**Date Received: 02/21/19 12:55**

**Lab Sample ID: 580-84010-1**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			295047	02/22/19 13:56	KO	TAL SEA
Total/NA	Analysis	8151A		1	295134	02/25/19 16:50	KFS	TAL SEA
Dissolved	Prep	3005A			296233	03/13/19 15:36	JKM	TAL SEA
Dissolved	Analysis	6010C		1	296335	03/14/19 11:58	HJM	TAL SEA
Dissolved	Prep	3005A			296233	03/13/19 15:36	JKM	TAL SEA
Dissolved	Analysis	6020B		1	296312	03/14/19 11:23	FCW	TAL SEA
Total Recoverable	Prep	3005A			295753	03/07/19 11:11	JKM	TAL SEA
Total Recoverable	Analysis	6020B		1	295933	03/08/19 13:38	FCW	TAL SEA
Dissolved	Analysis	SM 2340B		1	296067	03/12/19 11:02	R1K	TAL SEA
Total/NA	Analysis	SM 2540C		1	295014	02/22/19 11:07	R1K	TAL SEA
Total/NA	Analysis	SM 2540D		1	295049	02/22/19 14:10	EMM	TAL SEA

**Client Sample ID: PDI-WS-T02-1902**

**Date Collected: 02/18/19 21:24**

**Date Received: 02/21/19 12:55**

**Lab Sample ID: 580-84010-2**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			295047	02/22/19 13:56	KO	TAL SEA
Total/NA	Analysis	8151A		1	295134	02/25/19 17:12	KFS	TAL SEA
Dissolved	Prep	3005A			296233	03/13/19 15:36	JKM	TAL SEA
Dissolved	Analysis	6010C		1	296335	03/14/19 12:23	HJM	TAL SEA
Dissolved	Prep	3005A			296233	03/13/19 15:36	JKM	TAL SEA
Dissolved	Analysis	6020B		1	296312	03/14/19 11:55	FCW	TAL SEA
Total Recoverable	Prep	3005A			295753	03/07/19 11:11	JKM	TAL SEA
Total Recoverable	Analysis	6020B		1	295933	03/08/19 13:41	FCW	TAL SEA
Dissolved	Analysis	SM 2340B		1	296067	03/12/19 11:02	R1K	TAL SEA
Total/NA	Analysis	SM 2540C		1	295014	02/22/19 12:39	R1K	TAL SEA
Total/NA	Analysis	SM 2540D		1	295049	02/22/19 14:10	EMM	TAL SEA

**Client Sample ID: PDI-WS-T03-1902**

**Date Collected: 02/18/19 11:31**

**Date Received: 02/21/19 12:55**

**Lab Sample ID: 580-84010-3**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			295047	02/22/19 13:56	KO	TAL SEA
Total/NA	Analysis	8151A		1	295134	02/25/19 17:35	KFS	TAL SEA
Dissolved	Prep	3005A			296233	03/13/19 15:36	JKM	TAL SEA
Dissolved	Analysis	6010C		1	296335	03/14/19 12:26	HJM	TAL SEA
Dissolved	Prep	3005A			296233	03/13/19 15:36	JKM	TAL SEA
Dissolved	Analysis	6020B		1	296312	03/14/19 11:58	FCW	TAL SEA
Total Recoverable	Prep	3005A			295753	03/07/19 11:11	JKM	TAL SEA
Total Recoverable	Analysis	6020B		1	295933	03/08/19 13:45	FCW	TAL SEA

TestAmerica Seattle

# Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T03-1902**

Date Collected: 02/18/19 11:31

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-3**

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Analysis	SM 2340B		1	296067	03/12/19 11:02	R1K	TAL SEA
Total/NA	Analysis	SM 2540C		1	295014	02/22/19 12:39	R1K	TAL SEA
Total/NA	Analysis	SM 2540D		1	295049	02/22/19 14:10	EMM	TAL SEA

