Field and Data Report

Upriver Reach Sediment Investigation

Upriver Reach,
Lower Willamette River,
Portland, Oregon
ECSI #6220

Prepared for
Oregon Department of
Environmental Quality

January 31, 2020
150-002-017/Task 5

HARTCROWSER

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ACRONYMS AND ABBREVIATIONS

COI	contaminant of interest
cPAH	carcinogenic polycyclic aromatic hydrocarbon
CUL	Cleanup Level
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
DEQ	Oregon Department of Environmental Quality
ECSI	Environmental Cleanup Site Information
EPA	U.S. Environmental Protection Agency
ESD	Explanation of Significant Differences
FDR	Field and Data Report
GSI	GSI Water Solutions, Inc.
LCS/LCSD	laboratory control sample / laboratory control sample duplicate
MB	method blank
MDL	method detection limit
µg/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
MS/MSD	matrix spike/ matrix spike duplicate
ng/kg	nanograms per kilogram
PAH	polycyclic aromatic hydrocarbon
PBDE	polybrominated diphenyl ethers
PCB	polychlorinated biphenyl
PDI	Pre-Design Investigation
PHSS	Portland Harbor Superfund Site
PPE	personal protective equipment
Pre-RD AOC Group	Pre-Remedial Design Agreement and Order on Consent Investigation Group
PSEP	Puget Sound Estuary Protocols
QAPP	Quality Assurance Project Plan
QA	quality assurance
QC	quality control
RAL	Remedial Action Level
RM	River Mile
ROD	Record of Decision
SLV	Screening Level Values
TEQ	toxic equivalency
TOC	total organic carbon
TPH	total petroleum hydrocarbons

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1.0 INTRODUCTION

This Field and Data Report (FDR) documents sampling activities and provides the results of sediment sampling from the Upriver Reach of the Lower Willamette River at two previous characterization areas at River Mile (RM) 16.0 to 16.5 East and RM 19.4 to 19.7 West (Figure 1). Hart Crowser and GSI Water Solutions, Inc. (GSI), prepared this FDR for the Oregon Department of Environmental Quality (DEQ) under Task 5 of Task Order 72-18-17. DEQ has designated select portions of the Upriver Reach as an orphan site in their Environmental Cleanup Site Information (ECSI) database as ECSI #6220.

1.1 Purpose

In 2018, a group of potentially responsible parties called the Pre-Remedial Design Agreement and Order on Consent Investigation Group (Pre-RD AOC Group) completed a pre-design investigation (PDI) of the Portland Harbor Superfund Site (PHSS). The Upriver Reach, from approximately RM 16 to 28, of the Lower Willamette River was included in this PDI to provide baseline data on upstream (background) conditions to the PHSS. Based on these data, DEQ identified surface sediment contamination in two discrete areas with elevated levels of dioxins/furans, organochlorine pesticides, polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyl (PCBs) that warranted additional characterization: 1) from RM 16.0 to 16.3 East, offshore of Sellwood Riverfront Park and Oaks Amusement Park; and 2) at RM 19.6 West, in an area of sediment deposition and offshore of a residential area. The purpose of this investigation was to collect additional sediment data to further assess the extent of contaminants of interest (COIs) in the area of these samples. The data generated could also be used to evaluate potential sources of contamination and risks to human health and the environment.

1.2 Summary of Results

Sediment samples were successfully collected at or in the vicinity of the target sample locations. Rocky river bottom substrate prevented sample collection at the target sample locations for RM16.1E-SED1, RM16.3-SED2, and RM19.5W-SED7 and the locations were relocated to areas of finer grained sand or silt substrates. Sediment at each sample location consisted primarily of sand or sandy material, except at RM16.3E-SED2 which was a sandy clayey silt.

Sample results, PHSS Cleanup Levels (CULs), and PHSS Remedial Action Levels (RALs) are presented in Table 1. Chemical results detected the following compounds above CULs: arsenic in six samples; mercury in two samples; one furan each in three samples; dieldrin in one sample; and total PCBs in two samples. No COIs were detected above RALs. All other sample results were either not detected above the method detection limits (MDLs) or were below their respective CULs. In comparison to DEQ Level II Ecological

Screening Level Values (SLVs) for benthic toxicity, there were exceedances of copper, mercury, nickel, and zinc. Of these CUL and SLV exceedances, the majority were in sediment sample RM16.3E-SED2 and in shoreline sample RM16.3E-SED3 from RM 16.0 to 16.3 East area (Figure 2).

1.3 Document Organization

Following this introduction, this FDR is organized into the following sections:

- **Section 2 – Project Organization.** This section provides a description of the project team.
- **Section 3 – Setting and Sampling Approach.** This section describes the data collection goals and the rationale for selection of sample locations.
- **Section 4 – Field Activities.** This section details sampling methods, collection, and handling procedures for sampling activities.
- **Section 5 – Laboratory Analysis and Quality Assurance (QA) and Quality Control (QC).** This section presents the analytical requirements and procedures for testing and interpreting chemical analytical results of the sediment samples, including QA/QC procedures to ensure sample integrity and data quality.
- **Section 6 – Electronic Data Management.** This section details procedures for recording and storing field and analytical data generated during this investigation.
- **Section 7 – Sediment Analytical Results.** This section briefly discusses the results of the chemical and physical testing for sediment samples analyzed.
- **Section 8 – References.** This section lists documents referenced within the text of this FDR.

1.4 Limitations

This FDR has been prepared for the DEQ. Work for this project will be performed in accordance with generally accepted professional practices relating to the nature of work completed at the same or similar localities. It is intended for the exclusive use of the DEQ for specific application to the site. No other warranty, express or implied, is made. The evaluation of the data included in this FDR is limited to providing maps of the sampling locations and tables of the results. A detailed interpretation and discussion of these data are beyond the scope of this report.

2.0 PROJECT ORGANIZATION

The following sections describe the organizational structure of the project team, health and safety activities performed during field activities, and the project schedule for work performed.

2.1 Team Organization

Hart Crowser and GSI performed sediment investigation activities under Task Order 72-18-17 as teaming partners to support the DEQ. Hart Crowser performed project management and oversight, sediment sampling, and document preparation. GSI prepared document figures, performed sediment sampling, and provided technical and logistical support. Hart Crowser subcontracted operation of a sampling vessel and

sediment sampling support from Gravity Marine of Fall City, Washington. Pace Analytical of Mt. Juliet, Tennessee, and ALS Global of Burlington, Ontario, Canada, performed analytical services for this project.

2.2 Health and Safety

Field activities were performed by personnel trained in Hazardous Waste Operations and Emergency Response in accordance with Chapter 29 of the Code of Federal Regulations, Part 1910.120. Sampling personnel adhered to applicable maritime safety requirements while aboard the sampling vessel.

2.3 Project Schedule

Sediment sampling activities were performed on October 28 and 29, 2019, including sampling from the river bottom using a power-grab sampler from the vessel and directly from the shoreline. Sediment samples were transferred to laboratory couriers on October 30, 2019, and laboratory analyses were performed in November 2019. Data validation on laboratory analyses was performed in December 2019.

3.0 SETTING AND SAMPLING APPROACH

The Upriver Reach of the Lower Willamette River extends from RM 16.6 to 28.4. The Upriver Reach is the furthest upstream section of the Lower Willamette River which spans from RM 0.0 to 28.4. The Upriver Reach is narrow and swifter flowing compared to downstream reaches. The river bottom of the Lower Willamette River was evaluated in a Sediment Trend Analysis Report (GeoSea Consulting 2001) and identified a trend of harder to softer substrate surfaces from upstream to downstream reaches. Though the river bottom surface varies greatly throughout the Upriver Reach, this general trend exists with harder substrates in the upper portion between RM 22 to 26, a marginal increase in sandy substrates between RM 19 and 22, and a substantial increase in softer substrates, such as muddy sand and sandy mud, between RM 16.6 and 19. Grain size analysis data from PDI samples in the vicinity of RM 16 and 19 indicate that sediments in the target sampling areas are finer grained with approximately 50 to 60 percent silts and clays with the remaining material being fine sands (GSI and Hart Crowser 2018).

3.1 Land Use and Potential Sources of Contamination

Land use along the Upriver Reach is predominantly residential with areas of mixed commercial and residential use. Industrial use is confined to the Lake Oswego industrial park located on the western riverbank between RM 20.0 and 20.5 and near Willamette Falls at approximately RM 26, where papermaking facilities historically were located. For the sample area between RM 16.0 to 16.5 East, land use along the eastern shoreline (downstream to upstream) is recreational (Oaks Amusement Park), park space (Sellwood Riverfront Park), and commercial office space (River Park Center). For the sample area at RM 19.4 to 19.7 West, land use is residential with residences commonly containing private docks for recreational use. This area is also downstream of the confluence of Tryon Creek with the Willamette River at approximately RM 20.

3.2 Available Data and Sampling Location Rationale

Sample locations for this investigation were selected based upon data collected by the Pre-RD AOC Group during a PDI for the PHSS. Sediment data were collected during the PDI to document upstream baseline

conditions for the PHSS (AECOM and Geosyntec 2019). DEQ reviewed the PDI results and identified the following samples with elevated COI concentrations (sample locations are shown on Figures 2 and 3).

- **SG-B457 near RM 16.1.** Total PCBs (88.921 micrograms per kilogram [µg/kg]), total DDx (the sum of dichlorodiphenyltrichloroethane [DDT] and its breakdown products DDD [dichlorodiphenyldichloroethane] and DDE [dichlorodiphenyldichloroethylene]) (36.755 µg/kg), dioxins/furans toxic equivalency (TEQ) (13 nanograms per kilogram [ng/kg]), and benzo(a)pyrene TEQ (128.06 µg/kg).
- **SG-B458 near RM16.3.** Total DDx (13.98 µg/kg) and dioxins/furans TEQ (9.6 ng/kg).
- **SG-B471 near RM 19.6.** Total PCBs (95.959 µg/kg), dioxins/furans TEQ (12 ng/kg), and benzo(a)pyrene TEQ (133.338 µg/kg).

Sample locations for this investigation were selected to further define the extent of COIs in the areas of the above locations. Fish tissue samples historically collected in the vicinity of RM 16 have also contained elevated PCBs concentrations.

4.0 FIELD ACTIVITIES

Sampling personnel performed field activities in accordance with the Upriver Reach Sediment Investigation Work Plan (Work Plan; Hart Crowser and GSI 2019) prepared for this investigation. Field activities were performed on October 28 and 29, 2019, and summarized in the sections below. Please refer to Appendix A for a detailed description of the field activities.

4.1 Permitting

Sediment sampling was performed under U.S. Army Corps of Engineers permit NWP-2017-440 and Oregon Department of State Lands permit 60662. These permits were previously obtained for the Upriver Reach Sediment Characterization sampling performed in 2017. Both permits covered the same type of sampling and were still valid for use for this investigation.

4.2 Station Position and Vertical Control

Station positions were recorded using a differential GPS onboard the sampling vessel to record GPS coordinates to an accuracy of ± 1 meter (3.2 feet). Coordinates were measured using the North American Datum of 1983 of the State Plane Coordinate System, Oregon North Zone, in international feet. For samples along the shoreline that were collected using handheld tools, GPS coordinates were collected using a handheld GPS unit capable of decimeter accuracy. Sample locations, in northings and eastings, are presented in Table 1.

Vertical positioning for sediment samples in water were recorded using a pressure transducer affixed to the power-grab sampler to measure and record the water depth when the sampler was on the river bottom. Water depths were recorded to the nearest 0.1 feet and are presented in Table 1. Mudline elevations were not reported due to the distance from the nearest river stage gauge and difficulty in the changing datum conversions.

4.3 Sediment and Shoreline Sampling

Sediment samples were collected from the river bottom using a pneumatic power-grab sampler deployed from the sampling vessel. The sampler was deployed at each target location until three discrete grab samples were successfully collected. Table 1 lists the grab sampler run attempts at each sample location and penetration depth. A target penetration depth of 30 centimeters was attempted; however, due to coarse substrates, a shallower penetration depth was sometimes deemed acceptable. Shoreline sediment samples were collected using a spade shovel to collect material from three discrete grab locations with a 2-foot radius. For each sample location, material from each discrete location was first homogenized, then equal volumes from each discrete location were composited together and homogenized again prior to sample collection.

Three adjustments to sample locations were required due to successive unsuccessful grab sample attempts at three target sample locations. Rocky substrates were encountered at these locations with rocks lodged in the sampler jaws causing the sediment to wash out during sampler retrieval. The following sample location adjustments with rationales were made.

- RM16.1E-SED1 was shifted approximately 150 feet north and angled closer to the shoreline to increase the chance of finding finer grained material.
- RM16.3E-SED2 was shifted approximately 230 feet northwest and angled closer to the shoreline to increase chance of obtaining finer grained material. The target sample location was also shifted towards the location of PDI sample SG-B458 in order to replicate the results since the target location yielded unsuccessful grab sample attempts.
- RM19.5W-SED7 was shifted approximately 100 feet north towards the shoreline to increase the chance of obtaining finer grained material. The target sample location was also shifted towards SG-B471 in order to replicate the result of the sample since the target sample location yielded unsuccessful grab sample attempts.

Unsuccessful power-grab sample attempts were communicated to the DEQ Project Manager and adjustments to locations were approved by the DEQ prior to continuing sampling efforts. Target sample locations, composite sample centroids, and successful and unsuccessful power-grab sample attempts are shown on Figures 2 and 3.

A field duplicate sample (RM16.1E-SED1-DUP) and an equipment rinsate blank sample were collected as QC samples to serve as a check on laboratory precision and sampling and equipment decontamination procedures.

4.4 Equipment Decontamination

Reusable sampling equipment (e.g. power grab sampler, stainless-steel mixing bowls and spoons, spade shovel, etc.) were decontaminated prior to sampling and between each sample location. The power grab sampler and spade shovel were rinsed with river water between discrete grab samples for the same target location and decontaminated prior to moving to the next sample location. Decontamination was

performed using a phosphate free detergent solution to spray down the sampling equipment and then scrubbed with handheld brushes. Equipment was then rinsed with deionized water.

4.5 Investigation-Derived Waste

Following sample processing and collection, excess sediment was returned to the Willamette River in the vicinity where it was collected. Minor amounts of phosphate free detergent water were generated during decontamination activities that were containerized in a 5-gallon bucket and disposed of in a municipal sanitary sewer. Used personal protective equipment (PPE), aluminum foil, and paper towels were placed in a plastic trash bag and disposed of as municipal waste in a trash dumpster at the Hart Crowser office.

5.0 LABORATORY ANALYSIS AND QA/QC

The following sections present the analytical program implemented for this investigation and discuss the analytical methods performed, laboratory QA/QC procedures, and data QA review.

5.1 Physical and Chemical Analysis

Sediment samples were analyzed for physical and chemical parameters by Pace Analytical of Mt. Juliet, Tennessee, and ALS Environmental of Burlington, Ontario, Canada. Grain size analysis was subcontracted by Pace Analytical to Beaver Engineering of Nashville, Tennessee. The following analyses were performed for project samples.

Pace Analytical

- Grain size distribution by American Society for Testing and Materials International Method D422 (subcontracted to Beaver Engineering)
- Total organic carbon (TOC) by U.S. Department of Agriculture Loss on Ignition Method
- Total Solids by Puget Sound Estuary Protocol (PSEP) 1986
- Metals by Environmental Protection Agency (EPA) Method 6020B and mercury by EPA Method 7471B
- Total petroleum hydrocarbons (TPH) as diesel by Northwest Method NWTPH-Dx
- PAHs by EPA Method 8270D-SIM and select phenols and phthalates by EPA Method 8270D

ALS Environmental

- Dioxins/furans by EPA Method 1613B
- Organochlorine Pesticides by EPA Method 1699M
- Polybrominated diphenyl ethers (PBDE) by EPA Method 1614
- PCB Congeners by EPA Method 1668C

The analytical method for TOC analyses varied from the method specified in the Work Plan; however, the method performed uses a combustion method to measure the amount of carbon driven off the sample and provides comparable data to the PSEP method. The data are usable for the purpose of this investigation.

5.2 Laboratory QA/QC Procedures

Laboratory QA samples were analyzed with project samples and laboratory QC procedures were implemented to generate useable, high-quality data. Analytical methods were performed in accordance with EPA or other standard test methods and detailed in the DEQ Quality Assurance Project Plan (QAPP; DEQ 2012). The following QA/QC components were implemented during laboratory analyses.

