

Data Validation Report

Project: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling
 Portland Harbor Superfund Site
 Surface Water – November 2018

Laboratory: TestAmerica Laboratories, Incorporated, Seattle, WA

Laboratory Group: 580-82189-1

Analyses: Ethylbenzene, Methylchlorophenoxypropionic Acid (MCP), Metals, Total Hardness by calculation, Total Organic Carbon (TOC), Dissolved Organic Carbon (DOC), Total Suspended Solids (TSS), and Total Dissolved Solids (TDS)

Validation Level: Stage 2A

AECOM Project

Number: 60566335, Task #2.12

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File Name: 580-82189-1 DVR

SUMMARY

The data quality review of 19 surface water samples, 1 rinsate blank, and 5 trip blanks collected between November 27 and November 29, 2018, has been completed. Samples were analyzed for ethylbenzene by United States Environmental Protection Agency (EPA) Method 8260C, MCP by EPA Method 8151A, metals by EPA Methods 6010C (dissolved calcium and magnesium) and 6020B (total and dissolved arsenic, chromium, copper, and zinc), total hardness by Standard Method (SM) 2340B, TOC and DOC by SM 5310B, TSS by SM 2540D, and/or TDS by SM 2540C by TestAmerica Laboratories, Incorporated (TA) located in Tacoma, Washington as noted in the table below. The analyses were performed in general accordance with the methods specified in EPA's *Test Methods for Evaluating Solid Waste (SW-846)* and *Standard Methods for the Examination of Water and Wastewater*. The laboratory provided level 2 and level 4 data packages containing sample results, and associated quality assurance (QA) and quality control (QC) data, preparation logs, and raw instrument outputs (where applicable). The following samples are associated with laboratory group 580-82189-1:

Sample ID	Laboratory ID	Required Analyses
PDI-WS-T03-1811	580-82189-1	MCP, Metals, Hardness, TOC, DOC, TSS, and TDS
PDI-WS-T03W-1811	580-82189-2	Ethylbenzene
PDI-WS-T03N-1811	580-82189-3	Ethylbenzene
PDI-WS-T03E-1811	580-82189-4	Ethylbenzene
PDI-WS-T07-1811	580-82189-5	MCP, Metals, Hardness, TOC, DOC, TSS, and TDS
PDI-WS-T07E-1811	580-82189-6	Ethylbenzene
PDI-WS-T07W-1811	580-82189-7	Ethylbenzene
PDI-WS-T07N-1811	580-82189-8	Ethylbenzene
Trip Blank 01	580-82189-9	Ethylbenzene
Trip Blank 07	580-82189-10	Ethylbenzene
Trip Blank 03	580-82189-11	Ethylbenzene
PDI-RB-PP-181129 (Rinsate blank)	580-82189-12	MCP, Metals, Hardness, TOC, DOC, TSS, and TDS
PDI-WS-T05-1811	580-82189-13	MCP, Metals, Hardness, TOC, DOC, TSS, and TDS
PDI-WS-T05N-1811	580-82189-14	Ethylbenzene



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Sample ID	Laboratory ID	Required Analyses
PDI-WS-T05E-1811	580-82189-15	Ethylbenzene
PDI-WS-T05W-1811	580-82189-16	Ethylbenzene
PDI-WS-T01-1811	580-82189-17	MCP, Metals, Hardness, TOC, DOC, TSS, and TDS
PDI-WS-T01-1811D (Field duplicate of PDI-WS-T01-1811)	580-82189-18	MCP, Metals, Hardness, TOC, DOC, TSS, and TDS
PDI-WS-T01N-1811	580-82189-19	Ethylbenzene
PDI-WS-T01E-1811	580-82189-20	Ethylbenzene
PDI-WS-T01W-1811	580-82189-21	Ethylbenzene
PDI-WS-T01N-1811D (Field duplicate of PDI-WS-T01N-1811)	580-82189-22	Ethylbenzene
PDI-WS-T01W-1811D (Field duplicate of PDI-WS-T01W-1811)	580-82189-23	Ethylbenzene
Trip Blank 05	580-82189-24	Ethylbenzene
Trip Blank	580-82189-25	Ethylbenzene

Data validation is based on method performance criteria and QC criteria documented in the *Quality Assurance Project Plan (QAPP)*, dated March 23, 2018, as amended. If data qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA documents *USEPA National Functional Guidelines for Organic Superfund Methods Data Review*, January 2017, and *USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review*, January 2017. Data qualifiers assigned to this sample set are included in Table 1.

