TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Seattle
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Tacoma, WA 98424
Tel: (253)922-2310

TestAmerica Job ID: 580-80576-1
Client Project/Site: Portland Harbor Pre-Remedial Design

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

Attn: Amy Dahl

M. Elaine Walker

Authorized for release by:
10/16/2018 8:51:39 AM

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Job ID: 580-80576-1

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE
Client: AECOM
Project: Portland Harbor Pre-Remedial Design
Report Number: 580-80576-1

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

Ten samples were received on 9/25/2018 2:25 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.8º C.

The client requested the following IDs be changed in the login and corrected on the COC.PDI-WP-B483 (580-80576-4) and PDI-WP-B483-D (580-80576-5). IDs on COC are PDI-WP-B468 and PDI-WP-B468D and were changed to PDI-WP-B483 and PDI-WP-B483D.

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.

METALS (ICPMS)

Samples PDI-WP-B468 (580-80576-1), PDI-WP-B476 (580-80576-2), PDI-WP-B441 (580-80576-3), PDI-WP-B483 (580-80576-4), PDI-WP-B483-D (580-80576-5), PDI-WP-S266 (580-80576-6), PDI-WP-B454 (580-80576-7), PDI-WP-B455 (580-80576-8), PDI-WP-B466 (580-80576-9) and PDI-WP-B472 (580-80576-10) were analyzed for metals (ICPMS) in accordance with 6020B. The samples were prepared on 10/05/2018 and analyzed on 10/08/2018.

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

ANIONS

Samples PDI-WP-B468 (580-80576-1), PDI-WP-B476 (580-80576-2), PDI-WP-B441 (580-80576-3), PDI-WP-B483 (580-80576-4), PDI-WP-B483-D (580-80576-5), PDI-WP-S266 (580-80576-6), PDI-WP-B454 (580-80576-7), PDI-WP-B455 (580-80576-8), PDI-WP-B466 (580-80576-9) and PDI-WP-B472 (580-80576-10) were analyzed for anions in accordance with EPA Method 300.0. The samples were analyzed on 10/03/2018.

Bromide failed the recovery criteria low for the MS of sample PDI-WP-B468MS (580-80576-1) in batch 580-285599. Bromide failed the recovery criteria low for the MSD of sample PDI-WP-B468MSD (580-80576-1) in batch 580-285599. The associated LCS/LCSD recoveries met acceptance limits. The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount.

Samples PDI-WP-B468 (580-80576-1)[10X], PDI-WP-B476 (580-80576-2)[10X], PDI-WP-B441 (580-80576-3)[10X], PDI-WP-B483 (580-80576-4)[10X], PDI-WP-B483-D (580-80576-5)[10X], PDI-WP-S266 (580-80576-6)[10X], PDI-WP-B454 (580-80576-7)[10X],

Job ID: 580-80576-1 (Continued)

Laboratory: TestAmerica Seattle (Continued)

PDI-WP-B455 (580-80576-8)[10X], PDI-WP-B466 (580-80576-9)[10X] and PDI-WP-B472 (580-80576-10)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No additional 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: 580-80576-1

Qualifiers

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.

General Chemistry

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

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

TestAmerica Job ID: 580-80576-1

Client Sample ID: PDI-WP-B468
Date Collected: 09/22/18 16:30
Date Received: 09/25/18 14:25

Lab Sample ID: 580-80576-1
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0085		0.0050	0.0010	mg/L		10/05/18 11:26	10/08/18 16:31	5
Manganese	1.6		0.010	0.0023	mg/L		10/05/18 11:26	10/08/18 16:31	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	50		10	2.5	mg/L			10/03/18 09:29	10

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

TestAmerica Job ID: 580-80576-1

Client Sample ID: PDI-WP-B476
Date Collected: 09/22/18 14:50
Date Received: 09/25/18 14:25

Lab Sample ID: 580-80576-2
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0070		0.0050	0.0010	mg/L		10/05/18 11:26	10/08/18 16:36	5
Manganese	0.76		0.010	0.0023	mg/L		10/05/18 11:26	10/08/18 16:36	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	43		10	2.5	mg/L			10/03/18 09:41	10

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

TestAmerica Job ID: 580-80576-1

Client Sample ID: PDI-WP-B441
Date Collected: 09/23/18 18:00
Date Received: 09/25/18 14:25