- Method reporting limit verification
- Surrogate spike recoveries
- Method blanks (MB)
- Laboratory duplicates
- Laboratory control sample and laboratory control sample duplicate (LCS/LCSD)
- Matrix spike and matric spike duplicate (MS/MSD)

Laboratory QC samples were performed at the rates specified in the DEQ QAPP (DEQ 2012).

5.3 Data Validation and Usability

Field and laboratory data collected for this investigation were subjected to a formal verification and validation process in accordance with EPA guidance documents as described in the Work Plan. Verification is the confirmation by examination and provision of objective evidence that specified requirements have been fulfilled. Analytical data were verified by the Pace Analytical and ALS Environmental project managers to ensure that the specified laboratory QA/QC objectives were met. All data were indicated to be usable and any limitations were identified using data qualifiers, quantitative evaluations, and narrative statements regarding potential bias.

Validation is the confirmation by examination of objective evidence that the particular requirement for a specific intended use has been fulfilled. Analytical data were validated by Hart Crowser to ensure that the specified QA/QC objectives for precision, accuracy, representativeness, completeness, and comparability were met. The data validation included review of the chain of custody documentation, holding times, equipment blanks, MS, LCS, duplicates, and MB samples. It also included an assessment of data quality indicators: precision, accuracy, representativeness, completeness, and comparability using data validation methods consistent with EPA guidance. Data qualifiers were assigned during data validation to the electronic data deliverables when applicable QA/QC limits were not met and the qualification was warranted following guidance specified by EPA (EPA 2002), QC requirements specified in the Work Plan, and method-specific QC requirements, as applicable.

After verification and validation of the laboratory data, all data were deemed usable with limitations and were identified using data qualifiers, quantitative evaluations, and narrative statements regarding potential bias. Completeness for the data set is 100 percent (i.e., no data were rejected). Additional detail regarding the QA review and data validation procedures is provided in Appendix C. Table 2 presents grain size distributions. Final, qualified laboratory results are presented in Tables 3 and 4 and discussed in Section 7.

6.0 ELECTRONIC DATA MANAGEMENT

Location data for discrete grab samples are presented in Table 1. Unsuccessful grab attempt locations are included and noted as to whether they were used for the composite sample at each location. In order to depict a single sample point relative to the vicinity in which a composite was collected, sample locations depicted on figures are the centroid of the successful discrete grab sample locations. The centroids of the composite samples were calculated using the "Mean Center" tool in ArcGIS. The "Mean Center" tool identifies the geographic center (i.e. the average x and y coordinates) of all the selected features in the composite area. The actual and calculated "centroid" sample locations are shown on Figures 2 through 3.

Analytical results for physical and chemical analyses are presented in Tables 2 through 4. Validated laboratory results were managed in accordance with the Work Plan and specified data reduction and summation rules, consistent with those developed for PHSS and used during the Pre-RD AOC Group's PDI. Data summation for sediment samples was performed to generate total concentration values for respective analyte groups, including: total dioxins/furans, dioxin/furan TEQs, total DDD, total DDE, total DDT, total DDx, total chlordanes, total low and high molecular weight PAHs, total PAHs, total carcinogenic PAHs (cPAHs) as benzo(a)pyrene equivalents, and total PCB congeners. In general, the following data summation rules were used:

- Totals were calculated by summing only detected concentrations and by summing all detected concentrations plus one half the MDL value for non-detected results. To provide an indication of how using half the MDL may affect totals, we also provided summations with non-detect analytes set at zero.
- If all analytes were not detected, the highest MDL value was used for the summation total.
- Data qualifiers were carried through the summation calculation. Summed totals were flagged with a "T" qualifier indicating they are mathematically calculated totals.

7.0 SEDIMENT ANALYTICAL RESULTS

Sediment analytical results for physical and chemical analyses are presented in Tables 2 and 3. Results were compared to CULs and RALs from the PHSS Record of Decision (Tables 17 and 28 of EPA 2017), updated cPAH and total PAH CULs in the 2019 Explanation of Significant Differences (ESD; EPA 2019); and DEQ Level II Ecological SLVs (DEQ 2001). Detected concentrations exceeding CULs or SLVs are highlighted in Table 3, as well as the exceeded CUL or SLV. There were no exceedances of PHSS RALs.

Grain Size. Sediments from sample locations were predominantly a silty sand. A higher gravel content (34 percent) was present in shoreline sample RM16.3E-SED4, as we observed gravel to be more prevalent throughout the shoreline in that location. A greater proportion of fines (74 percent) were present at RM16.3E-SED2 where the material was a sandy clayey silt.

Conventional Parameters. TOC was present at 6,870 to 35,100 milligrams per kilogram (mg/kg) or 0.687 to 3.51 percent. Total solids ranged from 51.7 to 61.1 percent for sediment samples and from 66.4 to 81.6 percent for shoreline samples. There are no CULs for TOC or total solids.

Metals. Arsenic and mercury were detected in several samples above the CULs but below RALs. Arsenic was detected in samples from both RM 16 and RM 19 areas at up to 4.96 mg/kg, slightly above its 3 mg/kg CUL. Mercury was detected above its 0.085 mg/kg CUL at two locations: 0.214 mg/kg in sediment sample RM16.3E-SED2 and at 0.136 mg/kg in shoreline sample RM16.3E-SED3. These locations are in close proximity to each other and may be affected by the same source (1,2,3,4,7,8-HxCDF and PCBs also exceed CULs at these locations). All other mercury detections were approximately an order of magnitude lower.

In comparison to SLVs, copper and zinc exceeded their DEQ SLVs in only one sample (RM16.3E-SED2). Copper was detected 41.6 mg/kg (SLV of 36 mg/kg), and zinc was detected 170 mg/kg (SLV of 123 mg/kg); both these metals were below their respective CULs. Nickel was detected above its 18 mg/kg SLV in all samples collected. Nickel concentrations were generally between 23.0 to 28.4 mg/kg, with sample RM16.3-SED4 having 55.8 mg/kg. There is no CUL for nickel.

TPH as Diesel. TPH as diesel was detected up to 14.8 mg/kg, well below its CUL of 91 mg/kg.

Dioxins/Furans. Dioxin/furan analyses detected one exceedance of 2,3,7,8-TCDF and two exceedances of 1,2,3,4,7,8-HxCDF across three samples within the RM 16 sampling area. In sample RM16.1E-SED1, 2,3,7,8-TCDF was detected at an estimated concentration of 0.415 ng/kg, just slightly above its CUL of 0.407 ng/kg. The field duplicate of this sample (RM16.1E-SED1-DUP) was below the CUL with an estimated concentration of 0.261 ng/kg. In sample RM16.3E-SED1, we note that the MDL for 2,3,4,7,8-PeCDF was 0.42 ng/kg, slightly above the 0.3 ng/kg CUL (the result was qualified as undetected and estimated due to ion abundance ratio being outside acceptance criteria).

For 1,2,3,4,7,8-HxCDF, the 0.4 ng/kg CUL was exceeded by sediment sample RM16.3E-SED2 (estimated concentration of 0.650 ng/kg) and shoreline sample RM16.3E-SED3 (estimated concentration of 0.0.507 ng/kg). In sample RM16.3E-SED2, we note that the MDL for 2,3,7,8-TCDD was 0.27 ng/kg, slightly above the 0.2 ng/kg CUL and the MDL of 0.42 ng/kg for 2,3,4,7,8-PeCDF in RM16.1E-SED1 slightly exceeded the CUL of 0.3 ng/kg.

Organochlorine Pesticides. Dieldrin was detected above its 0.07 µg/kg CUL in one sample (RM16.3E-SED3) at 0.09 µg/kg. All other pesticides were either not detected above MDLs or did not exceed their respective CULs. Total DDx ranged up to 2.66 µg/kg, again below its 6.1 µg/kg CUL.

SVOCs. Relatively low concentrations of PAHs were detected, with the field duplicate being non-detect for PAHs. Total PAHs ranged up to 95.1 µg/kg, well below the CUL of 23,000 µg/kg. For total cPAHs, the highest concentration was 8.6 µg/kg in RM16.3E-SED2, approximately an order of magnitude below the 85 µg/kg CUL for beach areas recently revised in the 2019 ESD. The other two SVOC COIs for this project, pentachlorophenol and *bis* (2-ethylhexyl) phthalate, were not detected.

PBDEs. PBDEs were detected in all samples except RM16.3E-SED2. Relatively higher concentrations were detected in RM16.3E-SED1 and RM19.6W-SED8. There are no CULs, RALs, or SLVs for PBDEs.

PCBs. Total PCB concentrations exceeded the 9 mg/kg CUL for two samples: sediment sample RM16.3E-SED2 at 13.09 µg/kg (estimated) and in shoreline sample RM16.3E-SED3 at 15.13 µg/kg (estimated).

8.0 REFERENCES

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TABLES

Table 1 - Location and Sample Information
Upriver Reach, Lower Willamette River
Portland Oregon

Sample ID	Sample Type	Sample Date	Grab Number	Used for Composite	Location[a]		Water Depth (feet)	Penetration Depth (cm)	Sample Notes
					Northing	Easting			
RM16.1E-SED1/ RM16.1E-SED1-DUP	River Bottom Sediment	28-Oct-19	1	N	7646680.37	664966.51	3.0	--	Rocks in sampler jaws, no recovery.
			2	N	7646733.84	664849.61	3.2	--	Rocks in sampler jaws, no recovery.
			3	N	7646741.53	664859.89	5.7	--	Rocks in sampler jaws, no recovery.
			4	N	7646737.67	664871.05	2.5	--	Rocks in sampler jaws, sample washed out during retrieval.
			5	N	7646775.67	664841.05	3.3	--	Rocks in sampler jaws, no recovery.
			6	N	7646752.45	664831.65	11.6	--	Rocks in sampler jaws, no recovery.
			7	Y	7646691.47	664886.46	10.2	30	
			8	Y	7646753.05	665004.40	10.2	30	Sampler uneven on riverbottom, one side overpenetrated to 33 cm.
			9	Y	7646747.81	665012.22	13.2	30	Sampler uneven on riverbottom, one side overpenetrated to 33 cm.
RM16.3E-SED2	River Bottom Sediment	28-Oct-19	1	N	7646737.25	663753.20	--	--	Rocks in sampler jaws, no recovery
			2	N	7646723.82	663766.61	39.2	--	Rocks in sampler jaws, no recovery.
			3	N	7646762.54	663763.00	23.7	7	
			4	N	7646737.41	663791.33	27.5	--	Rocks in sampler jaws, no recovery.
			5	N	7646703.98	663785.88	40.8	--	Rocks in sampler jaws, no recovery.
			6	N	7646691.78	663743.38	54.0	--	Rocks in sampler jaws, no recovery.
			7	N	7646786.34	663807.71	15.8	--	Adjusted location. Rocks in sampler jaws, no recovery.
			8	N	7646782.66	663865.86	9.3	--	Rocks in sampler jaws, no recovery.
			9	N	7646743.78	663877.15	30.9	--	Rocks in sampler jaws, no recovery.
			10	N	7646774.65	663962.32	13.2	--	Rocks in sampler jaws, sample washed out during retrieval.
		29-Oct-19	11	N	7646777.91	663966.31	13.2	--	Sticks in sampler jaws, no recovery.
			12	Y	7646777.44	663967.73	13.1	25	
			13	Y	7646780.04	663965.79	12.6	29	
			14	N	7646779.64	663967.94	10.4	--	Sticks in sampler jaws, no recovery.
			15	Y	7646783.22	663963.30	11.7	24	
RM16.3E-SED3	Shoreline Sediment	29-Oct-19	1	--	7646826.51	663878.13	--	30	
RM16.3E-SED4	Shoreline Sediment	29-Oct-19	1	--	7646863.96	663673.25	--	30	
RM16.4E-SED5	Shoreline Sediment	29-Oct-19	1	--	7646937.21	663368.62	--	30	
RM19.4W-SED6	River Bottom Sediment	28-Oct-19	1	Y	7649678.3	650124.13	5.0	28	
			2	Y	7649680.46	650121.73	5.0	25	
			3	Y	7649687.83	650125.48	5.0	28	
RM19.5W-SED7	River Bottom Sediment	28-Oct-19	1	N	7649493.81	649748.04	59.4	--	Rocks in sampler jaws, no recovery.
			2	N	7649499.23	649760.29	62.0	--	Rocks in sampler jaws, no recovery.
			3	N	7649474.20	649759.68	53.6	3	Rocks in sampler jaws, little recovery.
			4	N	7649458.35	649773.15	48.2	--	Rocks in sampler jaws, no recovery.
			5	N	7649470.42	649810.55	39.0	--	Rocks in sampler jaws, no recovery.
			6	N	--	--	--		Sampler tipped over upon deployment, no sample attempt made.
			7	N	7649528.59	649737.02	72.7	--	Rocks in sampler jaws, no recovery.
			8	N	7649452.32	649832.03	29.6	--	Rocks in sampler jaws, no recovery.
			9	Y	7649463.58	649851.70	29.0	21	
			10	N	7649457.88	649849.59	29.0	--	Branch in sampler jaws, no recovery.
			11	N	7649467.87	649850.71	29.0	9	Partial sample washout during retrieval.
			12	N	7649465.76	649838.52	29.0	--	No recovery, water only in sampler.
			13	N	7649480.23	649841.62	32.0	--	Rocks in sampler jaws, no recovery.
			14	N	7649468.45	649848.91	32.0	10	Partial sample washout during retrieval.
			15	Y	7649470.21	649848.27	32.0	25	
			16	N	7649470.99	649850.40	32.0	17	
			17	Y	7649471.40	649841.79	32.0	22	
RM19.6W-SED8	River bottom Sediment	28-Oct-19	1	Y	7649096.32	649397.27	29.0	21	
			2	Y	7649094.76	649394.97	32.3	29	
			3	Y	7649094.3	649397.83	30.2	30	

Notes:
[a]Location data in State Plane Coordinates, Orgon North Zone, North American Datum 1983.
cm = centimeter.