SAMPLE RECEIPT

Upon receipt by TA, the sample jar information was compared to the chain-of-custody (COC) and the cooler temperatures were recorded. The coolers were received at temperatures within the EPA-recommended limits of greater than 0°C and less than or equal to 6°C. The laboratory noted that extra sample volume was received for PDI-WS-T03W-1811. AECOM confirmed that the extra volume was submitted for QA/QC analyses.

ORGANIC ANALYSES

Samples were analyzed for ethylbenzene and/or MCP by the methods identified in the introduction of this report.

1. Holding Times – Acceptable
2. Blanks – Acceptable

Ethylbenzene by Method 8260C – The rinsate blank reported in this laboratory group was submitted to TA for ethylbenzene analysis; however, it was not logged or analyzed for this analyte. Ethylbenzene was not detected in any of the associated samples; therefore, this oversight does not impact the use of the data.

MCP by Method 8151A – One rinsate blank was reported with this laboratory group. MCP was not detected in this rinsate blank.



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3. Surrogates – Acceptable
4. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) – Acceptable
5. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable

Ethylbenzene by Method 8260C – An MS/MSD was performed using PDI-WS-T03W-1811. Results were acceptable.

MCPP by Method 8151A – An MS/MSD was performed using PDI-WS-T03-1811. Results were acceptable.

6. Field Duplicate – Acceptable

General – Field duplicates were collected for PDI-WS-T01-1811, PDI-WS-T01N-1811, and PDI-WS-T01W-1811 and were identified as PDI-WS-T01-1811D, PDI-WS-T01N-1811D, and PDI-WS-T01W-1811D. Results were acceptable, where applicable.

7. Reporting Limits – Acceptable except as noted below:

MCPP by Method 8151A – The reporting limits for MCPP were slightly elevated in all samples reported in this laboratory group due to limited sample volume. The method detection limits (MDLs) and reporting limits are below cleanup levels.

METALS ANALYSES

Samples were analyzed for metals and calculated for hardness by the methods identified in the introduction to this report.

1. Holding Times – Acceptable
2. Blanks – Acceptable where applicable
General – One rinsate blank was reported with this laboratory group. Metals were not detected in this rinsate blank.
3. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) – Acceptable where applicable
4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Post Digestion Spike (PDS, where applicable) – Acceptable where applicable

Calcium and Magnesium by Method 6010C – An MS/MSD and PDS were performed using PDI-WS-T07-1811. Results were acceptable.

Metals by Method 6020B – An MS/MSD and PDS were performed using the total metals fraction submitted for PDI-WS-T03-1811 and the dissolved metals fraction submitted for PDI-WS-T07-1811. Results were acceptable.

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5. Laboratory Duplicate – Acceptable where applicable

Calcium and Magnesium by Method 6010C – A laboratory duplicate was performed using PDI-WS-T07-1811. Results were comparable.

Metals by Method 6020B – A laboratory duplicate was performed using the total metals fraction submitted for PDI-WS-T03-1811 and the dissolved metals fraction submitted for PDI-WS-T07-1811. Results were comparable.

6. Serial Dilution – Acceptable where applicable

Calcium and Magnesium by Method 6010C – A serial dilution was performed using PDI-WS-T07-1811. Results were comparable.

Metals by Method 6020B – A serial dilution was performed using the total metals fraction submitted for PDI-WS-T03-1811 and the dissolved metals fraction submitted for PDI-WS-T07-1811. Results were comparable.

7. Field Duplicate – Acceptable except as noted below:

General – A field duplicate was collected for PDI-WS-T01-1811 and identified as PDI-WS-T01-1811D. The relative percent difference (RPD) for dissolved chromium (103%) was more than 30%. The sample concentrations for dissolved chromium in the parent sample and field duplicate were less than five times the reporting limits; therefore, data were not qualified based on the elevated field duplicate RPD.