Lab Sample ID: 580-80576-3
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0097		0.0050	0.0010	mg/L		10/05/18 11:26	10/08/18 16:57	5
Manganese	1.5		0.010	0.0023	mg/L		10/05/18 11:26	10/08/18 16:57	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	51		10	2.5	mg/L			10/03/18 09:53	10

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

TestAmerica Job ID: 580-80576-1

Client Sample ID: PDI-WP-B483
Date Collected: 09/24/18 13:53
Date Received: 09/25/18 14:25

Lab Sample ID: 580-80576-4
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0061		0.0050	0.0010	mg/L		10/05/18 11:26	10/08/18 17:01	5
Manganese	1.4		0.010	0.0023	mg/L		10/05/18 11:26	10/08/18 17:01	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	47		10	2.5	mg/L			10/03/18 10:05	10

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

TestAmerica Job ID: 580-80576-1

Client Sample ID: PDI-WP-B483-D
Date Collected: 09/24/18 14:00
Date Received: 09/25/18 14:25

Lab Sample ID: 580-80576-5
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0058		0.0050	0.0010	mg/L		10/05/18 11:26	10/08/18 17:05	5
Manganese	1.4		0.010	0.0023	mg/L		10/05/18 11:26	10/08/18 17:05	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	47		10	2.5	mg/L			10/03/18 10:16	10

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

TestAmerica Job ID: 580-80576-1

Client Sample ID: PDI-WP-S266
Date Collected: 09/24/18 15:00
Date Received: 09/25/18 14:25

Lab Sample ID: 580-80576-6
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0098		0.0050	0.0010	mg/L		10/05/18 11:26	10/08/18 17:09	5
Manganese	5.1		0.010	0.0023	mg/L		10/05/18 11:26	10/08/18 17:09	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	60		10	2.5	mg/L			10/03/18 10:28	10

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

TestAmerica Job ID: 580-80576-1

Client Sample ID: PDI-WP-B454
Date Collected: 09/23/18 17:00
Date Received: 09/25/18 14:25

Lab Sample ID: 580-80576-7
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0079		0.0050	0.0010	mg/L		10/05/18 11:26	10/08/18 17:14	5
Manganese	2.4		0.010	0.0023	mg/L		10/05/18 11:26	10/08/18 17:14	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	56		10	2.5	mg/L			10/03/18 10:40	10

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

TestAmerica Job ID: 580-80576-1

Client Sample ID: PDI-WP-B455
Date Collected: 09/23/18 15:45
Date Received: 09/25/18 14:25

Lab Sample ID: 580-80576-8
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.012		0.0050	0.0010	mg/L		10/05/18 11:26	10/08/18 17:18	5
Manganese	4.5		0.010	0.0023	mg/L		10/05/18 11:26	10/08/18 17:18	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	34		10	2.5	mg/L			10/03/18 10:51	10

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

TestAmerica Job ID: 580-80576-1

Client Sample ID: PDI-WP-B466
Date Collected: 09/23/18 14:53
Date Received: 09/25/18 14:25

Lab Sample ID: 580-80576-9
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.011		0.0050	0.0010	mg/L		10/05/18 11:26	10/08/18 17:22	5
Manganese	5.0		0.010	0.0023	mg/L		10/05/18 11:26	10/08/18 17:22	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	45		10	2.5	mg/L			10/03/18 11:03	10

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

TestAmerica Job ID: 580-80576-1

Client Sample ID: PDI-WP-B472
Date Collected: 09/22/18 15:40
Date Received: 09/25/18 14:25

Lab Sample ID: 580-80576-10
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0049	J	0.0050	0.0010	mg/L		10/05/18 11:26	10/08/18 17:26	5
Manganese	0.94		0.010	0.0023	mg/L		10/05/18 11:26	10/08/18 17:26	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	37		10	2.5	mg/L			10/03/18 11:15	10

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 580-285770/22-A
Matrix: Water
Analysis Batch: 285994

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 285770

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.0010	mg/L		10/05/18 11:26	10/08/18 15:11	5
Manganese	ND		0.010	0.0023	mg/L		10/05/18 11:26	10/08/18 15:11	5

Lab Sample ID: LCS 580-285770/23-A
Matrix: Water
Analysis Batch: 285994

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 285770

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	4.00	4.01		mg/L		100	80 - 120
Manganese	1.00	0.972		mg/L		97	80 - 120