Table 2 - Grain Size Distributions
Upriver Reach, Lower Willamette River
Portland Oregon

		Sample	RM16.1E-SED1	RM16.1E-SED1-DUP	RM16.3E-SED2	RM16.3E-SED3	RM16.3E-SED4	RM16.4E-SED5
		Date	28-Oct-19	28-Oct-19	29-Oct-19	29-Oct-19	29-Oct-19	29-Oct-19
	Sieve Size	Sieve Size (mm)	Percent (%) Retained					
Gravel	#4	4.75	0	1	0	10	22	3
	#10	2.00	0	0	0	3	12	2
Coarse Sand	#40	0.425	1	1	1	2	7	2
Fine Sand	#100	0.150	20	21	14	23	33	21
Very Fine Sand	#200	0.075	25	23	11	18	9	42
Silt	-	0.005 - 0.075	44	44	54	30	13	19
Clay	-	<0.005	10	10	20	14	4	11
Total Fines	Passing #200	<0.075	54	54	74	44	17	30
Material Description			Silty SAND with Clay	Silty SAND with Clay	Sandy Clayey SILT	Silty SAND with Clay and Gravel	Gravelly SAND with Silt	Silty SAND with Clay

		Sample	RM19.4W-SED6	RM19.5W-SED7	RM19.6W-SED8
		Date	28-Oct-19	28-Oct-19	28-Oct-19
	Sieve Size	Sieve Size (mm)	Percent (%) Retained		
Gravel	#4	4.75	0	0	0
	#10	2.00	0	0	0
Coarse Sand	#40	0.425	3	6	2
Fine Sand	#100	0.150	55	62	26
Very Fine Sand	#200	0.075	15	7	21
Silt	-	0.005 - 0.075	19	17	41
Clay	-	<0.005	8	8	10
Total Fines	Passing #200	<0.075	27	25	51
Material Description			Silty SAND with Clay	SAND with Silt	Silty SAND with Clay

Notes:
Grain size distribution by ASTM D-422 Modified.
mm = millimeter

Table 3 - Sediment Sample Analytical Results
Upriver Reach, Lower Willamette River
Portland Oregon

Analyte	Unit[a]	RM16.1E-SED1 28-Oct-19	RM16.1E-SED1-DUP 28-Oct-19	RM16.3E-SED2 29-Oct-19	RM16.3E-SED3 29-Oct-19	RM16.3E-SED4 29-Oct-19	RM16.4E-SED5 29-Oct-19	RM19.4W-SED6 28-Oct-19	RM19.5W-SED7 28-Oct-19	RM19.6W-SED8 28-Oct-19	PHSS[b] CUL	PHSS[b] RAL	DEQ Level II Eco SLVs[b]
Conventional Parameters													
Total Organic Carbon	mg/kg	20,900	19,900	35,100	20,100	17,700	6,870	11,700	11,700	20,000	--	--	--
Total Solids PSEP	%	53.2	54.4	51.7	66.4	71.9	81.6	61.1	59.1	53.3	--	--	--
Metals													
Arsenic	mg/kg	3.37	3.45 J	4.96	3.76	2.56	2.23	3.70	3.33	3.64	3	--	6
Cadmium	mg/kg	0.0157 J	0.128 U	0.304 J	0.181 J	0.107 U	0.0999 U	0.115 U	0.113 U	0.142 J	0.51	--	0.6
Chromium	mg/kg	27.0	28.2	34.5	30.1	17.0	25.3	26.4	23.2	28.2	--	--	37
Copper	mg/kg	26.1	26.8	41.6	30.7	17.7	29.5	21.5	20.9	28.3	359	--	36
Lead	mg/kg	7.75	8.48 J	20.5	15.6	12.8	20.7	6.52	7.54	7.34	196	--	35
Manganese	mg/kg	367	376	688	487	252	382	480	443	485	--	--	1,100
Mercury	mg/kg	0.0362 J	0.0349 J	0.214	0.136	0.0183 J	0.0157 J	0.0220 J	0.0249 J	0.0329 J	0.085	--	0.2
Nickel	mg/kg	24.3	25.2	28.4	25.5	55.8	26.0	23.5	23.0	25.1	--	--	18
Zinc	mg/kg	79.0	80.7	170	116	55.1	56.1	72.4	92.2	80.4	459	--	123
Total Petroleum Hydrocarbons													
Diesel-Range Hydrocarbons	mg/kg	2.08 U	14.8	9.12	6.38	6.93	1.66 U	3.02 J	2.09 J	2.19 U	91	--	--
Dioxins/Furans (Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans)													
2,3,7,8-TCDD	ng/kg	0.11 U	0.070 U	0.27 U	0.083 J	0.11 U	0.034 U	0.068 U	0.17 U	0.065 U	0.2	0.6	9
1,2,3,7,8-PeCDD	ng/kg	0.150 J	0.098 J	0.13 U	0.174 J	0.053 U	0.022 J	0.056 UJ	0.099 UJ	0.090 UJ	0.2	0.8	--
1,2,3,4,7,8-HxCDD	ng/kg	0.180 UJ	0.126 J	0.500 J	0.345 J	0.072 U	0.022 J	0.058 J	0.200 UJ	0.087 J	--	--	--
1,2,3,6,7,8-HxCDD	ng/kg	1.19 J	0.609 J	1.76 J	1.28 J	0.223 J	0.061 UJ	0.380 J	0.829 J	0.346 J	--	--	--
1,2,3,7,8,9-HxCDD	ng/kg	0.522 J	0.333 J	0.700 J	0.717 J	0.110 UJ	0.034 UJ	0.087 UJ	0.456 J	0.190 J	--	--	--
1,2,3,4,6,7,8-HpCDD	ng/kg	17.5	9.70	72.0	39.3	4.04	0.804 UJ	6.26	20.8	8.88	--	--	--
OCDD	ng/kg	155	88.6	1,520	793	32.0	6.13	45.8	261	59.8	--	--	--
2,3,7,8-TCDF	ng/kg	0.415 J	0.261 J	0.240 U	0.171 J	0.156 J	0.124 J	0.145 J	0.29 J	0.190 UJ	0.40658	--	--
1,2,3,7,8-PeCDF	ng/kg	0.166 J	0.090 UJ	0.250 UJ	0.179 J	0.066 UJ	0.046 J	0.087 J	0.15 UJ	0.091 J	--	--	--
2,3,4,7,8-PeCDF	ng/kg	0.420 UJ	0.100 UJ	0.200 UJ	0.263 J	0.042 U	0.014 U	0.054 UJ	0.208 J	0.081 J	0.3	200	--
1,2,3,4,7,8-HxCDF	ng/kg	0.270 J	0.147 J	0.650 J	0.507 J	0.057 U	0.017 U	0.092 J	0.210 UJ	0.126 J	0.4	--	--
1,2,3,6,7,8-HxCDF	ng/kg	0.213 J	0.133 J	0.800 J	0.864 J	0.056 U	0.016 U	0.052 UJ	0.140 UJ	0.067 UJ	--	--	--
1,2,3,7,8,9-HxCDF	ng/kg	0.203 UJ	0.110 UJ	0.250 UJ	0.290 UJ	0.075 UJ	0.074 UJ	0.119 UJ	0.144 UJ	0.130 UJ	--	--	--
2,3,4,6,7,8-HxCDF	ng/kg	0.457 J	0.148 J	1.20 UJ	0.912 J	0.240 UJ	0.023 UJ	0.082 UJ	0.290 UJ	0.170 UJ	--	--	--
1,2,3,4,6,7,8-HpCDF	ng/kg	3.50 J	1.48 J	16.7	10.7	1.20 UJ	0.100 J	0.884 J	2.71 J	1.49 J	--	--	--
1,2,3,4,7,8,9-HpCDF	ng/kg	0.206 J	0.123 J	1.00 UJ	0.662 J	0.045 U	0.019 UJ	0.044 UJ	0.055 U	0.036 U	--	--	--
OCDF	ng/kg	10.3	2.98 J	74.1	23.2	1.76 J	0.190 UJ	1.56 J	5.49 J	3.04 J	--	--	--
Total Dioxins/Furans (ND = 0)	ng/kg	189.9 JT	104.7 JT	1,687.2 JT	872.4 JT	38.2 JT	6.4 JT	55.3 JT	291.8 JT	74.1 JT	--	--	--
Total Dioxins/Furans (ND = 1/2 MDL)	ng/kg	190.3 JT	104.9 JT	1,689.0 JT	872.5 JT	39.2 JT	7.1 JT	55.5 JT	292.5 JT	74.5 JT	--	--	--
Dioxin/Furan TEQ (ND = 1/2 MDL)	ng/kg	0.860 JT	0.471 JT	2.129 JT	1.587 JT	0.214 JT	0.075 JT	0.243 JT	0.721 JT	0.330 JT	--	--	--
Pesticides													
2,4'-DDD	µg/kg	0.128 J	0.124 J	0.265 J	0.319	0.022 U	0.019 U	0.026 U	0.024 UJ	0.024 U	--	--	--
4,4'-DDD	µg/kg	0.353 J	0.505	0.958	1.43	0.030 UJ	0.013 U	0.027 U	0.0761 J	0.123 J	--	--	--
2,4'-DDE	µg/kg	0.016 U	0.016 U	0.0607 J	0.0524 J	0.012 U	0.0076 U	0.019 U	0.015 U	0.015 U	--	--	--
4,4'-DDE	µg/kg	0.631	0.420	0.983	0.839	0.0597 J	0.014 U	0.112 J	0.163 J	0.303 J	--	--	--
2,4'-DDT	µg/kg	0.037 U	0.033 U	0.034 U	0.023 U	0.021 U	0.018 U	0.038 U	0.033 U	0.028 U	--	--	--
4,4'-DDT	µg/kg	0.20 UJ	0.135 J	0.219 J	0.026 U	0.021 U	0.022 U	0.035 U	0.023 U	0.041 U	--	--	--
Total DDD	µg/kg	0.481 JT	0.629 JT	1.223 JT	1.75 JT	0.030 UT	0.019 UT	0.027 UT	0.0881 JT	0.135 JT	114	--	4
Total DDE	µg/kg	0.639 T	0.428 T	1.013 JT	0.8914 JT	0.0657 JT	0.014 UT	0.122 JT	0.171 JT	0.311 JT	226	--	1.5
Total DDT	µg/kg	0.20 U	0.168 JT	0.253 JT	0.026 U	0.021 UT	0.022 UT	0.038 UT	0.033 UT	0.041 UT	246	--	4
Total DDx (ND = 0)	µg/kg	1.112 JT	1.184 JT	2.486 JT	2.64 JT	0.0597 JT	0.022 UT	0.112 JT	0.239 JT	0.426 JT	6.1	160	7
Total DDx (ND = 1/2 MDL)	µg/kg	1.239 JT	1.209 JT	2.503 JT	2.66 JT	0.1127 JT	0.022 UT	0.185 JT	0.287 JT	0.480 JT	6.1	160	7
cis-Chlordane	µg/kg	0.0640 J	0.0429 J	0.0310 U	0.0300 U	0.0180 U	0.0140 U	0.0280 U	0.0260 U	0.0480 U	--	--	--
trans-Chlordane	µg/kg	0.0695 J	0.0673 J	0.0463 J	0.0330 U	0.0200 U	0.0150 U	0.0310 U	0.0290 U	0.0530 U	--	--	--
cis-Nonachlor	µg/kg	0.0320 UJ	0.0280 U	0.0280 U	0.0250 U	0.0130 U	0.0110 U	0.0270 U	0.0110 U	0.0170 U	--	--	--
trans-Nonachlor	µg/kg	0.0500 U	0.0430 UJ	0.0320 U	0.0300 U	0.0180 U	0.0140 U	0.0290 U	0.0270 U	0.0490 U	--	--	--
Oxychlordane	µg/kg	0.0047 U	0.0073 U	0.0063 U	0.0034 U	0.0049 U	0.0022 U	0.0044 U	0.0070 U	0.0060 U	--	--	--
Total Chlordanes (ND = 0)	µg/kg	0.1335 JT	0.1102 JT	0.0463 JT	0.0330 U	0.0200 U	0.0150 U	0.0310 U	0.0290 U	0.0530 U	1.4	--	4.5
Total Chlordanes (ND = 1/2 MDL)	µg/kg	0.1769 JT	0.1494 JT	0.0950 JT	0.0330 U	0.0200 U	0.0150 U	0.0310 U	0.0290 U	0.0530 U	1.4	--	4.5

Please refer to notes on the last page of this table.

Table 3 - Sediment Sample Analytical Results
Upriver Reach, Lower Willamette River
Portland Oregon

Analyte	Unit[a]	RM16.1E-SED1 28-Oct-19	RM16.1E-SED1-DUP 28-Oct-19	RM16.3E-SED2 29-Oct-19	RM16.3E-SED3 29-Oct-19	RM16.3E-SED4 29-Oct-19	RM16.4E-SED5 29-Oct-19	RM19.4W-SED6 28-Oct-19	RM19.5W-SED7 28-Oct-19	RM19.6W-SED8 28-Oct-19	PHSS[b] CUL	PHSS[b] RAL	DEQ Level II Eco SLVs[b]
Pesticides (Continued)													
Aldrin	µg/kg	0.023 UJ	0.016 UJ	**0.0230 J**	**0.0346 J**	**0.00999 J**	0.003 U	0.0037 U	0.0046 U	0.0087 UJ	2	--	40
alpha-BHC	µg/kg	0.035 U	0.025 U	0.028 U	0.023 U	0.026 U	0.024 U	0.028 U	0.030 U	0.030 U	--	--	--
beta-BHC	µg/kg	0.047 U	0.033 U	0.041 U	0.029 U	0.036 U	0.035 U	0.038 U	0.038 U	0.042 U	--	--	--
delta-BHC	µg/kg	0.045 U	0.033 U	0.042 U	0.029 U	0.032 U	0.034 U	0.037 U	0.037 U	0.040 U	--	--	--
Gamma-HCH (Lindane)	µg/kg	0.043 U	0.030 U	0.037 U	0.028 U	0.033 U	0.033 U	0.037 U	0.037 U	0.036 U	5	--	0.9
Chlorpyrifos	µg/kg	0.955 UJ	0.392 UJ	0.742 UJ	0.563 UJ	0.551 UJ	0.719 UJ	0.501 UJ	0.236 UJ	0.947 UJ	--	--	--
Dieldrin	µg/kg	0.031 UJ	**0.0400 J**	0.045 UJ	**0.0900 J**	**0.0271 J**	**0.0639 J**	0.017 U	0.017 U	0.020 U	0.07	--	3
Endosulfan I	µg/kg	0.042 U	0.0351 UJ	0.043 U	0.043 U	0.019 U	0.023 U	0.021 U	0.026 U	0.046 U	--	--	--
Endosulfan II	µg/kg	0.053 U	0.037 U	0.088 U	0.022 U	0.048 U	0.031 U	0.070 U	0.037 U	0.074 U	--	--	--
Endosulfan Sulfate	µg/kg	0.009 U	0.0077 U	0.016 U	0.011 U	0.0059 U	0.0093 U	0.011 U	0.0087 U	0.0081 U	--	--	--
Endrin	µg/kg	0.012 U	0.017 U	0.013 U	0.017 U	0.011 U	0.032 U	0.019 U	0.018 U	0.020 U	--	--	3
Endrin Aldehyde	µg/kg	0.011 U	0.012 U	0.0079 U	0.0077 U	0.011 U	0.011 U	0.014 U	0.008 U	0.014 U	--	--	--
Endrin Ketone	µg/kg	0.038 U	0.034 U	0.032 U	0.03 U	0.025 U	0.023 U	0.028 U	0.035 U	0.033 U	--	--	--
Heptachlor	µg/kg	0.0033 UJ	0.0017 UJ	0.0031 U	0.0017 U	0.0021 U	0.0026 UJ	0.0042 U	0.0017 U	0.0011 U	--	--	10
Heptachlor Epoxide A	µg/kg	0.048 U	0.031 U	0.042 U	0.024 U	0.025 U	0.032 U	0.016 U	0.045 U	0.030 U	--	--	0.6
Heptachlor Epoxide B	µg/kg	0.0063 U	0.0041 U	0.0055 U	0.0031 U	0.0033 U	0.0042 U	0.0021 U	0.0060 U	0.004 U			
Hexachlorobenzene	µg/kg	**0.0824 J**	**0.0801 J**	**0.0458 J**	**0.0393 J**	**0.032 J**	**0.0253 J**	**0.0376 J**	**0.0473 J**	0.002 U	--	--	100
Isodrin	µg/kg	0.0048 U	0.0048 U	0.0089 U	0.0065 U	0.007 U	0.0039 U	0.0062 U	0.0063 U	0.0042 U	--	--	--
Methoxychlor	µg/kg	0.012 U	0.0095 U	0.0095 U	0.0079 U	0.0072 U	0.008 U	0.0081 U	0.0063 U	0.0099 U	--	--	--
Mirex	µg/kg	0.0067 UJ	0.0039 UJ	0.0045 UJ	0.0036 UJ	0.0034 UJ	0.0026 UJ	0.0028 UJ	0.0019 U	0.0019 UJ	--	--	800
Octachlorostyrene	µg/kg	**0.00972 J**	0.0041 U	0.0059 UJ	0.0052 U	0.0032 U	0.0042 U	0.0032 U	0.0032 U	0.0039 U	--	--	--
Polycyclic Aromatic Hydrocarbons (PAHs)													
LPAHs													
2-Methylnaphthalene	µg/kg	3.13 U	3.21 U	**4.11 J**	**6.17 J**	2.67 U	2.50 U	2.86 U	2.83 U	3.29 U	--	--	--
Acenaphthene	µg/kg	0.939 U	0.963 U	**2.04 J**	0.927 U	0.800 U	0.749 U	0.859 U	0.848 U	0.988 U	--	--	290
Acenaphthylene	µg/kg	0.939 U	0.963 U	1.14 U	0.927 U	0.800 U	0.749 U	0.859 U	0.848 U	0.988 U	--	--	160
Anthracene	µg/kg	0.939 U	0.963 U	**2.46 J**	0.927 U	0.800 U	0.749 U	0.859 U	0.848 U	0.988 U	--	--	57
Fluorene	µg/kg	0.939 U	0.963 U	**3.01 J**	0.927 U	0.800 U	0.749 U	0.859 U	0.848 U	0.988 U	--	--	77
Naphthalene	µg/kg	3.13 U	3.21 U	**12.2 J**	**6.79 J**	**9.36 J**	2.50 U	2.86 U	**3.55 J**	3.29 U	--	--	176
Phenanthrene	µg/kg	0.939 U	0.963 U	**8.81 J**	**2.57 J**	**1.69 J**	**1.01 J**	**0.909 J**	**2.85 J**	**2.21 J**	--	--	42
LPAHs (ND = 0)	µg/kg	3.13 U	3.21 U	**32.6 JT**	**15.53 JT**	**11.05 JT**	**1.01 JT**	**0.909 JT**	**6.40 JT**	**2.21 JT**	--	--	76
LPAHs (ND = 1/2 MDL)	µg/kg	3.13 U	3.21 U	**33.2 JT**	**17.38 JT**	**13.99 JT**	**5.01 JT**	**5.487 JT**	**9.51 JT**	**7.48 JT**	--	--	76
HPAHs													
Benzo(a)anthracene	µg/kg	**1.21 J**	0.963 U	**6.66 J**	**3.17 J**	**0.942 J**	0.749 U	0.859 U	**6.50 J**	**2.63 J**	--	--	32
Benzo(a)pyrene	µg/kg	**1.00 J**	0.963 U	**5.65 J**	**3.37 J**	0.800 U	0.749 U	0.859 U	**5.57 J**	**2.44 J**	--	--	32
Benzo(b)fluoranthene	µg/kg	**1.31 J**	0.963 U	**7.84 J**	**4.42 J**	**1.02 J**	0.749 U	0.859 U	**7.31 J**	**3.31 J**	--	--	--
Benzo(g,h,i)perylene	µg/kg	**1.60 J**	0.963 U	**3.98 J**	**2.44 J**	**1.21 J**	0.749 U	0.859 U	**3.22 J**	**2.16 J**	--	--	300
Benzo(k)fluoranthene	µg/kg	0.939 U	0.963 U	**2.70 J**	**1.34 J**	0.800 U	0.749 U	0.859 U	**2.90 J**	**1.15 J**	--	--	27
Chrysene	µg/kg	0.939 U	0.963 U	**5.54 J**	**2.86 J**	0.800 U	0.749 U	0.859 U	**5.45 J**	**2.27 J**	--	--	57
Dibenzo(a,h)anthracene	µg/kg	0.939 U	0.963 U	**1.14 J**	0.927 U	0.800 U	0.749 U	0.859 U	**0.865 J**	0.988 U	--	--	33
Fluoranthene	µg/kg	0.939 U	0.963 U	**13.4**	**5.66 J**	**1.41 J**	**0.862 J**	**0.863 J**	**9.37**	**5.40 J**	--	--	111
Indeno(1,2,3-cd)pyrene	µg/kg	**1.01 J**	0.963 U	**2.82 J**	**1.87 J**	0.800 U	0.749 U	0.859 U	**2.67 J**	**1.52 J**	--	--	17
Pyrene	µg/kg	**1.88 J**	0.963 U	**12.2**	**5.66 J**	**1.53 J**	**0.828 J**	**1.21 J**	**9.18**	**4.41 J**	--	--	53
HPAHs (ND = 0)	µg/kg	**8.01 JT**	0.963 U	**61.9 JT**	**30.79 JT**	**6.11 JT**	**1.690 JT**	**2.07 JT**	**53.04 JT**	**25.29 JT**	--	--	193
HPAHs (ND = 1/2 MDL)	µg/kg	**9.89 JT**	0.963 U	**61.9 JT**	**31.25 JT**	**8.11 JT**	**4.686 JT**	**5.51 JT**	**53.04 JT**	**25.78 JT**	--	--	193
Total PAHs (ND = 0)	µg/kg	**11.14 JT**	0.963 U	**94.6 JT**	**46.32 JT**	**17.16 JT**	**2.700 JT**	**2.98 JT**	**59.44 JT**	**27.50 JT**	23,000	30,000[c]	1,610
Total PAHs (ND = 1/2 MDL)	µg/kg	**13.02 JT**	0.963 U	**95.1 JT**	**48.64 JT**	**22.10 JT**	**9.694 JT**	**11.00 JT**	**62.55 JT**	**33.26 JT**	23,000	30,000[c]	1,610
Total cPAH (BaP Eq, ND = 1/2 MDL)	µg/kg	**2.30 JT**	2.225 UT	**8.6 JT**	**4.80 JT**	**1.04 JT**	0.865 UT	0.993 UT	**8.12 JT**	**3.69 JT**	85 / 774[c]	--	193
Phenols													
Pentachlorophenol	µg/kg	0.0751 U	0.0771 U	0.0914 U	0.0742 U	0.0640 U	0.0599 U	0.0687 U	0.0678 U	0.0790 U	--	--	--
Phthalates													
Bis(2-Ethylhexyl) Phthalate	µg/kg	0.0188 U	0.0193 U	0.0228 U	0.0185 U	0.0160 U	0.0150 U	0.0172 U	0.0170 U	0.0198 U	135	--	750