**Client Sample ID: PDI-WS-T04-1902**

Date Collected: 02/17/19 19:35

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-4**

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			295047	02/22/19 13:56	KO	TAL SEA
Total/NA	Analysis	8151A		1	295134	02/25/19 17:57	KFS	TAL SEA
Dissolved	Prep	3005A			296233	03/13/19 15:36	JKM	TAL SEA
Dissolved	Analysis	6010C		1	296335	03/14/19 12:30	HJM	TAL SEA
Dissolved	Prep	3005A			296233	03/13/19 15:36	JKM	TAL SEA
Dissolved	Analysis	6020B		1	296312	03/14/19 12:02	FCW	TAL SEA
Total Recoverable	Prep	3005A			295753	03/07/19 11:11	JKM	TAL SEA
Total Recoverable	Analysis	6020B		1	295933	03/08/19 13:48	FCW	TAL SEA
Dissolved	Analysis	SM 2340B		1	296067	03/12/19 11:02	R1K	TAL SEA
Total/NA	Analysis	SM 2540C		1	295014	02/22/19 12:39	R1K	TAL SEA
Total/NA	Analysis	SM 2540D		1	295049	02/22/19 14:10	EMM	TAL SEA

**Client Sample ID: PDI-WS-T05-1902**

Date Collected: 02/18/19 19:17

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-5**

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			295047	02/22/19 13:56	KO	TAL SEA
Total/NA	Analysis	8151A		1	295134	02/25/19 18:19	KFS	TAL SEA
Dissolved	Prep	3005A			296233	03/13/19 15:36	JKM	TAL SEA
Dissolved	Analysis	6010C		1	296335	03/14/19 12:33	HJM	TAL SEA
Dissolved	Prep	3005A			296233	03/13/19 15:36	JKM	TAL SEA
Dissolved	Analysis	6020B		1	296312	03/14/19 12:05	FCW	TAL SEA
Total Recoverable	Prep	3005A			295753	03/07/19 11:11	JKM	TAL SEA
Total Recoverable	Analysis	6020B		1	295933	03/08/19 13:52	FCW	TAL SEA
Dissolved	Analysis	SM 2340B		1	296067	03/12/19 11:02	R1K	TAL SEA
Total/NA	Analysis	SM 2540C		1	295014	02/22/19 12:39	R1K	TAL SEA
Total/NA	Analysis	SM 2540D		1	295049	02/22/19 14:10	EMM	TAL SEA

TestAmerica Seattle

# Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T01E-1902**

Date Collected: 02/18/19 18:45

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-6**

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	295020	02/22/19 15:48	TL1	TAL SEA

**Client Sample ID: PDI-WS-T01N-1902**

Date Collected: 02/18/19 13:10

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-7**

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	295020	02/22/19 16:13	TL1	TAL SEA

**Client Sample ID: PDI-WS-T01W-1902**

Date Collected: 02/18/19 10:30

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-8**

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	295020	02/22/19 16:38	TL1	TAL SEA

**Client Sample ID: PDI-WS-T02W-1902**

Date Collected: 02/18/19 16:14

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-9**

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	295020	02/22/19 17:03	TL1	TAL SEA

**Client Sample ID: PDI-WS-T02E-1902**

Date Collected: 02/18/19 19:19

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-10**

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	295020	02/22/19 17:28	TL1	TAL SEA

**Client Sample ID: PDI-WS-T02N-1902**

Date Collected: 02/18/19 13:23

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-11**

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	295020	02/22/19 17:53	TL1	TAL SEA

TestAmerica Seattle

# Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T03E-1902**

Date Collected: 02/17/19 14:47

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-12**

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	295020	02/22/19 18:18	TL1	TAL SEA

**Client Sample ID: PDI-WS-T03N-1902**

Date Collected: 02/17/19 10:57

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-13**

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	295020	02/22/19 18:43	TL1	TAL SEA

**Client Sample ID: PDI-WS-T03W-1902**

Date Collected: 02/18/19 09:55

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-14**

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	295020	02/22/19 19:08	TL1	TAL SEA