Lab Sample ID: LCSD 580-285770/24-A
Matrix: Water
Analysis Batch: 285994

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 285770

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	4.00	4.08		mg/L		102	80 - 120	2	20
Manganese	1.00	0.990		mg/L		99	80 - 120	2	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 580-285599/3
Matrix: Water
Analysis Batch: 285599

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		1.0	0.25	mg/L			10/02/18 15:35	1

Lab Sample ID: LCS 580-285599/4
Matrix: Water
Analysis Batch: 285599

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bromide	10.0	10.1		mg/L		101	90 - 110

Lab Sample ID: LCSD 580-285599/5
Matrix: Water
Analysis Batch: 285599

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
Bromide	10.0	10.1		mg/L		101	90 - 110	0	15

Lab Sample ID: 580-80576-1 MS
Matrix: Water
Analysis Batch: 285599

Client Sample ID: PDI-WP-B468
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Bromide	50		10.0	51.9	4	mg/L		16	90 - 110

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 580-80576-1 MSD
Matrix: Water
Analysis Batch: 285599

Client Sample ID: PDI-WP-B468
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Bromide	50		10.0	52.1	4	mg/L		18	90 - 110	0	15

Lab Chronicle

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

TestAmerica Job ID: 580-80576-1

Client Sample ID: PDI-WP-B468
Date Collected: 09/22/18 16:30
Date Received: 09/25/18 14:25

Lab Sample ID: 580-80576-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			285770	10/05/18 11:26	JKM	TAL SEA
Total Recoverable	Analysis	6020B		5	285994	10/08/18 16:31	FCW	TAL SEA
Total/NA	Analysis	300.0		10	285599	10/03/18 09:29	EMM	TAL SEA

Client Sample ID: PDI-WP-B476
Date Collected: 09/22/18 14:50
Date Received: 09/25/18 14:25

Lab Sample ID: 580-80576-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			285770	10/05/18 11:26	JKM	TAL SEA
Total Recoverable	Analysis	6020B		5	285994	10/08/18 16:36	FCW	TAL SEA
Total/NA	Analysis	300.0		10	285599	10/03/18 09:41	EMM	TAL SEA

Client Sample ID: PDI-WP-B441
Date Collected: 09/23/18 18:00
Date Received: 09/25/18 14:25

Lab Sample ID: 580-80576-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			285770	10/05/18 11:26	JKM	TAL SEA
Total Recoverable	Analysis	6020B		5	285994	10/08/18 16:57	FCW	TAL SEA
Total/NA	Analysis	300.0		10	285599	10/03/18 09:53	EMM	TAL SEA

Client Sample ID: PDI-WP-B483
Date Collected: 09/24/18 13:53
Date Received: 09/25/18 14:25

Lab Sample ID: 580-80576-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			285770	10/05/18 11:26	JKM	TAL SEA
Total Recoverable	Analysis	6020B		5	285994	10/08/18 17:01	FCW	TAL SEA
Total/NA	Analysis	300.0		10	285599	10/03/18 10:05	EMM	TAL SEA

Client Sample ID: PDI-WP-B483-D
Date Collected: 09/24/18 14:00
Date Received: 09/25/18 14:25

Lab Sample ID: 580-80576-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			285770	10/05/18 11:26	JKM	TAL SEA
Total Recoverable	Analysis	6020B		5	285994	10/08/18 17:05	FCW	TAL SEA
Total/NA	Analysis	300.0		10	285599	10/03/18 10:16	EMM	TAL SEA

Lab Chronicle

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

TestAmerica Job ID: 580-80576-1

Client Sample ID: PDI-WP-S266
Date Collected: 09/24/18 15:00
Date Received: 09/25/18 14:25

Lab Sample ID: 580-80576-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			285770	10/05/18 11:26	JKM	TAL SEA
Total Recoverable	Analysis	6020B		5	285994	10/08/18 17:09	FCW	TAL SEA
Total/NA	Analysis	300.0		10	285599	10/03/18 10:28	EMM	TAL SEA

Client Sample ID: PDI-WP-B454
Date Collected: 09/23/18 17:00
Date Received: 09/25/18 14:25

Lab Sample ID: 580-80576-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			285770	10/05/18 11:26	JKM	TAL SEA
Total Recoverable	Analysis	6020B		5	285994	10/08/18 17:14	FCW	TAL SEA
Total/NA	Analysis	300.0		10	285599	10/03/18 10:40	EMM	TAL SEA

Client Sample ID: PDI-WP-B455
Date Collected: 09/23/18 15:45
Date Received: 09/25/18 14:25