Please refer to notes on the last page of this table.

Table 3 - Sediment Sample Analytical Results
Upriver Reach, Lower Willamette River
Portland Oregon

Analyte	Unit[a]	RM16.1E-SED1 28-Oct-19	RM16.1E-SED1-DUP 28-Oct-19	RM16.3E-SED2 29-Oct-19	RM16.3E-SED3 29-Oct-19	RM16.3E-SED4 29-Oct-19	RM16.4E-SED5 29-Oct-19	RM19.4W-SED6 28-Oct-19	RM19.5W-SED7 28-Oct-19	RM19.6W-SED8 28-Oct-19	PHSS[b] CUL	PHSS[b] RAL	DEQ Level II Eco SLVs[b]
Polybrominated Diphenyl Ethers (PBDEs)													
PBDE 17/25	µg/kg	22.3	14.4 J	0.34 U	0.16 U	1.5 J	0.12 U	4.13 J	1.40 UJ	14.3 J	--	--	--
PBDE 28/33	µg/kg	9.00 J	5.44 J	0.57 UJ	0.68 J	0.92 J	0.39 J	2.60 UJ	1.12 J	6.25 J	--	--	--
PBDE 47	µg/kg	229	145	6.1 UJ	2.75 UJ	13.8 UJ	4.63 UJ	69.1	39.8	237	--	--	--
PBDE 66	µg/kg	5.72 J	3.01 J	0.3 U	0.12 U	0.067 U	0.11 U	1.35 J	0.027 U	5.53 J	--	--	--
PBDE 71	µg/kg	1.65 J	0.17 U	0.3 U	0.12 U	0.067 U	0.11 U	0.38 UJ	0.13 UJ	1.29 J	--	--	--
PBDE 85	µg/kg	9.08 J	4.72 J	0.98 UJ	0.41 J	0.28 UJ	0.4 UJ	2.11 J	1.46 J	8.61 J	--	--	--
PBDE 99	µg/kg	177	104	6.17 UJ	2.41 UJ	10.8 UJ	5.49 UJ	56.3	34.7	165	--	--	--
PBDE 100	µg/kg	54.7	35.1	2.07 UJ	0.624 UJ	3.39 UJ	1.39 UJ	17.2	8.95 J	47.3	--	--	--
PBDE 128	µg/kg	0.50 U	0.74 U	1.6 U	0.53 U	0.48 U	0.48 U	0.56 U	0.18 U	0.52 U	--	--	--
PBDE 138/166	µg/kg	3.90 UJ	0.73 U	1.6 U	0.52 U	0.47 U	0.47 U	0.55 U	0.80 UJ	2.9 J	--	--	--
PBDE 153	µg/kg	20.3	11.7 J	0.9 U	0.32 U	1.1 UJ	0.86 UJ	6.09 J	3.00 J	18.2 J	--	--	--
PBDE 154	µg/kg	20.0	12.2 J	0.68 U	0.22 U	1.3 UJ	0.88 UJ	5.62 J	3.01 J	17.6 J	--	--	--
PBDE 183	µg/kg	4.34 J	2.75 J	0.39 U	0.11 U	0.083 U	0.082 U	1.64 J	0.487 J	4.35 J	--	--	--
PBDE 190	µg/kg	0.20 U	0.29 U	0.76 U	0.22 U	0.16 U	0.16 U	0.18 U	0.077 U	0.15 U	--	--	--
PBDE 203	µg/kg	3.05 J	1.90 UJ	0.62 U	0.24 U	0.15 U	0.11 U	2.05 J	0.12 UJ	2.52 J	--	--	--
PBDE 206	µg/kg	20.9 J	30.3 J	1.1 U	0.31 U	0.44 U	0.22 U	11.4 J	3.77 J	21.8 J	--	--	--
PBDE 209	µg/kg	314	701	5.3 U	1.2 U	1.4 U	0.58 U	107	64.5	294	--	--	--
Polychlorinated Biphenyl (PCB) Congeners													
PCB 1	µg/kg	0.0023 UJ	0.00169 J	0.021	0.004 UJ	0.00056 U	0.00045 UJ	0.00084 UJ	0.0011 UJ	0.00077 UJ	--	--	--
PCB 2	µg/kg	0.00439 J	0.0019 UJ	0.0031 UJ	0.00089 U	0.00058 U	0.00069 UJ	0.0015 UJ	0.00147 UJ	0.0016 UJ	--	--	--
PCB 3	µg/kg	0.0038 UJ	0.00197 J	0.0096 UJ	0.0046 UJ	0.00159 J	0.0011 UJ	0.0015 UJ	0.0023 UJ	0.0025 UJ	--	--	--
PCB 4	µg/kg	0.0086 J	0.0022 U	0.015 UJ	0.0044 U	0.0032 U	0.0028 U	0.0029 U	0.0028 U	0.0037 U	--	--	--
PCB 5	µg/kg	0.0019 U	0.0013 U	0.0066 U	0.0033 U	0.002 U	0.0019 U	0.0016 U	0.0016 U	0.0024 U	--	--	--
PCB 6	µg/kg	0.0037 J	0.0021 UJ	0.008 UJ	0.0028 U	0.0017 U	0.0016 U	0.0013 U	0.0013 U	0.0021 U	--	--	--
PCB 7	µg/kg	0.0017 U	0.0012 U	0.0058 U	0.0029 U	0.0017 U	0.0016 U	0.0014 U	0.0014 U	0.0021 U	--	--	--
PCB 8	µg/kg	0.017 J	0.007 UJ	0.036 UJ	0.013 UJ	0.0027 UJ	0.0028 UJ	0.0034 UJ	0.0064 UJ	0.0019 U	--	--	--
PCB 9	µg/kg	0.0017 U	0.0012 U	0.0059 U	0.003 U	0.0018 U	0.0017 U	0.0014 U	0.0014 U	0.0022 U	--	--	--
PCB 10	µg/kg	0.0017 U	0.0012 U	0.0058 U	0.0029 U	0.0017 U	0.0016 U	0.0014 U	0.0014 U	0.0021 U	--	--	--
PCB 11	µg/kg	0.112	0.0907	0.0908	0.0812 UJ	0.0381 UJ	0.0493 U	0.0895	0.108	0.0907	--	--	--
PCB 12/13	µg/kg	0.0026 U	0.0021 U	0.0076 U	0.0035 U	0.002 U	0.002 U	0.0013 U	0.0018 U	0.003 U	--	--	--
PCB 14	µg/kg	0.0025 U	0.002 U	0.0072 U	0.0033 U	0.0019 U	0.0019 U	0.0013 U	0.0017 U	0.0028 U	--	--	--
PCB 15	µg/kg	0.0057 UJ	0.0077 J	0.015 J	0.0068 UJ	0.0024 U	0.0025 U	0.0038 UJ	0.0076 J	0.0045 UJ	--	--	--
PCB 16	µg/kg	0.0195	0.0065 UJ	0.0235	0.0082 UJ	0.0019 UJ	0.0014 U	0.0018 J	0.0062 J	0.0031 J	--	--	--
PCB 17	µg/kg	0.026 UJ	0.0105 J	0.034	0.0126 J	0.0023 UJ	0.0013 J	0.00177 J	0.00744 J	0.0023 UJ	--	--	--
PCB 18/30	µg/kg	0.0488	0.0181 J	0.0527	0.0223	0.0034 UJ	0.0019 J	0.00278 J	0.0104 J	0.005 J	--	--	--
PCB 19	µg/kg	0.0069 J	0.0024 J	0.0061 UJ	0.0019 U	0.0011 U	0.00091 U	0.0007 U	0.0016 UJ	0.0014 U	--	--	--
PCB 20/28	µg/kg	0.123	0.048	0.101	0.0633	0.015 UJ	0.0083 UJ	0.0138 UJ	0.0552	0.0176 UJ	--	--	--
PCB 21/33	µg/kg	0.068	0.018 UJ	0.0573	0.038	0.00756 UJ	0.003 UJ	0.00761 UJ	0.02	0.0084 UJ	--	--	--
PCB 22	µg/kg	0.0344	0.0119 J	0.0301	0.0202	0.0035 UJ	0.0042 J	0.0045 J	0.0123 J	0.0058 J	--	--	--
PCB 23	µg/kg	0.0025 U	0.0013 U	0.0033 U	0.0031 U	0.00096 U	0.0011 U	0.0006 U	0.0011 U	0.0011 U	--	--	--
PCB 24	µg/kg	0.0011 U	0.00055 U	0.0027 U	0.0013 U	0.0012 U	0.00096 U	0.00051 U	0.00069 U	0.0015 U	--	--	--
PCB 25	µg/kg	0.0151 J	0.0059 J	0.0063 UJ	0.0063 J	0.00093 U	0.0011 U	0.00059 UJ	0.0027 J	0.0011 U	--	--	--
PCB 26/29	µg/kg	0.0253	0.0072 J	0.0115 J	0.007 UJ	0.00141 J	0.0011 U	0.0011 J	0.0046 J	0.0011 U	--	--	--
PCB 27	µg/kg	0.0032 UJ	0.00091 UJ	0.0035 UJ	0.0012 U	0.0011 U	0.00091 U	0.00049 U	0.00097 J	0.0015 U	--	--	--
PCB 31	µg/kg	0.0978	0.032	0.0734	0.0457	0.0108 J	0.0045 J	0.00884 J	0.032	0.011 J	--	--	--
PCB 32	µg/kg	0.016 UJ	0.00671 J	0.0192	0.0066 UJ	0.0013 UJ	0.0011 UJ	0.0013 UJ	0.0045 UJ	0.0019 J	--	--	--
PCB 34	µg/kg	0.0027 U	0.0013 U	0.0034 U	0.0032 U	0.001 U	0.0012 U	0.00064 U	0.0011 U	0.0012 U	--	--	--
PCB 35	µg/kg	0.0039 J	0.0013 U	0.0035 U	0.0032 U	0.001 U	0.0012 U	0.0012 UJ	0.0025 J	0.0014 UJ	--	--	--
PCB 36	µg/kg	0.0031 UJ	0.0012 U	0.0031 UJ	0.0029 U	0.00091 U	0.0011 U	0.00057 U	0.001 U	0.0011 U	--	--	--
PCB 37	µg/kg	0.025 UJ	0.01 UJ	0.018 UJ	0.0137 J	0.0029 UJ	0.0026 UJ	0.0053 UJ	0.0146 J	0.0083 UJ	--	--	--
PCB 38	µg/kg	0.0026 U	0.0013 U	0.0034 U	0.0032 U	0.00099 U	0.0012 U	0.00062 U	0.0011 U	0.0012 U	--	--	--
PCB 39	µg/kg	0.0025 U	0.0012 U	0.0032 U	0.003 U	0.00095 U	0.0011 U	0.0006 U	0.0011 U	0.0011 U	--	--	--
PCB 40/41/ 71	µg/kg	0.092	0.0389	0.0703	0.0436	0.011 UJ	0.0014 UJ	0.00455 J	0.0329	0.0062 UJ	--	--	--
PCB 42	µg/kg	0.0592	0.0255	0.0559	0.0307	0.0074 UJ	0.0011 U	0.002 UJ	0.0217	0.0039 J	--	--	--
PCB 43	µg/kg	0.0091 J	0.0023 UJ	0.0087 J	0.0026 U	0.0012 U	0.001 U	0.00064 U	0.0027 UJ	0.0013 U	--	--	--

Please refer to notes on the last page of this table.