**Client Sample ID: PDI-WS-T04E-1902**

Date Collected: 02/17/19 12:20

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-15**

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	295020	02/22/19 19:33	TL1	TAL SEA

**Client Sample ID: PDI-WS-T04N-1902**

Date Collected: 02/17/19 16:34

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-16**

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	295020	02/22/19 19:58	TL1	TAL SEA

**Client Sample ID: PDI-WS-T04W-1902**

Date Collected: 02/17/19 15:10

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-17**

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	295020	02/22/19 20:23	TL1	TAL SEA

TestAmerica Seattle

# Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: PDI-WS-T05E-1902**

Date Collected: 02/17/19 16:05

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-18**

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	295020	02/22/19 20:48	TL1	TAL SEA

**Client Sample ID: PDI-WS-T05N-1902**

Date Collected: 02/17/19 15:50

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-19**

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	295018	02/22/19 18:52	CJ	TAL SEA

**Client Sample ID: PDI-WS-T05W-1902**

Date Collected: 02/17/19 15:40

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-20**

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	295018	02/22/19 19:17	CJ	TAL SEA

**Client Sample ID: Trip Blank-T01**

Date Collected: 02/17/19 00:00

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-21**

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	295018	02/22/19 19:42	CJ	TAL SEA

**Client Sample ID: Trip Blank-T02**

Date Collected: 02/17/19 00:00

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-22**

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	295018	02/22/19 20:07	CJ	TAL SEA

**Client Sample ID: Trip Blank-T03**

Date Collected: 02/17/19 00:00

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-23**

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	295018	02/22/19 20:32	CJ	TAL SEA

TestAmerica Seattle

# Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

**Client Sample ID: Trip Blank-T04**

Date Collected: 02/17/19 00:00

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-24**

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	295018	02/22/19 20:57	CJ	TAL SEA

**Client Sample ID: Trip Blank-T05**

Date Collected: 02/17/19 00:00

Date Received: 02/21/19 12:55

**Lab Sample ID: 580-84010-25**

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	295103	02/25/19 18:10	W1T	TAL SEA

## Laboratory References:

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

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## Accreditation/Certification Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-84010-1

### 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	01-19-20
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: 580-84010-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-84010-1	PDI-WS-T01-1902	Water	02/18/19 20:15	02/21/19 12:55
580-84010-2	PDI-WS-T02-1902	Water	02/18/19 21:24	02/21/19 12:55
580-84010-3	PDI-WS-T03-1902	Water	02/18/19 11:31	02/21/19 12:55
580-84010-4	PDI-WS-T04-1902	Water	02/17/19 19:35	02/21/19 12:55
580-84010-5	PDI-WS-T05-1902	Water	02/18/19 19:17	02/21/19 12:55
580-84010-6	PDI-WS-T01E-1902	Water	02/18/19 18:45	02/21/19 12:55
580-84010-7	PDI-WS-T01N-1902	Water	02/18/19 13:10	02/21/19 12:55
580-84010-8	PDI-WS-T01W-1902	Water	02/18/19 10:30	02/21/19 12:55
580-84010-9	PDI-WS-T02W-1902	Water	02/18/19 16:14	02/21/19 12:55
580-84010-10	PDI-WS-T02E-1902	Water	02/18/19 19:19	02/21/19 12:55
580-84010-11	PDI-WS-T02N-1902	Water	02/18/19 13:23	02/21/19 12:55
580-84010-12	PDI-WS-T03E-1902	Water	02/17/19 14:47	02/21/19 12:55
580-84010-13	PDI-WS-T03N-1902	Water	02/17/19 10:57	02/21/19 12:55
580-84010-14	PDI-WS-T03W-1902	Water	02/18/19 09:55	02/21/19 12:55
580-84010-15	PDI-WS-T04E-1902	Water	02/17/19 12:20	02/21/19 12:55
580-84010-16	PDI-WS-T04N-1902	Water	02/17/19 16:34	02/21/19 12:55
580-84010-17	PDI-WS-T04W-1902	Water	02/17/19 15:10	02/21/19 12:55
580-84010-18	PDI-WS-T05E-1902	Water	02/17/19 16:05	02/21/19 12:55
580-84010-19	PDI-WS-T05N-1902	Water	02/17/19 15:50	02/21/19 12:55
580-84010-20	PDI-WS-T05W-1902	Water	02/17/19 15:40	02/21/19 12:55
580-84010-21	Trip Blank-T01	Water	02/17/19 00:00	02/21/19 12:55
580-84010-22	Trip Blank-T02	Water	02/17/19 00:00	02/21/19 12:55
580-84010-23	Trip Blank-T03	Water	02/17/19 00:00	02/21/19 12:55
580-84010-24	Trip Blank-T04	Water	02/17/19 00:00	02/21/19 12:55
580-84010-25	Trip Blank-T05	Water	02/17/19 00:00	02/21/19 12:55