Lab Sample ID: 580-80576-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			285770	10/05/18 11:26	JKM	TAL SEA
Total Recoverable	Analysis	6020B		5	285994	10/08/18 17:18	FCW	TAL SEA
Total/NA	Analysis	300.0		10	285599	10/03/18 10:51	EMM	TAL SEA

Client Sample ID: PDI-WP-B466
Date Collected: 09/23/18 14:53
Date Received: 09/25/18 14:25

Lab Sample ID: 580-80576-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			285770	10/05/18 11:26	JKM	TAL SEA
Total Recoverable	Analysis	6020B		5	285994	10/08/18 17:22	FCW	TAL SEA
Total/NA	Analysis	300.0		10	285599	10/03/18 11:03	EMM	TAL SEA

Client Sample ID: PDI-WP-B472
Date Collected: 09/22/18 15:40
Date Received: 09/25/18 14:25

Lab Sample ID: 580-80576-10
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			285770	10/05/18 11:26	JKM	TAL SEA
Total Recoverable	Analysis	6020B		5	285994	10/08/18 17:26	FCW	TAL SEA
Total/NA	Analysis	300.0		10	285599	10/03/18 11:15	EMM	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: 580-80576-1
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	01-19-19
ANAB	DoD ELAP		L2236	01-19-19
ANAB	ISO/IEC 17025		L2236	01-19-19
California	State Program	9	2901	11-05-18
Montana (UST)	State Program	8	N/A	04-30-20
Nevada	State Program	9	WA000502019-1	07-31-19
Oregon	NELAP	10	WA100007	11-05-18
US Fish & Wildlife	Federal		LE058448-0	07-31-19
USDA	Federal		P330-14-00126	02-10-20
Washington	State Program	10	C553	02-17-19

Sample Summary

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

TestAmerica Job ID: 580-80576-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-80576-1	PDI-WP-B468	Water	09/22/18 16:30	09/25/18 14:25
580-80576-2	PDI-WP-B476	Water	09/22/18 14:50	09/25/18 14:25
580-80576-3	PDI-WP-B441	Water	09/23/18 18:00	09/25/18 14:25
580-80576-4	PDI-WP-B483	Water	09/24/18 13:53	09/25/18 14:25
580-80576-5	PDI-WP-B483-D	Water	09/24/18 14:00	09/25/18 14:25
580-80576-6	PDI-WP-S266	Water	09/24/18 15:00	09/25/18 14:25
580-80576-7	PDI-WP-B454	Water	09/23/18 17:00	09/25/18 14:25
580-80576-8	PDI-WP-B455	Water	09/23/18 15:45	09/25/18 14:25
580-80576-9	PDI-WP-B466	Water	09/23/18 14:53	09/25/18 14:25
580-80576-10	PDI-WP-B472	Water	09/22/18 15:40	09/25/18 14:25

SURFACE SEDIMENT CHAIN OF CUSTODY

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 **Ph: 253-922-2310 Fax: 253-922-5047**	**Project Contact: Amy Dahl / Chelsey Cook** **Tel: (206) 438-2261 / (206) 438-2010** **Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ [x] 21 days [ ] Other _ASAP_____	**Site Contact: Jennifer Ray** **Laboratory Contact: Elaine-Walker**	**9/25/2018** **Carrier: Courier**	COC No: 1 __1__ of __1__ pages
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: Porewater Sample Type: water				

580-80576 Chain of Custody

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Filtration	As and Mn 6020B	Bromide 300.0	Sample Specific Notes:
PDI-WP-B468	9/22/2018	16:30	W			2		x	x	
PDI-WP-B476	9/22/2018	14:50	W			2		x	x	
PDI-WP-B441	9/23/2018	18:00	W			2		x	x	
PDI-WP-B468	9/24/2018	13:53	W			2		x	x	
PDI-WP-B468-D	9/24/2018	14:00	W			2		x	x	
PDI-WP-S266	9/24/2018	15:00	W			2		x	x	
PDI-WP-B454	9/23/2018	17:00	W			2		x	x	
PDI-WP-B455	9/23/2018	15:45	W			2		x	x	
PDI-WP-B466	9/23/2018	14:53	W			2		x	x	
PDI-WP-B472	9/22/2018	15:40	W			2		x	x	

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:

Separate reports for each lab.