Table 3 - Sediment Sample Analytical Results
Upriver Reach, Lower Willamette River
Portland Oregon

Analyte	Unit[a]	RM16.1E-SED1 28-Oct-19	RM16.1E-SED1-DUP 28-Oct-19	RM16.3E-SED2 29-Oct-19	RM16.3E-SED3 29-Oct-19	RM16.3E-SED4 29-Oct-19	RM16.4E-SED5 29-Oct-19	RM19.4W-SED6 28-Oct-19	RM19.5W-SED7 28-Oct-19	RM19.6W-SED8 28-Oct-19	PHSS[b] CUL	PHSS[b] RAL	DEQ Level II Eco SLVs[b]
PCB Congeners (Continued)													
PCB 44/47/65	µg/kg	**0.218**	**0.0899**	**0.226**	**0.122**	**0.0328**	0.0036 UJ	0.00876 UJ	**0.0688**	**0.0159 J**	--	--	--
PCB 45/51	µg/kg	**0.0259**	**0.0133 J**	**0.0222**	**0.0136 J**	**0.0059 J**	0.00096 U	**0.00157 J**	**0.00629 J**	**0.0025 J**	--	--	--
PCB 46	µg/kg	**0.0104 J**	**0.0048 J**	**0.005 J**	**0.0052 J**	0.0012 U	0.0011 U	0.00065 U	**0.00221 J**	0.0013 U	--	--	--
PCB 48	µg/kg	**0.0307**	**0.0121 J**	**0.0235**	**0.019**	0.0034 UJ	0.00094 U	**0.0012 J**	**0.0112 J**	0.002 UJ	--	--	--
PCB 49/69	µg/kg	**0.169**	**0.0763**	**0.211**	**0.126**	**0.0221**	0.001 UJ	**0.0049 J**	**0.0611**	**0.0116 J**	--	--	--
PCB 50/53	µg/kg	0.02 UJ	**0.0103 J**	0.016 UJ	**0.0118 J**	**0.003 J**	0.00091 U	0.00068 UJ	**0.00541 J**	**0.0015 J**	--	--	--
PCB 52	µg/kg	**0.339**	**0.111**	**0.386**	**0.185**	**0.0288**	0.0018 UJ	**0.00859 J**	**0.0892**	**0.0216**	--	--	--
PCB 54	µg/kg	0.00072 U	0.00049 U	0.0012 U	0.00071 U	0.0006 U	0.00044 U	0.00031 U	0.0006 U	0.00062 U	--	--	--
PCB 55	µg/kg	0.0014 U	**0.0016 J**	0.0048 U	0.0033 U	0.0013 U	0.001 U	0.00058 U	0.001 U	0.0014 U	--	--	--
PCB 56	µg/kg	**0.0788**	**0.0326**	**0.0508**	**0.0424**	**0.0116 J**	0.0014 UJ	**0.00424 J**	**0.036**	0.0071 UJ	--	--	--
PCB 57	µg/kg	0.0014 U	0.0012 U	0.0046 U	0.0032 U	0.0013 U	0.00099 U	0.00056 U	0.00097 U	0.0014 U	--	--	--
PCB 58	µg/kg	0.0014 U	0.0012 U	0.0046 U	0.0032 U	0.0013 U	0.001 U	0.00057 U	0.00104 J	0.0014 U	--	--	--
PCB 59/62/75	µg/kg	**0.0154 J**	**0.00585 J**	**0.0137 J**	0.0061 UJ	0.0015 UJ	0.0007 U	0.00063 UJ	0.00695 J	0.00086 U	--	--	--
PCB 60	µg/kg	**0.0271**	**0.0101 J**	**0.0121 J**	**0.0123 J**	**0.0059 J**	**0.001 J**	**0.00307 J**	**0.01 J**	0.0044 UJ	--	--	--
PCB 61/70/74/76	µg/kg	**0.373**	**0.126**	**0.312**	**0.184**	**0.038**	0.0045 UJ	**0.0131 J**	**0.154**	**0.0333**	--	--	--
PCB 63	µg/kg	**0.0077 J**	**0.0031 J**	**0.0067 J**	**0.0043 J**	0.0012 U	0.00094 U	0.00053 U	**0.00432 J**	0.0013 U	--	--	--
PCB 64	µg/kg	**0.0922**	**0.0385**	**0.0631**	**0.0399**	**0.0104 J**	0.00098 UJ	**0.00468 J**	**0.0318**	**0.00772 J**	--	--	--
PCB 66	µg/kg	**0.189**	**0.0779**	**0.154**	**0.0992**	**0.0263**	0.0028 UJ	0.0098 UJ	**0.101**	**0.0197**	--	--	--
PCB 67	µg/kg	0.0035 UJ	**0.0017 J**	0.004 U	**0.0037 J**	0.0011 U	0.00087 U	0.00049 U	0.0025 UJ	0.0012 U	--	--	--
PCB 68	µg/kg	0.0024 UJ	0.0017 UJ	**0.0099 J**	0.0056 UJ	0.0012 U	0.00091 U	0.00052 U	**0.0026 J**	0.0013 U	--	--	--
PCB 72	µg/kg	0.0033 UJ	**0.0029 J**	**0.0102 J**	**0.0117 J**	0.0012 U	0.00095 U	0.00054 U	0.0033 UJ	0.0013 U	--	--	--
PCB 73	µg/kg	0.0012 UJ	0.0011 UJ	**0.0058 J**	0.0018 U	0.00092 UJ	0.00075 U	0.00046 U	0.0015 UJ	0.00091 U	--	--	--
PCB 77	µg/kg	**0.0092 J**	0.0045 UJ	0.0065 U	0.0043 U	0.0021 UJ	0.0012 U	**0.00199 J**	**0.0071 J**	0.0018 UJ	--	--	--
PCB 78	µg/kg	0.0014 U	0.0012 U	0.0046 U	0.0032 U	0.0013 U	0.001 U	0.00056 U	0.00098 U	0.0014 U	--	--	--
PCB 79	µg/kg	**0.0046 J**	0.0013 UJ	**0.0082 J**	0.0029 U	0.0012 U	0.00091 U	0.00051 U	**0.00225 J**	0.0012 U	--	--	--
PCB 80	µg/kg	0.0012 U	0.001 U	0.004 U	0.0028 U	0.0011 U	0.00087 U	0.00049 U	0.00085 U	0.0012 U	--	--	--
PCB 81	µg/kg	0.0015 U	0.0014 U	0.0054 U	0.0042 U	0.0014 U	0.0012 U	0.00063 U	0.0011 U	0.0015 U	--	--	--
PCB 82	µg/kg	**0.0552**	**0.0176 J**	**0.0545**	**0.021**	**0.0037 J**	0.00099 U	0.002 UJ	**0.0195**	0.002 UJ	--	--	--
PCB 83/99	µg/kg	**0.259**	**0.102**	**0.435**	**0.296**	**0.0255**	0.0023 UJ	**0.00901 J**	**0.104**	**0.0167 J**	--	--	--
PCB 84	µg/kg	**0.108**	**0.0375**	**0.11**	**0.0519**	0.0071 UJ	0.00093 U	**0.00311 J**	**0.0315**	0.0048 UJ	--	--	--
PCB 85/110/115/116/117	µg/kg	**0.623**	**0.213**	**0.733**	**0.427**	**0.047**	**0.00663 J**	**0.0199**	**0.222**	**0.0393**	--	--	--
PCB 86/87/97/109/119/125	µg/kg	**0.294**	**0.0885**	**0.326**	**0.154**	**0.0235**	0.0017 UJ	0.0109 J	**0.0983**	**0.0189**	--	--	--
PCB 88/91	µg/kg	**0.0662**	**0.0277**	**0.111**	**0.0719**	0.008 UJ	0.00085 U	0.0018 UJ	**0.0193**	**0.0036 J**	--	--	--
PCB 89	µg/kg	0.0043 UJ	0.0022 UJ	0.0056 U	0.003 U	0.0012 U	0.0009 U	0.0005 U	0.001 UJ	0.0015 U	--	--	--
PCB 90/101/113	µg/kg	**0.472**	**0.15**	**0.718**	**0.597**	**0.0458**	0.0017 UJ	**0.0129 J**	**0.169**	**0.0268**	--	--	--
PCB 92	µg/kg	**0.0912**	**0.0315**	**0.184**	**0.187**	0.0089 UJ	0.00087 U	**0.00215 J**	**0.0357**	0.0044 UJ	--	--	--
PCB 93/100/102/98	µg/kg	**0.021**	**0.009 J**	**0.0465**	**0.0241**	**0.0115 J**	0.00086 U	0.00048 U	**0.00778 J**	0.0015 U	--	--	--
PCB 94	µg/kg	0.0018 U	0.0013 U	0.0057 U	0.003 U	0.0012 U	0.00092 U	0.00051 U	0.00087 U	0.0015 U	--	--	--
PCB 95	µg/kg	**0.295**	**0.0982**	**0.491**	**0.359**	**0.0259**	0.0023 UJ	**0.00752 J**	**0.0831**	**0.0137 J**	--	--	--
PCB 96	µg/kg	**0.00319 J**	0.0013 UJ	**0.0049 J**	**0.0019 J**	0.00098 UJ	0.00049 U	0.00028 U	0.00044 UJ	0.00048 U	--	--	--
PCB 103	µg/kg	0.0056 UJ	0.0032 UJ	**0.0328**	**0.0254**	0.0031 UJ	0.00077 U	0.00043 U	**0.00273 J**	0.0013 U	--	--	--
PCB 104	µg/kg	0.00034 U	0.00036 U	0.0025 UJ	0.00063 U	0.0004 UJ	0.00044 U	0.00029 U	0.00029 U	0.00044 U	--	--	--
PCB 105	µg/kg	**0.168**	**0.0481**	**0.153**	**0.0638**	**0.0135 J**	0.00071 U	0.00592 J	**0.0446**	**0.0127 J**	--	--	--
PCB 106	µg/kg	0.00098 U	0.00064 U	0.0027 U	0.0017 U	0.00083 U	0.00062 U	0.00036 U	0.00065 U	0.00085 U	--	--	--
PCB 107	µg/kg	**0.0314**	**0.0124 J**	**0.0468**	**0.0424**	**0.0029 J**	0.0006 U	0.00047 UJ	**0.0151 J**	0.0028 UJ	--	--	--
PCB 108/124	µg/kg	**0.0146 J**	**0.00354 J**	**0.0118 J**	0.0047 UJ	0.00084 U	0.00062 U	0.00067 UJ	0.003 UJ	**0.00135 J**	--	--	--
PCB 111	µg/kg	0.0013 U	0.00089 U	0.004 U	**0.0036 J**	0.00087 U	0.00064 U	0.00036 U	0.00061 U	0.0011 U	--	--	--
PCB 112	µg/kg	0.0012 U	0.00087 U	0.0039 U	0.0021 U	0.00085 U	0.00063 U	0.00035 U	0.00059 U	0.0011 U	--	--	--
PCB 114	µg/kg	0.009 UJ	**0.00241 J**	**0.0111 J**	0.0026 UJ	0.001 U	0.00077 U	**0.00044 J**	0.0022 UJ	0.001 U	--	--	--
PCB 118	µg/kg	**0.431**	**0.135**	**0.46**	**0.219**	**0.033**	0.00336 UJ	**0.0132 J**	**0.16**	**0.0314**	--	--	--
PCB 120	µg/kg	0.002 UJ	**0.00152 J**	**0.0133 J**	**0.0099 J**	0.00083 U	0.00062 U	0.00034 U	**0.00175 J**	0.001 U	--	--	--
PCB 121	µg/kg	0.0012 U	0.00088 U	0.0039 U	0.0021 U	0.00085 U	0.00063 U	0.00035 U	0.0006 U	0.0011 U	--	--	--
PCB 122	µg/kg	0.006 UJ	**0.00259 J**	**0.0067 J**	0.0022 UJ	0.0009 U	0.00067 U	0.0004 U	0.0023 UJ	0.00093 U	--	--	--
PCB 123	µg/kg	0.0044 UJ	0.0022 UJ	**0.0067 J**	0.0022 U	0.001 U	0.00077 U	0.00043 UJ	0.00079 U	0.001 U	--	--	--
PCB 126	µg/kg	0.0043 UJ	0.0014 UJ	**0.0057 J**	0.0077 UJ	0.0013 U	0.0009 U	0.00047 U	0.00085 U	0.0012 U	--	--	--

Please refer to notes on the last page of this table.

Table 3 - Sediment Sample Analytical Results
Upriver Reach, Lower Willamette River
Portland Oregon