TestAmerica Seattle

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TestAmerica-Seattle		SURFACE WATER		CHAIN OF CUSTODY	
5755-8th Street-East Tacoma, WA 98424-1317	Ph: 253-922-2310 F 253-922-5047	Project Contact: Amy Dahl / Chelsea Cook Tel: (206) 438-2261 / (206) 438-2010	Site Contact: Jennifer Ray Laboratory Contact: Elaine Walker	Carrier: TestAmerica Courier	COC No. 1 1 of 13 pages
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	Analysis Turnaround Time Calendar (C) or Work Days (W) <input type="checkbox"/> 21 days <input type="checkbox"/> Other _____			
Portland, OR Project #: 60566335 Study: Surface Water					
Sample Identification					
		Sample Date	Sample Time	Matrix	QC Sample
PDI-WS-T	01 19 02	2/18/2019	20:15	W	LS
PDI-WS-T	02 19 02	2/18/2019	21:24	W	ED
PDI-WS-T	03 19 02	2/18/2019	11:31	W	ED
PDI-WS-T	04 19 02	2/17/2019	19:35	W	MT
PDI-WS-T	05 19 02	2/18/2019	19:17	W	KD
PDI-WS-T	01 E 19 02	2/18/2019	18:45	W	MT
PDI-WS-T	01 N 19 02	2/18/2019	13:10	W	MT
PDI-WS-T	01 W 19 02	2/18/2019	10:30	W	MT
PDI-WS-T	02 W 19 02	2/18/2019	16:14	W	ED
PDI-WS-T	02 E 19 02	2/18/2019	19:19	W	ED
PDI-WS-T	02 N 19 02	2/18/2019	13:23	W	ED
PDI-WS-T	03 E 19 02	2/17/2019	14:47	W	ED
Fraction					
Methylbenzenes, EPA 8260C					
Metals (Total), EPA Method 8151A					
Metals Dissolved Solids, Standard Method 6020B-LL					
Total Dissolved Solids, Standard Method 2500C					
Metals (Dissolved) + Hardness as CaCO <sub>3</sub> , EPA Method 6020B-LL					
EPA Method 6020B-LL					
Standard Method 8151A					
Metals (Total), EPA Method 8151A					
Ethylbenzenes, EPA 8260C					
MCPs, EPA Method 8151A					
Fraction					
Sample Specific Notes:					
					
580-84010 Chain of Custody					
<input type="checkbox"/> Disposal <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input checked="" type="checkbox"/> Archive For 12 Months					
Container Type: WMG=Wide Mouth Glass Jar, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Column Preservative: HCl = Hydrochloric Acid, H <sub>3</sub> PO <sub>4</sub> = Phosphoric Acid, HNO <sub>3</sub> = Nitric Acid Fraction: D = Dissolved, PR = Particulate, T = Total (unfiltered)					
Special Instructions/QC Requirements & Comments:  <i>3.9, 3.1, 4.2</i>					
Relinquished by: <i>J. M. Minard</i> Company: <i>NEON</i> Date/time: <i>2/21/19 1100</i> Relinquished by: <i>J. M. Minard</i> Company: <i>M.E.</i> Date/time: <i>2/21/19 1255</i> Relinquished by: <i>J. M. Minard</i> Company: _____ Date/time: _____					
Received by: <i>J. M. Minard</i> Company: <i>NEON</i> Date/time: <i>2/21/19 1100</i> Received by: <i>J. M. Minard</i> Company: <i>M.E.</i> Date/time: <i>2/21/19 1255</i> Received by: _____ Company: _____ Date/time: _____					