8. Reporting Limits – Acceptable

General – Analyte concentrations detected between the MDLs and the reporting limits are reported by the laboratory with 'J' flags. One or more results were flagged 'J' by the laboratory. Laboratory 'J'-flagged results are considered estimated results. As the results are between the MDLs and the reporting limits, there is a greater level of uncertainty associated with the numerical results.

CONVENTIONAL ANALYSES

Samples were analyzed for TOC, DOC, TSS, and TDS by the methods identified in the introduction to this report.

1. Holding Times – Acceptable

2. Blanks – Acceptable except as noted below:

General – One rinsate blank was reported with this laboratory group. TOC (0.56 mg/L) and DOC (0.40 mg/L) were detected at concentrations between the MDLs and the reporting limits in the rinsate blank. TOC and DOC were detected in PDI-WS-T03-1811, PDI-WS-T07-1811, PDI-WS-T05-1811, PDI-WS-T01-1811, and PDI-WS-T01-1811D at concentrations above the reporting limits but less than ten times the rinsate blank concentrations; therefore, the results for TOC and DOC were qualified as estimated and flagged 'J' in these samples based on the rinsate blank results.

3. Laboratory Control Sample (LCS) – Acceptable



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4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable where applicable

TOC by SM 5310B – An MS/MSD was not performed in association with this analysis. Accuracy was assessed using the LCS. Precision was assessed using field duplicate results.

DOC by SM 5310B – An MS/MSD was performed using PDI-WS-T03-1811. Results were acceptable.

5. Laboratory Duplicate – Acceptable

TOC/DOC by Method 5310B – Laboratory duplicates were not performed using a sample from this laboratory group. Precision for DOC was assessed using the MS/MSD and field duplicate results. Precision for TOC was assessed using the field duplicate results.

TSS by Method 2540D – Laboratory duplicates were performed using PDI-WS-T03-1811 and PDI-WS-T07-1811. Results were comparable.

TDS by Method 2540C – A laboratory duplicate was performed using PDI-WS-T03-1811. Results were comparable.

6. Field Duplicate – Acceptable

General – A field duplicate was collected for PDI-WS-T01-1811 and identified as PDI-WS-T01-1811D. Results were comparable.

7. Reporting Limits – Acceptable

TOC/DOC by Method 5310B – The results for TOC and/or DOC in multiple samples were flagged 'J' by the laboratory. As noted above, laboratory 'J'-flagged results are estimated results.

OVERALL ASSESSMENT OF DATA

The data reported in this laboratory group, as qualified, is considered usable for meeting project objectives. The completeness for laboratory group 580-82189-1 is 100%.

Table 1
QA/QC Data Summary Review
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Sample ID	Laboratory ID	Method	Analyte	Laboratory Result	Units	Final Result	Reason Code
PDI-WS-T03-1811	580-82189-1	SM5310B	Total Organic Carbon	1.5	mg/L	1.5 J	be
PDI-WS-T03-1811	580-82189-1	SM5310B	Dissolved Organic Carbon	1.7	mg/L	1.7 J	be
PDI-WS-T07-1811	580-82189-5	SM5310B	Total Organic Carbon	1.7	mg/L	1.7 J	be
PDI-WS-T07-1811	580-82189-5	SM5310B	Dissolved Organic Carbon	2.3	mg/L	2.3 J	be
PDI-WS-T05-1811	580-82189-13	SM5310B	Total Organic Carbon	1.5	mg/L	1.5 J	be
PDI-WS-T05-1811	580-82189-13	SM5310B	Dissolved Organic Carbon	2.1	mg/L	2.1 J	be
PDI-WS-T01-1811	580-82189-17	SM5310B	Total Organic Carbon	1.3	mg/L	1.3 J	be
PDI-WS-T01-1811	580-82189-17	SM5310B	Dissolved Organic Carbon	1.5	mg/L	1.5 J	be
PDI-WS-T01-1811-D	580-82189-18	SM5310B	Total Organic Carbon	1.4	mg/L	1.4 J	be
PDI-WS-T01-1811-D	580-82189-18	SM5310B	Dissolved Organic Carbon	2.0	mg/L	2.0 J	be

Notes:

be - equipment blank contamination
 J - estimated value
 mg/L - milligram per liter