Analyte	Unit[a]	RM16.1E-SED1 28-Oct-19	RM16.1E-SED1-DUP 28-Oct-19	RM16.3E-SED2 29-Oct-19	RM16.3E-SED3 29-Oct-19	RM16.3E-SED4 29-Oct-19	RM16.4E-SED5 29-Oct-19	RM19.4W-SED6 28-Oct-19	RM19.5W-SED7 28-Oct-19	RM19.6W-SED8 28-Oct-19	PHSS[b] CUL	PHSS[b] RAL	DEQ Level II Eco SLVs[b]
PCB Congeners (Continued)													
PCB 127	µg/kg	0.00097 U	0.00063 U	0.0027 U	0.0017 U	0.00082 U	0.00061 U	0.00036 U	0.00064 U	0.00084 U	--	--	--
PCB 128/166	µg/kg	**0.078**	**0.0279**	0.094 UJ	**0.107**	0.0072 UJ	**0.00241 J**	**0.0025 J**	**0.0321**	**0.00808 J**	--	--	--
PCB 129/138/163	µg/kg	**0.461**	**0.174**	**0.838**	**1.25**	**0.0615**	0.011 UJ	**0.0177**	**0.188**	**0.0426**	--	--	--
PCB 130	µg/kg	**0.0321**	**0.0115 J**	**0.056**	**0.112**	0.0036 UJ	0.00068 U	**0.00108 J**	0.013 UJ	**0.0026 J**	--	--	--
PCB 131	µg/kg	**0.0058 J**	0.0018 U	**0.0088 J**	**0.0089 J**	0.0022 U	0.00075 U	0.00043 U	0.0023 UJ	0.0013 U	--	--	--
PCB 132	µg/kg	**0.155**	**0.0567**	**0.277**	**0.358**	**0.02**	0.0023 UJ	**0.00439 J**	**0.0661**	**0.0093 J**	--	--	--
PCB 133	µg/kg	**0.0084 J**	**0.0035 J**	0.054 UJ	**0.0444**	0.0019 U	0.00064 U	0.00037 U	**0.00358 J**	0.0011 U	--	--	--
PCB 134/143	µg/kg	**0.0229**	**0.008 J**	**0.0556**	**0.0576**	**0.0025 J**	0.00069 U	0.00075 UJ	**0.00956 J**	0.002 UJ	--	--	--
PCB 135/151	µg/kg	**0.119**	**0.0511**	**0.439**	**0.581**	**0.0233**	0.003 UJ	**0.00377 J**	**0.0465**	**0.0094 J**	--	--	--
PCB 136	µg/kg	**0.0373**	**0.0166 J**	**0.122**	**0.176**	**0.00812 J**	**0.00069 J**	**0.00102 J**	**0.0143 J**	**0.00272 J**	--	--	--
PCB 137/164	µg/kg	**0.0477**	**0.0166 J**	**0.0803**	**0.106**	0.0055 UJ	0.00051 U	0.0015 UJ	**0.0187**	**0.00459 J**	--	--	--
PCB 139/140	µg/kg	**0.0081 J**	**0.0034 J**	0.018 UJ	**0.0199**	0.0017 U	0.00058 U	0.00034 U	0.0027 UJ	0.00098 U	--	--	--
PCB 141	µg/kg	**0.063**	**0.0231**	**0.124**	**0.202**	**0.0099 J**	0.00059 U	0.0021 UJ	**0.0247**	**0.0058 J**	--	--	--
PCB 142	µg/kg	0.0013 U	0.0016 U	0.0034 U	0.0028 U	0.0019 U	0.00066 U	0.00039 U	0.00068 U	0.0011 U	--	--	--
PCB 144	µg/kg	**0.016 J**	0.0051 UJ	**0.0305**	**0.0464**	**0.00195 J**	0.00043 U	**0.0004 J**	**0.0064 J**	0.0011 UJ	--	--	--
PCB 145	µg/kg	0.00034 U	0.00031 U	0.00096 U	0.00071 U	0.00048 U	0.00033 U	0.00026 U	0.00025 U	0.0003 U	--	--	--
PCB 146	µg/kg	**0.0683**	**0.0312**	**0.38**	**0.417**	**0.0119 J**	0.0014 UJ	**0.0026 J**	**0.0331**	**0.00612 J**	--	--	--
PCB 147/149	µg/kg	**0.293**	**0.12**	**0.913**	**1.4**	**0.0623**	**0.00751 J**	**0.0113 J**	**0.123**	**0.0239**	--	--	--
PCB 148	µg/kg	**0.00126 J**	0.00048 UJ	**0.0179 J**	**0.00787 J**	0.00062 U	0.00044 U	0.00034 U	0.00033 U	0.00039 U	--	--	--
PCB 150	µg/kg	**0.00097 J**	0.00029 U	**0.0134 J**	**0.00824 J**	0.00077 UJ	0.00031 U	0.00024 U	0.00024 U	0.00028 U	--	--	--
PCB 152	µg/kg	0.00032 U	0.00029 U	0.0009 U	0.00067 U	0.00045 U	0.00031 U	0.00024 U	0.00024 U	0.00028 U	--	--	--
PCB 153/168	µg/kg	**0.355**	**0.154**	**1.01**	**1.6**	**0.0595**	**0.00858 J**	**0.0146 J**	**0.153**	**0.0363**	--	--	--
PCB 154	µg/kg	**0.00718 J**	**0.00491 J**	**0.0736**	**0.055**	0.0056 UJ	0.00037 U	0.00028 U	0.0032 UJ	0.00033 U	--	--	--
PCB 155	µg/kg	0.00024 U	0.00023 U	0.0012 UJ	0.00081 U	0.00032 U	0.00024 U	0.00019 U	0.00019 U	0.00022 U	--	--	--
PCB 156/157	µg/kg	**0.0552**	0.016 UJ	**0.0659**	**0.055**	**0.0049 J**	0.00067 U	0.0019 UJ	**0.0218 J**	**0.0052 J**	--	--	--
PCB 158	µg/kg	**0.0369**	**0.0127 J**	**0.0597**	**0.0614**	**0.0046 J**	**0.00086 J**	0.0012 UJ	**0.013 J**	0.0027 UJ	--	--	--
PCB 159	µg/kg	**0.0017 J**	0.001 U	0.0068 UJ	**0.0151**	0.0012 U	0.00043 U	0.00025 U	**0.00116 J**	0.00072 U	--	--	--
PCB 160	µg/kg	0.00093 U	0.0011 U	0.0025 U	0.002 U	0.0014 U	0.00048 U	0.00028 U	0.00049 U	0.00081 U	--	--	--
PCB 161	µg/kg	0.00084 U	0.001 U	0.0022 U	0.0018 U	0.0013 U	0.00044 U	0.00026 U	0.00045 U	0.00074 U	--	--	--
PCB 162	µg/kg	**0.00143 J**	0.0011 U	**0.0027 J**	0.0019 U	0.0013 U	0.00046 U	0.00027 U	**0.00079 J**	0.00077 U	--	--	--
PCB 165	µg/kg	0.00096 U	0.0012 U	**0.0037 J**	**0.0063 J**	0.0015 U	0.0005 U	0.00029 U	0.00051 U	0.00084 U	--	--	--
PCB 167	µg/kg	**0.017 J**	**0.0069 J**	**0.0245**	**0.0209**	0.0015 UJ	0.00045 U	0.00086 UJ	**0.00636 J**	0.0014 UJ	--	--	--
PCB 169	µg/kg	0.0011 U	0.0013 U	0.0029 U	0.0049 UJ	0.0018 U	0.00059 U	0.00033 U	0.00053 U	0.00098 U	--	--	--
PCB 170	µg/kg	**0.0665**	**0.0338**	**0.147**	**0.38**	**0.0125 J**	**0.0027 J**	0.0029 UJ	**0.0245**	0.0089 UJ	--	--	--
PCB 171/173	µg/kg	0.018 UJ	**0.00919 J**	0.046 UJ	**0.138**	0.0025 UJ	**0.0013 J**	**0.00091 J**	**0.00795 J**	0.0024 UJ	--	--	--
PCB 172	µg/kg	**0.0115 J**	**0.00587 J**	**0.026**	**0.0709**	0.0026 UJ	0.0006 UJ	**0.00073 J**	**0.00499 J**	**0.00161 J**	--	--	--
PCB 174	µg/kg	**0.0588**	**0.0312**	**0.175**	**0.425**	**0.0154**	**0.00236 J**	**0.00322 J**	**0.0256**	**0.00748 J**	--	--	--
PCB 175	µg/kg	0.0027 UJ	**0.00111 J**	0.005 UJ	**0.0234**	**0.00092 J**	0.00047 U	0.00016 U	0.0013 UJ	0.00052 U	--	--	--
PCB 176	µg/kg	**0.00869 J**	**0.00446 J**	**0.0263**	**0.0649**	0.002 UJ	0.00036 U	**0.00051 J**	**0.00352 J**	0.0004 U	--	--	--
PCB 177	µg/kg	**0.0388**	**0.0189**	**0.139**	**0.249**	0.0069 UJ	**0.00164 J**	**0.00205 J**	**0.0144 J**	0.0047 UJ	--	--	--
PCB 178	µg/kg	**0.0165 J**	**0.0095 J**	**0.0742**	**0.101**	**0.00402 J**	0.00049 U	0.00055 UJ	0.0049 UJ	**0.0017 J**	--	--	--
PCB 179	µg/kg	**0.0261**	**0.0159 J**	**0.123**	**0.202**	**0.00736 J**	**0.00134 J**	**0.00104 J**	**0.0113 J**	0.0034 UJ	--	--	--
PCB 180/193	µg/kg	**0.137**	**0.0725**	**0.371**	**0.958**	**0.0327**	0.006 UJ	**0.00783 J**	**0.0591**	**0.0187**	--	--	--
PCB 181	µg/kg	0.00083 UJ	0.00052 U	0.0017 U	0.0014 U	0.00049 U	0.00048 U	0.00016 U	0.00043 U	0.00053 U	--	--	--
PCB 182	µg/kg	**0.00095 J**	0.0005 U	0.0016 U	0.0048 UJ	0.00047 U	0.00045 U	0.00015 U	0.00045 UJ	0.0005 U	--	--	--
PCB 183	µg/kg	**0.0388**	**0.0203**	**0.109**	**0.28**	**0.0114 J**	0.0015 UJ	0.0016 UJ	**0.0164 J**	**0.00447 J**	--	--	--
PCB 184	µg/kg	0.00036 U	0.00039 U	0.0012 U	0.001 U	0.00037 U	0.00036 U	0.00012 U	0.00032 U	0.0004 U	--	--	--
PCB 185	µg/kg	**0.00474 J**	0.003 UJ	**0.0145 J**	**0.0268**	0.0011 UJ	0.00048 U	**0.00022 J**	**0.00178 J**	0.00089 UJ	--	--	--
PCB 186	µg/kg	0.00037 U	0.00041 U	0.0013 U	0.0011 U	0.00038 U	0.00038 U	0.00013 U	0.00034 U	0.00042 U	--	--	--
PCB 187	µg/kg	**0.0852**	**0.0467**	**0.344**	**0.618**	**0.0219**	0.0033 UJ	**0.00545 J**	**0.0346**	**0.014 J**	--	--	--
PCB 188	µg/kg	0.0003 U	0.00031 U	**0.0023 J**	0.0013 U	0.00035 U	0.00033 U	0.00012 U	0.00033 U	0.0004 U	--	--	--
PCB 189	µg/kg	0.0022 UJ	0.0015 UJ	0.0064 UJ	0.011 UJ	0.00055 UJ	0.00043 U	0.00017 U	**0.00158 J**	0.0005 U	--	--	--
PCB 190	µg/kg	0.0082 UJ	**0.00553 J**	**0.0224**	**0.0554**	**0.00225 J**	**0.00073 J**	0.00029 UJ	**0.00357 J**	0.0014 UJ	--	--	--
PCB 191	µg/kg	**0.00235 J**	0.00094 UJ	**0.0062 J**	**0.0144 J**	0.0006 UJ	0.00036 U	0.00012 U	**0.00117 J**	0.00053 UJ	--	--	--
PCB 192	µg/kg	0.00039 U	0.00043 U	0.0014 U	0.0011 U	0.0004 U	0.00039 U	0.00013 U	0.00035 U	0.00044 U	--	--	--

Please refer to notes on the last page of this table.

Table 3 - Sediment Sample Analytical Results
Upriver Reach, Lower Willamette River
Portland Oregon

Analyte	Unit[a]	RM16.1E-SED1 28-Oct-19	RM16.1E-SED1-DUP 28-Oct-19	RM16.3E-SED2 29-Oct-19	RM16.3E-SED3 29-Oct-19	RM16.3E-SED4 29-Oct-19	RM16.4E-SED5 29-Oct-19	RM19.4W-SED6 28-Oct-19	RM19.5W-SED7 28-Oct-19	RM19.6W-SED8 28-Oct-19	PHSS[b] CUL	PHSS[b] RAL	DEQ Level II Eco SLVs[b]
PCB Congeners (Continued)													
PCB 194	µg/kg	0.02 UJ	0.0125 J	0.0791	0.189	0.0062 UJ	0.00189 J	0.00195 J	0.0138 J	0.00484 J	--	--	--
PCB 195	µg/kg	0.00911 J	0.00527 J	0.0294	0.0714	0.0026 J	0.00082 J	0.00067 J	0.005 J	0.0018 UJ	--	--	--
PCB 196	µg/kg	0.0124 J	0.00723 J	0.0532	0.115	0.00451 J	0.00046 UJ	0.00075 J	0.008 UJ	0.0016 UJ	--	--	--
PCB 197	µg/kg	0.00076 UJ	0.00037 UJ	0.0036 UJ	0.00604 J	0.00028 U	0.00022 U	0.00019 UJ	0.00085 UJ	0.00039 U	--	--	--
PCB 198/199	µg/kg	0.0305	0.0192	0.109	0.202	0.01 J	0.0017 UJ	0.0031 UJ	0.0198	0.00712 J	--	--	--
PCB 200	µg/kg	0.00336 J	0.00188 J	0.0125 J	0.0223	0.00068 UJ	0.0002 U	0.00031 J	0.0018 UJ	0.00054 UJ	--	--	--
PCB 201	µg/kg	0.0038 UJ	0.00198 J	0.0192	0.0211	0.00168 J	0.00021 U	0.00028 UJ	0.0024 UJ	0.00046 UJ	--	--	--
PCB 202	µg/kg	0.0061 UJ	0.00424 J	0.022	0.0352	0.0014 UJ	0.00019 U	0.00052 UJ	0.0041 J	0.0016 J	--	--	--
PCB 203	µg/kg	0.0203	0.0105 J	0.0651	0.135	0.00575 J	0.00072 UJ	0.0016 UJ	0.0117 J	0.0047 UJ	--	--	--
PCB 204	µg/kg	0.00023 U	0.00017 U	0.0021 U	0.00048 U	0.00027 U	0.00021 U	0.00016 U	0.00015 U	0.00037 U	--	--	--
PCB 205	µg/kg	0.0012 UJ	0.00027 U	0.0055 J	0.0102 J	0.00047 U	0.00034 U	0.00025 U	0.0014 J	0.00066 U	--	--	--
PCB 206	µg/kg	0.014 J	0.00848 J	0.0514	0.0554	0.004 UJ	0.0018 J	0.0016 J	0.00861 J	0.0051 J	--	--	--
PCB 207	µg/kg	0.0017 UJ	0.0011 UJ	0.006 J	0.0048 UJ	0.00094 U	0.00079 U	0.00042 U	0.00137 J	0.0011 U	--	--	--
PCB 208	µg/kg	0.0043 UJ	0.00209 J	0.014 UJ	0.016	0.00177 J	0.0007 U	0.00086 J	0.00313 J	0.0018 UJ	--	--	--
PCB 209	µg/kg	0.0172 J	0.00931 J	0.0555	0.0423	0.00541 J	0.00076 J	0.0033 UJ	0.0155 J	0.00603 J	--	--	--
Monochlorobiphenyls	µg/kg	0.0105 J	0.00556 J	0.0337 J	0.0086 J	0.00159 J	0.00224 J	0.00384 J	0.00487 J	0.00487 J	--	--	--
Dichlorobiphenyls	µg/kg	0.147 J	0.108 J	0.165 J	0.101 J	0.0408 J	0.0521 J	0.0967 J	0.122 J	0.0952 J	--	--	--
Trichlorobiphenyls	µg/kg	0.516 J	0.178 J	0.437 J	0.244 J	0.0501 J	0.0269 J	0.0506 J	0.175 J	0.0648 J	--	--	--
Tetrachlorobiphenyls	µg/kg	1.78 J	0.693 J	1.67 J	0.966 J	0.211 J	0.0185 J	0.0698 J	0.666 J	0.139 J	--	--	--
Pentachlorobiphenyls	µg/kg	2.97 J	0.991 J	3.96 J	2.57 J	0.261 J	0.018 J	0.09 J	1.02 J	0.178 J	--	--	--
Hexachlorobiphenyls	µg/kg	1.89 J	0.744 J	4.77 J	6.72 J	0.295 J	0.0377 J	0.0677 J	0.783 J	0.164 J	--	--	--
Heptachlorobiphenyls	µg/kg	0.528 J	0.28 J	1.64 J	3.62 J	0.125 J	0.0215 J	0.0273 J	0.217 J	0.0702 J	--	--	--
Octachlorobiphenyls	µg/kg	0.108 J	0.0632 J	0.399 J	0.807 J	0.0328 J	0.00559 J	0.00937 J	0.0689 J	0.0227 J	--	--	--
Nonachlorobiphenyls	µg/kg	0.02 J	0.0117 J	0.0714 J	0.0762 J	0.00577 J	0.00184 J	0.00246 J	0.0131 J	0.00688 J	--	--	--
Decachlorobiphenyl	µg/kg	0.0172 J	0.00931 J	0.0555 J	0.0423 J	0.00541 J	0.00076 J	0.0033 J	0.0155 J	0.00603 J	--	--	--
Total PCBs (ND = 0)	µg/kg	7.77 JT	2.99 JT	12.83 JT	14.98 JT	0.84 JT	0.05 JT	0.33 JT	3.01 JT	0.63 JT	9	75	34
Total PCBs (ND = 1/2 MDL)	µg/kg	7.90 JT	3.06 JT	13.09 JT	15.13 JT	0.98 JT	0.16 JT	0.39 JT	3.07 JT	0.73 JT	9	75	34

Notes:
[a]Units are provided on a dry-weight basis.
[b]Screening levels from EPA (2017) for the PHSS and DEQ (2001) for ecological SLVs.
[c]The 2019 Explanation of Significant Differences updated CULs for cPAHs and the RAL for total PAHs. For CULs, the 85 µg/kg CUL is for beach areas and the 774 µg/kg CUL is for nearshore sediment excluding beach areas.
J = Reported value is estimated.
T = Value is a mathematically derived total.
U = Analyte was not detected above the MDL.