TestAmerica Seattle

5755-8th Street-East

Tacoma, WA 98424-3117

Ph: 253-922-2310

F 253-922-5047

## SURFACE WATER

## CHAIN OF CUSTODY

Project Contact: Amy Dahl / Chelsey Cook		Site Contact: Jennifer Ray		2/21/2019 COC No: 1									
Client Contact		Project Contact: Amy Dahl / Chelsey Cook		Carrier: TestAmerica Courier									
A/E/COM		Client Contact		Laboratory Contact: Elaine-Walker									
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													

### Succinct Instructions/OC Requirements & Comments:

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

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

## SURFACE WATER CHAIN OF CUSTODY

Project Contact: Amy Dahl / Chelsey Cook		Site Contact: Jennifer Ray										2/21/2019 COC No. 1 1 of 13 pages			
		Laboratory Contact: Elaine-Walker													
Tel: (206) 438-2261 / (206) 438-2010		Analysis Turnaround Time													
Calendar (C) or Work Days (W)		<input type="checkbox"/> 21 days  <input type="checkbox"/> Other _____													
Sample Identification			Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Method	Ethylbenzene, EPA 822dC	MCPB, EPA Method 8151A	Metals(Total), EPA Method 6020B-LI	Total Suspended Solids, Standard Method 2540D	Total Dissolved Solids, Standard Method 2540C	Metals (Dissolved) + Hardness as CaCO <sub>3</sub> , EPA Method 6020B-LI
PDI-WS-T	01	19 02	2/18/2019	20:15	W		LS	6		2	1	1	1	1	-
PDI-WS-T	02	19 02	2/18/2019	21:24	W		ED	6		2	1	1	1	1	
PDI-WS-T	03	19 02	2/18/2019	11:31	W		ED	6		2	1	1	1	1	
PDI-WS-T	04	19 02	2/17/2019	19:35	W		MT	6		2	1	1	1	1	
PDI-WS-T	05	19 02	2/18/2019	19:17	W		KD	6		2	1	1	1	1	
PDI-WS-T	01	E 19 02	2/18/2019	18:45	W		MT	3		3					
PDI-WS-T	01	N 19 02	2/18/2019	13:10	W		MT	3		3					
PDI-WS-T	01	W 19 02	2/18/2019	10:30	W		MT	3		3					
PDI-WS-T	02	W 19 02	2/18/2019	16:14	W		ED	3		3					
PDI-WS-T	02	E 19 02	2/18/2019	19:19	W		ED	3		3					
PDI-WS-T	02	N 19 02	2/18/2019	13:23	W		ED	3		3					
PDI-WS-T	03	E 19 02	2/17/2019	14:47	W		ED	3		3					
<b>Container Type:</b> WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Column															
<b>Preservative:</b> HCl = Hydrochloric Acid, H <sub>3</sub> PO <sub>4</sub> = Phosphoric Acid, HNO <sub>3</sub> = Nitric Acid															
<b>Fraction:</b> D = Dissolved, PRT = Particulate, T = Total (unfiltered)															
<b>Sample Disposal</b>															
<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For 12 Months															
Special Instructions/QC Requirements & Comments:															
3.9, 3-1, 4.2															

Relinquished by: 	Company: AECOM	Date/Time: 2/21/19 1100	Received by: 	Company: M-E.	Date/Time: 2/21/19 1100
Relinquished by: 	Company: M-E.	Date/Time: 2/21/19 1255	Received by: 	Company: TARE	Date/Time: 2/21/19 1255
Relinquished by: 	Company: TARE	Date/Time: 2/21/19 1100	Received by: 	Company: TARE	Date/Time: 2/22/19 0930