2.8

Relinquished by:	Company: AECOM	Date/Time: 9/25/18 1153	Received by:	Company: M.E.	Date/Time: 9/25/18 1153
Relinquished by:	Company: M.E.	Date/Time: 9/25/18 1240	Received by:	Company: CHOL	Date/Time: 9/25/18 1240
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

SURFACE SEDIMENT
CHAIN OF CUSTODY

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 **Ph: 253-922-2310 Fax: 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: Porewater Sample Type: water	**Project Contact: Amy Dahl / Chelsey Cook** **Tel: (206) 438-2261 / (206) 438-2010** **Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ [x] 21 days [ ] Other _ASAP_____	**Site Contact: Jennifer Ray** **Laboratory Contact: Elaine-Walker**	**9/25/2018** **Carrier: Courier**	COC No: 1 __1__ of __1__ pages

580-80576 Chain of Custody

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	As and Mn 6020B	Bromide 300.0	Sample Specific Notes:
PDI-WP-B468	9/22/2018	16:30	W			2		x	x	
PDI-WP-B476	9/22/2018	14:50	W			2		x	x	
PDI-WP-B441	9/23/2018	18:00	W			2		x	x	
PDI-WP-B468	9/24/2018	13:53	W			2		x	x	
PDI-WP-B468-D	9/24/2018	14:00	W			2		x	x	
PDI-WP-S266	9/24/2018	15:00	W			2		x	x	
PDI-WP-B454	9/23/2018	17:00	W			2		x	x	
PDI-WP-B455	9/23/2018	15:45	W			2		x	x	
PDI-WP-B466	9/23/2018	14:53	W			2		x	x	
PDI-WP-B472	9/22/2018	15:40	W			2		x	x	

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:

Separate reports for each lab.

2.8

Relinquished by:	Company: AECOM	Date/Time: 9/25/18 1153	Received by:	Company: M.E.	Date/Time: 9/25/18 1153
Relinquished by:	Company: M.E.	Date/Time: 9/25/18 1240	Received by:	Company: TAOR	Date/Time: 9/25/18 1240
Relinquished by:	Company: TAOR	Date/Time: 9/25/18 1400	Received by: Tom Blanton	Company: TA-Sea	Date/Time: 9/26/18 1000

IR5 -2.2/-2.4

Revised

TestAmerica-Seattle	SURFACE SEDIMENT CHAIN OF CUSTODY			
5755-8th-Street-East				
Tacoma, WA 98424-1317				
Ph: 253-922-2310 Fax: 253-922-5047				
Client Contact	**Project Contact: Amy Dahl / Chelsey Cook**	**Site Contact: Jennifer Ray**	9/25/2018	COC No: 1
AECOM	**Tel: (206) 438-2261 / (206) 438-2010**	**Laboratory Contact: Elaine-Walker**	**Carrier: Courier**	1 of 1 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	☒ 21 days			
Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling	☐ Other _ASAP_____			
Portland, OR				
Project #: 60566335 Study: Porewater				
Sample Type: Water				

580-80576 Chain of Custody

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	As and Mn 6020B	Bromide 300.0	Sample Specific Notes:
PDI-WP-B468	9/22/2018	16:30	W			2		x	x	
PDI-WP-B476	9/22/2018	14:50	W			2		x	x	
PDI-WP-B441	9/23/2018	18:00	W			2		x	x	
PDI-WP-~~B468~~ B483	9/24/2018	13:53	W			2		x	x	
PDI-WP-~~B468-D~~ B483D	9/24/2018	14:00	W			2		x	x	
PDI-WP-S266	9/24/2018	15:00	W			2		x	x	
PDI-WP-B454	9/23/2018	17:00	W			2		x	x	
PDI-WP-B455	9/23/2018	15:45	W			2		x	x	
PDI-WP-B466	9/23/2018	14:53	W			2		x	x	
PDI-WP-B472	9/22/2018	15:40	W			2		x	x	

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 ☒ Disposal By Lab ☒ Archive For 12 Months

Special Instructions/QC Requirements & Comments:

Separate reports for each lab.

Changed Per Aecom Request 9/27/18 (KP)

28

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	AECOM	9/25/18 1153		M.E.	9/25/18 1153
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	M.E.	9/25/18 1240		TAOR	9/25/18 1240
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	TAOR	9/25/18 1400	Tom Blankenship	TA-Sea	9/26/18 1000

IRS -2.2/-2.4

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-80576-1

Login Number: 80576
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?	False	
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	