Acronyms:
BaP Eq - Benzo(a)pyrene equivalents
cPAHs = carcinogenic polycyclic aromatic hydrocarbons
CUL = Cleanup Level
Dioxin/Furan TEQ = 2,3,7,8-TCDD Eq
MDL = method detection limit
mg/kg = milligrams per kilogram
ND = Not detected above the MDL
ng/kg = nanograms per kilogram
PAH = polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PBDEs = Polybrominated diphenyl ethers
PHSS= Portland Harbor Superfund Site
PSEP = Puget Sound Estuary Protocol
RAL = Remedial Action Level
SLV = Screening Level Value
TEQ = Toxic Equivalency Quotient
µg/kg = micrograms per kilogram

Table 4 - Rinsate Blank Analytical Results
Upriver Reach, Lower Willamette River
Portland Oregon

Analyte	Unit	RINSATE BLANK 28-Oct-19
Conventional Parameters		
Total Organic Carbon	µg/L	349 U
Metals		
Arsenic	µg/L	0.25 U
Cadmium	µg/L	0.16 U
Chromium	µg/L	1.4 UJ
Copper	µg/L	0.52 U
Lead	µg/L	**0.594 J**
Manganese	µg/L	1.71 UJ
Mercury	µg/L	0.0490 U
Nickel	µg/L	0.35 U
Zinc	µg/L	**4.24 J**
Total Petroleum Hydrocarbons		
Diesel-Range Hydrocarbons	µg/L	**100 J**
Dioxins/Furans (Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans)		
2,3,7,8-TCDD	pg/L	2.4 U
1,2,3,7,8-PeCDD	pg/L	1.7 U
1,2,3,4,7,8-HxCDD	pg/L	2.9 U
1,2,3,6,7,8-HxCDD	pg/L	2.8 U
1,2,3,7,8,9-HxCDD	pg/L	2.8 U
1,2,3,4,6,7,8-HpCDD	pg/L	**2.5 J**
OCDD	pg/L	9.1 UJ
2,3,7,8-TCDF	pg/L	1.1 U
1,2,3,7,8-PeCDF	pg/L	0.74 U
2,3,4,7,8-PeCDF	pg/L	0.58 U
1,2,3,4,7,8-HxCDF	pg/L	1.1 U
1,2,3,6,7,8-HxCDF	pg/L	1.1 U
1,2,3,7,8,9-HxCDF	pg/L	1.4 U
2,3,4,6,7,8-HxCDF	pg/L	1.1 U
1,2,3,4,6,7,8-HpCDF	pg/L	1.1 U
1,2,3,4,7,8,9-HpCDF	pg/L	1.3 U
OCDF	pg/L	1.2 U
Pesticides		
2,4'-DDD	ng/L	0.38 U
4,4'-DDD	ng/L	0.25 U
2,4'-DDE	ng/L	0.27 U
4,4'-DDE	ng/L	0.35 U
2,4'-DDT	ng/L	0.38 U
4,4'-DDT	ng/L	0.73 U
cis-Chlordane	ng/L	0.51 U
trans-Chlordane	ng/L	0.54 U
cis-Nonachlor	ng/L	0.42 U
trans-Nonachlor	ng/L	0.53 U
Oxychlordane	ng/L	0.12 U
Aldrin	ng/L	0.076 U
alpha-BHC	ng/L	0.72 U
beta-BHC	ng/L	1.0 U
delta-BHC	ng/L	1.1 U
Gamma-HCH (Lindane)	ng/L	0.94 U
Chlorpyrifos	ng/L	0.69 U
Dicofol	ng/L	3.1 U
Dieldrin	ng/L	0.20 U
Endosulfan I	ng/L	0.22 U
Endosulfan II	ng/L	0.59 U
Endosulfan Sulfate	ng/L	0.94 U
Endrin	ng/L	0.21 U

Please refer to notes on the last page of this table.

Table 4 - Rinsate Blank Analytical Results
Upriver Reach, Lower Willamette River
Portland Oregon

Analyte	Unit	RINSATE BLANK 28-Oct-19
Pesticides (Continued)		
Endrin Aldehyde	ng/L	0.20 U
Endrin Ketone	ng/L	1.2 U
Heptachlor	ng/L	0.056 U
Heptachlor Epoxide A	ng/L	0.14 U
Heptachlor Epoxide B	ng/L	1.0 U
Hexachlorobenzene	ng/L	0.077 U
Isodrin	ng/L	0.12 U
Methoxychlor	ng/L	0.11 U
Mirex	ng/L	0.12 U
Octachlorostyrene	ng/L	0.15 U
Polycyclic Aromatic Hydrocarbons (PAHs)		
LPAHs		
2-Methylnaphthalene	µg/L	0.0100 UJ
Acenaphthene	µg/L	0.0100 U
Acenaphthylene	µg/L	0.0120 U
Anthracene	µg/L	0.0140 U
Fluorene	µg/L	0.0157 U
Naphthalene	µg/L	0.0228 UJ
Phenanthrene	µg/L	0.0082 U
HPAHs		
Benzo(a)anthracene	µg/L	0.00410 U
Benzo(a)pyrene	µg/L	0.01160 U
Benzo(b)fluoranthene	µg/L	0.00212 U
Benzo(g,h,i)perylene	µg/L	0.00227 U
Benzo(k)fluoranthene	µg/L	0.01360 U
Chrysene	µg/L	0.01080 U
Dibenzo(a,h)anthracene	µg/L	0.00396 U
Fluoranthene	µg/L	0.01570 U
Indeno(1,2,3-cd)pyrene	µg/L	0.01480 U
Pyrene	µg/L	0.01170 U
Phenols		
Pentachlorophenol	µg/L	0.313 U
Phthalates		
Bis(2-Ethylhexyl) Phthalate	µg/L	0.709 U
Polybrominated Diphenyl Ethers (PBDEs)		
PBDE 17/25	pg/L	1.4 U
PBDE 28/33	pg/L	1.3 U
PBDE 47	pg/L	17.7 UJ
PBDE 66	pg/L	1.0 U
PBDE 71	pg/L	1.0 U
PBDE 85	pg/L	1.1 U
PBDE 99	pg/L	24.7 UJ
PBDE 100	pg/L	**5.67 J**
PBDE 128	pg/L	5.2 U
PBDE 138/166	pg/L	5.1 U
PBDE 153	pg/L	3.0 U
PBDE 154	pg/L	1.9 U
PBDE 183	pg/L	1.4 U
PBDE 190	pg/L	2.7 U
PBDE 203	pg/L	1.9 U
PBDE 206	pg/L	3.6 U
PBDE 209	pg/L	11 U
PCB 1	pg/L	7.3 U
PCB 2	pg/L	7.8 U
PCB 3	pg/L	8.8 U

Please refer to notes on the last page of this table.

Table 4 - Rinsate Blank Analytical Results
Upriver Reach, Lower Willamette River
Portland Oregon

Analyte	Unit	RINSATE BLANK 28-Oct-19
Polychlorinated Biphenyl (PCB) Congeners		
PCB 4	pg/L	110 U
PCB 5	pg/L	67 U
PCB 6	pg/L	59 U
PCB 7	pg/L	60 U
PCB 8	pg/L	55 U
PCB 9	pg/L	61 U
PCB 10	pg/L	61 U
PCB 11	pg/L	35 U
PCB 12/13	pg/L	35 U
PCB 14	pg/L	33 U
PCB 15	pg/L	40 U
PCB 16	pg/L	15 U
PCB 17	pg/L	12 U
PCB 18/30	pg/L	11 U
PCB 19	pg/L	13 U
PCB 20/28	pg/L	11 UJ
PCB 21/33	pg/L	11 U
PCB 22	pg/L	11 U
PCB 23	pg/L	10 U
PCB 24	pg/L	9.4 U
PCB 25	pg/L	10 U
PCB 26/29	pg/L	10 U
PCB 27	pg/L	9 U
PCB 31	pg/L	9.5 U
PCB 32	pg/L	8.4 U
PCB 34	pg/L	11 U
PCB 35	pg/L	10 U
PCB 36	pg/L	9.5 U
PCB 37	pg/L	12 U
PCB 38	pg/L	10 U
PCB 39	pg/L	9.8 U
PCB 40/41/ 71	pg/L	9.6 U
PCB 42	pg/L	11 U
PCB 43	pg/L	11 U
PCB 44/47/65	pg/L	9.1 U
PCB 45/51	pg/L	10 U
PCB 46	pg/L	11 U
PCB 48	pg/L	9.7 U
PCB 49/69	pg/L	8.8 U
PCB 50/53	pg/L	9.8 U
PCB 52	pg/L	9.4 U
PCB 54	pg/L	8.6 U
PCB 55	pg/L	9.9 U
PCB 56	pg/L	9.9 U
PCB 57	pg/L	9.6 U
PCB 58	pg/L	9.6 U
PCB 59/62/75	pg/L	7.4 U
PCB 60	pg/L	9.7 U
PCB 61/70/74/76	pg/L	9.7 U
PCB 63	pg/L	9.1 U
PCB 64	pg/L	7.8 U
PCB 66	pg/L	9.1 U
PCB 67	pg/L	8.6 U
PCB 68	pg/L	8.8 U
PCB 72	pg/L	9.2 U

Please refer to notes on the last page of this table.

Table 4 - Rinsate Blank Analytical Results
Upriver Reach, Lower Willamette River
Portland Oregon

Analyte	Unit	RINSATE BLANK 28-Oct-19
PCB Congeners (Continued)		
PCB 73	pg/L	7.9 U
PCB 77	pg/L	10 U
PCB 78	pg/L	9.7 U
PCB 79	pg/L	8.7 U
PCB 80	pg/L	8.4 U
PCB 81	pg/L	11 U
PCB 82	pg/L	13 U
PCB 83/99	pg/L	12 U
PCB 84	pg/L	13 U
PCB 85/110/115/116/117	pg/L	9.4 U
PCB 86/87/97/109/119/125	pg/L	10 U
PCB 88/91	pg/L	11 U
PCB 89	pg/L	12 U
PCB 90/101/113	pg/L	10 U
PCB 92	pg/L	12 U
PCB 93/100/102/98	pg/L	12 U
PCB 94	pg/L	12 U
PCB 95	pg/L	11 U
PCB 96	pg/L	8.4 U
PCB 103	pg/L	10 U
PCB 104	pg/L	8.1 U
PCB 105	pg/L	9.8 U
PCB 106	pg/L	7.8 U
PCB 107	pg/L	7.3 U
PCB 108/124	pg/L	8.3 U
PCB 111	pg/L	8.7 U
PCB 112	pg/L	8.5 U
PCB 114	pg/L	10 U
PCB 118	pg/L	9.2 U
PCB 120	pg/L	8.5 U
PCB 121	pg/L	8.6 U
PCB 122	pg/L	8.7 U
PCB 123	pg/L	9.7 U
PCB 126	pg/L	9.9 U
PCB 127	pg/L	8.1 U
PCB 128/166	pg/L	3.9 U
PCB 129/138/163	pg/L	7.5 UJ
PCB 130	pg/L	5.0 U
PCB 131	pg/L	5.6 U
PCB 132	pg/L	5.0 U
PCB 133	pg/L	4.6 U
PCB 134/143	pg/L	5.1 U
PCB 135/151	pg/L	3.8 U
PCB 136	pg/L	2.8 U
PCB 137/164	pg/L	3.8 U
PCB 139/140	pg/L	4.3 U
PCB 141	pg/L	4.4 U
PCB 142	pg/L	4.8 U
PCB 144	pg/L	3.6 U
PCB 145	pg/L	2.9 U
PCB 146	pg/L	4.0 U
PCB 147/149	pg/L	4.3 U
PCB 148	pg/L	3.7 U
PCB 150	pg/L	2.8 U
PCB 152	pg/L	2.8 U

Please refer to notes on the last page of this table.

Table 4 - Rinsate Blank Analytical Results
Upriver Reach, Lower Willamette River
Portland Oregon

Analyte	Unit	RINSATE BLANK 28-Oct-19
PCB Congeners (Continued)		
PCB 153/168	pg/L	4.8 UJ
PCB 154	pg/L	3.2 U
PCB 155	pg/L	2.6 U
PCB 156/157	pg/L	4.8 U
PCB 158	pg/L	3.0 U
PCB 159	pg/L	3.3 U
PCB 160	pg/L	3.4 U
PCB 161	pg/L	3.4 U
PCB 162	pg/L	3.3 U
PCB 165	pg/L	3.7 U
PCB 167	pg/L	3.5 U
PCB 169	pg/L	3.9 U
PCB 170	pg/L	4.5 U
PCB 171/173	pg/L	4.3 U
PCB 172	pg/L	4.3 U
PCB 174	pg/L	3.8 U
PCB 175	pg/L	4.0 U
PCB 176	pg/L	3.1 U
PCB 177	pg/L	4.3 U
PCB 178	pg/L	4.1 U
PCB 179	pg/L	3.1 U
PCB 180/193	pg/L	3.7 U
PCB 181	pg/L	4.2 U
PCB 182	pg/L	3.9 U
PCB 183	pg/L	3.7 U
PCB 184	pg/L	3.0 U
PCB 185	pg/L	4.6 U
PCB 186	pg/L	3.2 U
PCB 187	pg/L	3.8 U
PCB 188	pg/L	3.2 U
PCB 189	pg/L	4.9 U
PCB 190	pg/L	3.1 U
PCB 191	pg/L	3.3 U
PCB 192	pg/L	3.5 U
PCB 194	pg/L	3.5 U
PCB 195	pg/L	3.6 U
PCB 196	pg/L	4.0 U
PCB 197	pg/L	3.0 U
PCB 198/199	pg/L	4.1 U
PCB 200	pg/L	2.8 U
PCB 201	pg/L	2.8 U
PCB 202	pg/L	3.0 U
PCB 203	pg/L	3.8 U
PCB 204	pg/L	2.9 U
PCB 205	pg/L	3.4 U
PCB 206	pg/L	11 U
PCB 207	pg/L	7.0 U
PCB 208	pg/L	6.4 U
PCB 209	pg/L	3.0 U

Please refer to notes on the last page of this table.

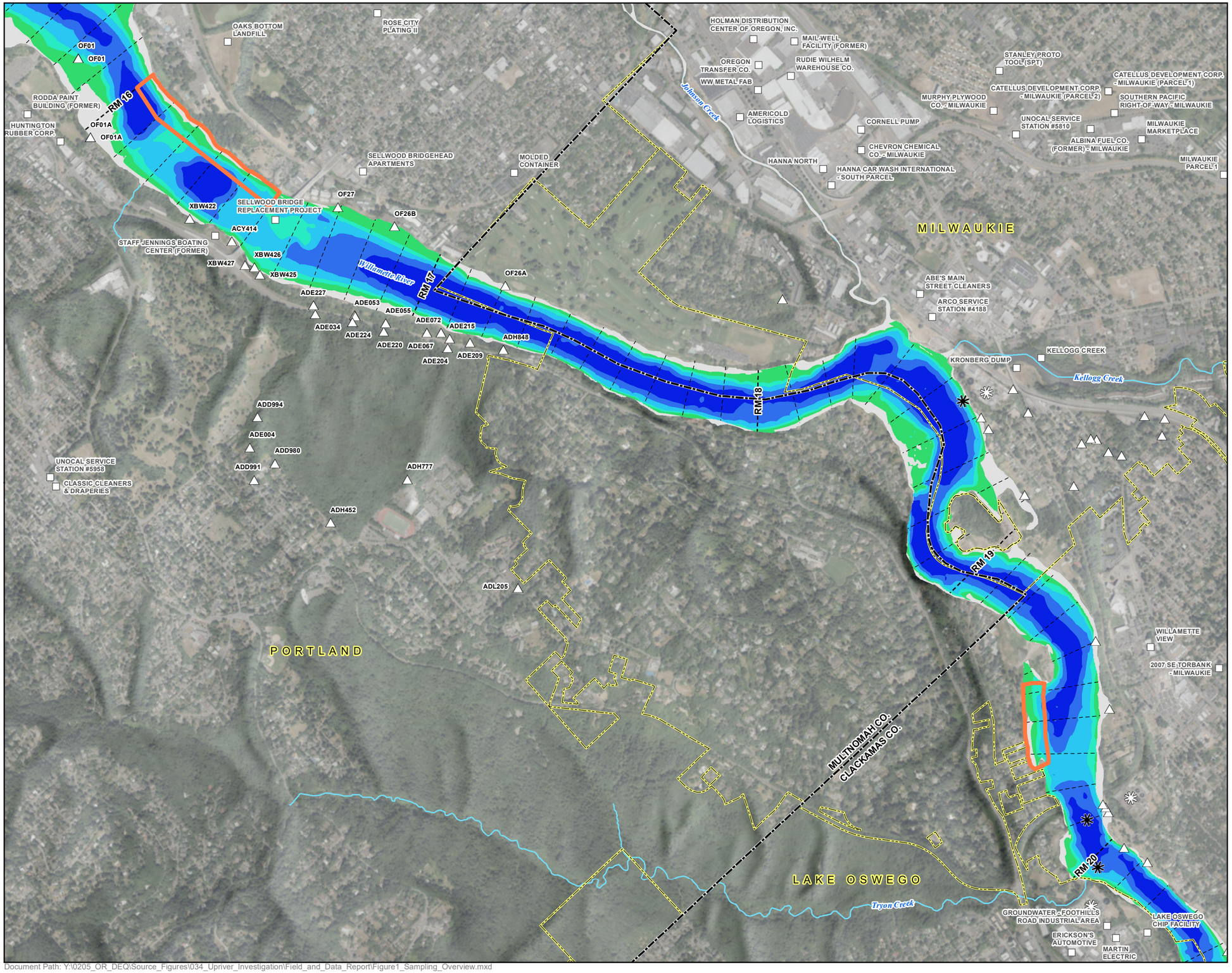
Table 4 - Rinsate Blank Analytical Results
Upriver Reach, Lower Willamette River
Portland Oregon

Analyte	Unit	RINSATE BLANK 28-Oct-19
PCB Congeners (Continued)		
Monochlorobiphenyls	pg/L	7.3 U
Dichlorobiphenyls	pg/L	33 U
Trichlorobiphenyls	pg/L	11.0 U
Tetrachlorobiphenyls	pg/L	7.4 U
Pentachlorobiphenyls	pg/L	7.3 U
Hexachlorobiphenyls	pg/L	12.3 U
Heptachlorobiphenyls	pg/L	3.0 U
Octachlorobiphenyls	pg/L	2.8 U
Nonachlorobiphenyls	pg/L	6.4 U
Decachlorobiphenyl	pg/L	3.0 U

Notes:
J = Reported value is estimated.
U = Analyte was not detected above the method detection limit.
µg/L = micrograms per liter.
ng/L = nanogram per liter.
pg/L = picogram per liter.