5=-1.0

R5 -1.1/-1.1

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						2/21/2019 COC No: 1	
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				Tel: (206) 438-2261 / (206) 438-2010						Laboratory Contact: Elaine-Walker						Carrier: TestAmerica Courier	
				Analysis Turnaround Time												2 of 13 pages	
				Calendar ( C ) or Work Days ( W )													
				<input type="checkbox"/> 21 days													
				<input type="checkbox"/> Other _____													
Sample Identification				Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	Ethylbenzene, EPA Method 8260C	MCP, 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 <sub>3</sub> , EPA Method 6020B,LL	Sample Specific Notes:
PDI-WS-T	03	N	19 02	2/17/2019	10:57	W		ED	3	3							
PDI-WS-T	03	W	19 02	2/18/2019	9:55	W		ED	3	3							
PDI-WS-T	04	E	19 02	2/17/2019	12:20	W		LS	3	3							
PDI-WS-T	04	N	19 02	2/17/2019	16:34	W		LS	3	3							
PDI-WS-T	04	W	19 02	2/17/2019	15:10	W		LS	3	3							
PDI-WS-T	05	E	19 02	2/17/2019	16:05	W		KD	3	3							
PDI-WS-T	05	N	19 02	2/17/2019	15:50	W		KD	3	3							
PDI-WS-T	05	W	19 02	2/17/2019	15:40	W		KD	3	3							
Trip Blank - T01						W			3	3							
Trip Blank - T02						W			3	3							
Trip Blank - T03						W			3	3							
Trip Blank - T04						W			3	3							
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Column Preservative: HCl = Hydrochloric Acid, H <sub>3</sub> PO <sub>4</sub> = Phosphoric Acid, HNO <sub>3</sub> = Nitric Acid																	
Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)								Sample Disposal									
								<input type="checkbox"/> Return To Client	<input checked="" type="checkbox"/> Disposal By Lab	<input checked="" type="checkbox"/> Archive For 12 Months							
Special Instructions/QC Requirements & Comments:																	
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:												
	AECOM	2/21/19 11:00		JENNIFER RAY	2/21/19 11:00												
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:												
	M.E.	2/21/19 12:55		M.E.	2/21/19 12:55												
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:												
	TAPOL	2/21/19 11:00		JENNIFER RAY	2/22/19 09:30												

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

## SURFACE WATER CHAIN OF CUSTODY

<b>Client Contact</b> 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		<b>Project Contact:</b> Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010				<b>Site Contact:</b> Jennifer Ray Laboratory Contact: Elaine-Walker				2/21/2019 COC No. 1 15 of 15 pages			
		Analysis Turnaround Time Calendar (C) or Work Days (W)											
		<input type="checkbox"/> 21 days <input type="checkbox"/> Other _____											
Sample Identification		Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Preservative	Ethyleneglycol, EPA 2269C	MCP, 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 <sub>3</sub> , EPA Method 6020B-LL
Trip Blank - T05				W			3	3					
<b>Sample Specific Notes:</b>													
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Column Preservative: HCl = Hydrochloric Acid, H <sub>3</sub> PO <sub>4</sub> = Phosphoric Acid, HNO <sub>3</sub> = Nitric Acid Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)													
<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input checked="" type="checkbox"/> Archive For 12 Months													
Special Instructions/QC Requirements & Comments:													
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:								
	AECOM	2/21/19 1100		JENNIFER RAY	2/21/19 1100								
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:								
	M.E.-TARA	2/21/19 1255		CHELSEY COOK	2/21/19 1255								
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:								
	TestAmerica	2/21/19 1200		JENNIFER RAY	2/22/19 0930								

## Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-84010-1

**Login Number: 84010**

**List Source: TestAmerica Seattle**

**List Number: 1**

**Creator: O'Connell, Jason I**

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	