FIGURES

FIGURE 1
Upriver Reach Sampling Overview
Field and Data Report



LEGEND

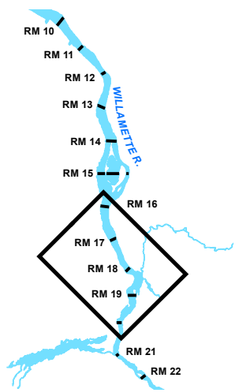
- Sampling Area Boundary

Bathymetric Surface[1]

- -10 to 0
- -20 to -10
- -40 to -20
- -60 to -40
- < -60

All Other Features

- River Mile (RM)
- DEQ ECSI Site
- Outfall
- Wastewater Treatment Plant
- Wastewater Treatment Plant Discharge Point (approximate)
- City Limit
- County Line
- Watercourse
- Waterbody



NOTES:
1. Elevations in feet are relative to Columbia River Datum (CRD), U. S. Army Corps of Engineers, Hydrographic Surveys, 1999

N

0 700 1,400 2,100
Feet

Date: November 25, 2019
Data Sources: BES, METRO, COP

GSI Water Solutions, Inc.

Document Path: Y:\0205_OR_DEQ\Source_Figures\034_Upriver_Investigation\Field_and_Data_Report\Figure1_Sampling_Overview.mxd

FIGURE 2

Upriver Reach
Sampling Locations:
River Mile 16.0 - 16.5 East

Field and Data Report

LEGEND

- Sampling Area Boundary

Sample Locations

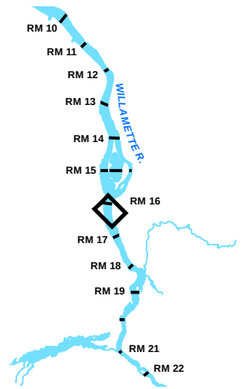
- Shoreline Sediment Sample
- Composite Sediment Sample Centroid
- Successful Sediment Power-grab Sample
- Unsuccessful Sediment Power-grab Sample
- Target Shoreline Sediment Sample
- Target Sediment Power-grab Sample

Sample Locations

- Pre-RD Surface Sediment
- Surface Sediment
- Subsurface Sediment

All Other Features

- River Mile (RM)
- DEQ ECSI Site
- Outfall/Drainage Ditch



N

0 150 300 450

Feet

Date: January 2, 2020
Data Sources: BES, METRO, COP

GSI Water Solutions, Inc.

Document Path: Y:\0205_OR_DEQ\Source_Figures\034_Upriver_Investigation\Field_and_Data_Report\Figure2_SampleArea_A.mxd

FIGURE 3

Upriver Reach
Sampling Locations:
River Mile 19.4 - 19.7 West

Field and Data Report

LEGEND

- Sampling Area Boundary

Sample Locations

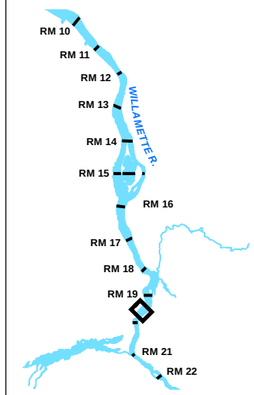
- Composite Sediment Sample Centroid
- Successful Sediment Power-grab Sample
- Target Sediment Power-grab Sample

Sample Locations

- Pre-RD Surface Sediment

All Other Features

- River Mile (RM)
- Outfall/Drainage Ditch
- City Limit



N

0 100 200 300

Feet

Date: January 2, 2020
Data Sources: BES, METRO, COP

GSI Water Solutions, Inc.

Document Path: Y:\0205_OR_DEQ\Source_Figures\034_Upriver_Investigation\Field_and_Data_Report\Figure3_SampleArea_B.mxd

APPENDIX A
Field Activities, QA/QC Procedures, and Photograph Log

APPENDIX A
FIELD ACTIVITIES, QA/QC PROCEDURES, AND PHOTOGRAPH LOG

This appendix presents the procedures that Hart Crowser and GSI used to complete sediment sampling activities for the Upriver Reach of the Lower Willamette River in Portland, Oregon (Figure 1). Field quality assurance/quality control (QA/QC) is also discussed. Photographs of the sampling activities are included at the end of this appendix. Field activities were performed on October 28 and 29, 2019.

1.0 FIELD AND SAMPLING PROCEDURES

Field and sampling procedures included the following tasks:

- Station positioning
- Sediment sampling and processing
- Decontamination procedures
- Investigation-derived waste (IDW) handling

1.1 Station Positioning

Station positions were entered into the vessels navigation software and used to navigate and position the vessel near the target area for each sample location. Station positioning was performed using the Trimble RTK GPS on-board Gravity Consulting's sampling vessel. Actual station coordinates are provided in Table 1 using the North American Datum of 1983, Oregon State Plane North Zone, in units of international feet. Field conditions that may have affected GPS data accuracy include on-water movement of the GPS unit during satellite signal acquisition and tall vertical structures (e.g., bridges) near sample stations. Based on GPS unit specifications and field conditions, GPS coordinate data appear to be accurate to within 2 meters. Station positions are presented in Table 1.

Vertical positioning was established using a pressure transducer attached to the power-grab sampler and connected via cable to the ships' navigation software. Depth measurements were collected when the power-grab sampler was deployed on the river bottom. Depth measurements were recorded to the nearest tenth of a foot and are presented in Table 1. Precision of vertical measurements may have been affected by environmental conditions, including waves and wind, river current, and water depth.

Mudline elevations are not reported on the basis of water depths because of the distance from the Morrison Bridge river gauge and the difficulty in the changing datum conversions with distance upstream. Additionally, several samples were collected along the shoreline on dry land where vertical measurements were collected using a handheld GPS device. Elevations collected using the handheld GPS are accurate to within 6 feet under normal conditions but may have been affected by environmental conditions such as satellite coverage, overhead tree coverage, and proximity to large structures.

Sample locations are shown on Figures 2 and 3 and present the target sample locations, the centroid of the three discrete grab samples for the composite sample at each sample location, and the successful and unsuccessful grab sample attempts. Shoreline sediment station locations were measured as a centroid of the three discrete grab locations and measures as a single GPS coordinate location because of the close proximity of each grab sample within a 2-foot triangular area.

1.2 Sediment Sampling and Processing

A total of nine 3-point composite samples were collected from the locations shown on Figures 2 and 3. Five samples, including a field duplicate, were collected from the river bottom and three samples were collected from the shoreline of Sellwood Riverfront Park.

Sediment samples were collected from the river bottom using a pneumatic power-grab sampler deployed from the vessel's A-frame and winch line (Photograph 9). The power grab sampler had a penetration capacity of 30 centimeters (cm) matching the target penetration depth. Following deployment, the power grab sampler was retrieved and assessed for usability based on the criteria of a minimum penetration depth of 20 cm. River substrate in the area of sample locations was variable and cobbles were frequently encountered that held the power-grab sampler jaws open allowing loss of sediment material during retrieval. Representative photographs of unsuccessful grab sample attempts are shown in Photographs 8, 11, 12, and 13.

Due to the difficulty encountered with rocky substrates, multiple unsuccessful attempts were made around sample locations RM16.1E-SED1, RM16.3E-SED2, and RM19.5W-SED7. Initial grab attempts were made within a 25-foot radius of the target location and then expanded to a 50-foot radius if grab attempts remained unsuccessful. Successful grab attempts within the 50-foot radius were not able to be made at these locations. After consultation with the Oregon Department of Environmental Quality (DEQ), sample locations were shifted to replicate the Pre-Design Investigation (PDI) sample locations; thus RM16.3E-SED2, RM19.5W-SED7, and RM16.1E-SED1 were shifted to locations with finer grained material. Sample locations were adjusted as follows:

- RM16.1E-SED1 was shifted approximately 150 feet north and angled closer to the shoreline.
- RM16.3E-SED2 was shifted approximately 230 feet northwest and angled closer to the shoreline and PDI sample SG-B458.
- RM19.5W-SED7 was shifted approximately 100 feet north towards the shoreline and towards PDI sample SG-B471.

Unsuccessful power-grab sample attempts were communicated to the DEQ Project Manager and following consultation, adjustments to sample locations were made and target locations were expanded to outside the 50-foot secondary buffer specified in the Work Plan.

Shoreline sediment samples were collected using a spade shovel consistent with the secondary sampling procedures used for the 2017 Upriver Reach Sediment Characterization investigation and described in the 2017 URSC Work Plan (GSI and Hart Crowser 2017). Secondary sampling procedures to be used in case of hand corer advancement failure were not specified in the Work Plan (GSI and Hart Crowser 2019) for this

investigation so these procedures were used for consistency with previous investigations along the Upriver Reach. Initial attempts were made to collect shoreline sediment samples using a hand corer but were unsuccessful due to either rock and cobble cover along the shoreline (RM-16.4E-SED5) or excessive friction from the primarily sand material (RM-16.3E-SED3 and RM-16.3E-SED4). The secondary sampling method was then employed to dig a cylindrical hole to a depth of 30 cm and collect a representative sample (Photographs 18, 19, and 20). Three discrete grab samples were collected within a distance of 2 feet from each other in a triangular pattern.

Sample processing was performed to homogenize each discrete sample prior to mixing and homogenizing each composite sample (Photographs 3 and 6). Each discrete grab sample was placed into a stainless-steel mixing bowl and mixed thoroughly using a stainless-steel mixing spoon for a minimum of 60 seconds (Photograph 16). Equal volume aliquots of material from each discrete sample were then placed into a clean stainless-steel mixing bowl and mixed thoroughly using a clean stainless-steel mixing spoon for a minimum of 60 seconds. Homogenized sample material was then collected and immediately labeled with the sample identification number, date and time of collection, and project identifying information and placed on ice in a cooler pending transport to the Hart Crowser office for temporary overnight storage in a dedicated sample refrigerator.

1.4 Decontamination Procedures

Personnel Decontamination. Field personnel used disposable gloves during sampling activities and washed their hands upon completion of sample processing and collection.

Equipment Decontamination. Reusable sampling equipment (e.g. power grab sampler, stainless-steel mixing bowls and spoons, etc.) were decontaminated prior to sampling and between each sample location. The power grab sampler was rinsed with river water between discrete grab samples for the same sample location and decontaminated prior to moving to the next sample location. Decontamination was performed using a phosphate free detergent solution to spray down the sampling equipment then scrubbed with handheld brushes. Equipment was then rinsed with deionized water.

1.5 IDW Handling

Following sample processing and collection, excess sediment was returned to the Willamette River in the vicinity where it was collected. Minor amounts of phosphate free detergent water were generated during decontamination activities that were containerized in a 5-gallon bucket and disposed of in a municipal sanitary sewer. Used disposable gloves, aluminum foil, and paper towels were placed in a plastic trash bag and disposed of as municipal waste in a trash dumpster at the Hart Crowser office.

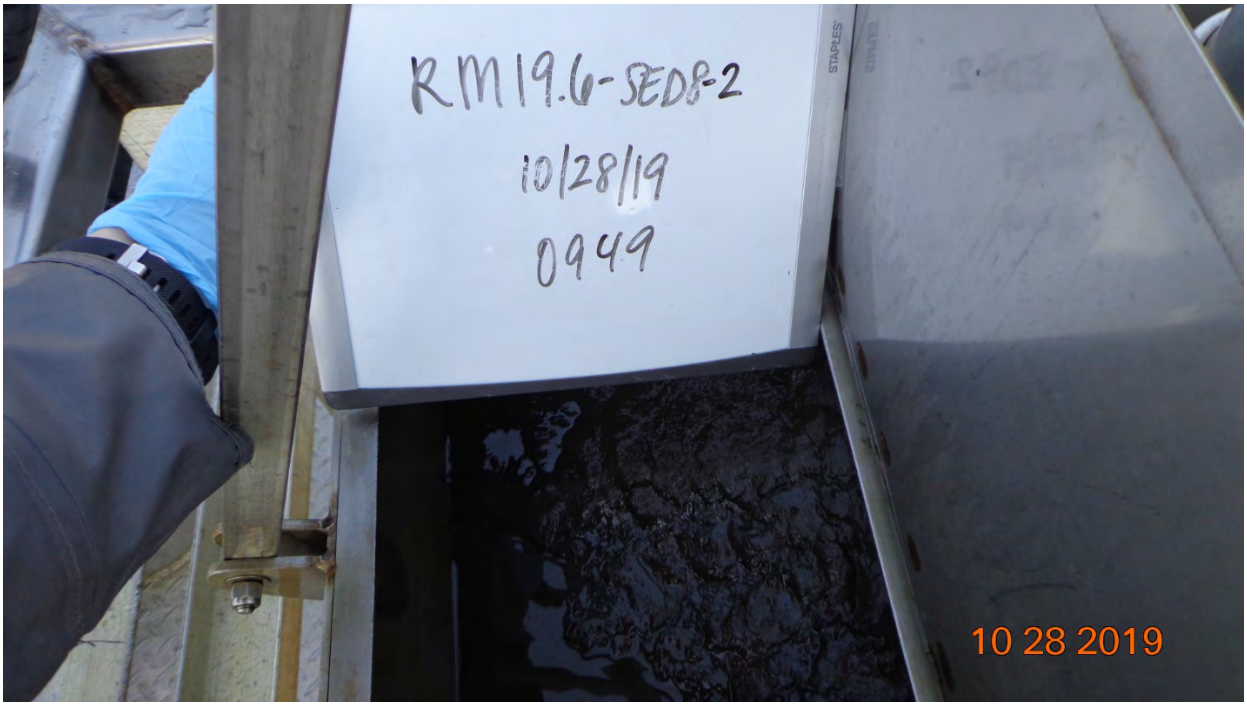
2.0 FIELD QA/QC

QA/QC was practiced throughout the field activities. As discussed above, all sampling equipment was decontaminated between sampling locations and new, disposable gloves were used for each sample. All laboratory containers, including the field duplicate and equipment rinsate blank, that were collected were marked with the project number, a unique sample identification number, the date and time of collection, and the sampler's initials. Sediment and water containers were packed in a cooled ice chest for field

storage and transported to the Hart Crowser office for temporary storage. Standard chain of custody protocols were followed at all times. Samples were stored at the Hart Crowser office in a dedicated sample refrigerator pending transfer to laboratory couriers for transport and shipment to the laboratory. QC samples collected in the field, including field duplicate and equipment rinsate blank samples, were submitted for immediate analyses along with the primary sample as a QC check.

Field duplicate sample RM16.1E-SED1-DUP was collected from homogenized sample material for RM16.1E-SED1. A field duplicate is a field collected sample submitted to the laboratory to assess the precision of laboratory equipment. A field duplicate will also assess the effectiveness of homogenization for composite samples. Once each composite sample has been homogenized, the primary sample and the field duplicate were collected from the homogenized material.

An equipment rinsate blank was collected to evaluate the effectiveness of equipment decontamination procedures for reusable sampling equipment. An equipment rinsate blank collects clean water that is run through or over reusable sampling equipment and is analyzed to determine if residual contaminants are present after equipment decontamination. The equipment rinsate blank was collected on the power-grab sampler by pouring deionized water into the sampler and collecting the water that flowed out through a crack in the sampler jaws and into laboratory supplied sample bottles. Table 4 presents the results on the rinsate blank. Chemical results detected low concentrations of lead, zinc, diesel-range hydrocarbons, 1,2,3,4,6,7,8-HpCDD, and polybrominated diphenyl ether.



Photograph 1: Successful grab sample attempt for RM19.6W-SED8.

Photograph 2: Close up view of sediment from successful grab sample attempt for RM19.6W-SED8.

Photograph 3: Sediment processing station onboard sampling vessel with sediment from RM19.6W-SED8. Individual grab samples in three bowls in background, composited sediment in bowl in foreground.

Photograph 4: Composited and homogenized sample material from RM19.6W-SED8.

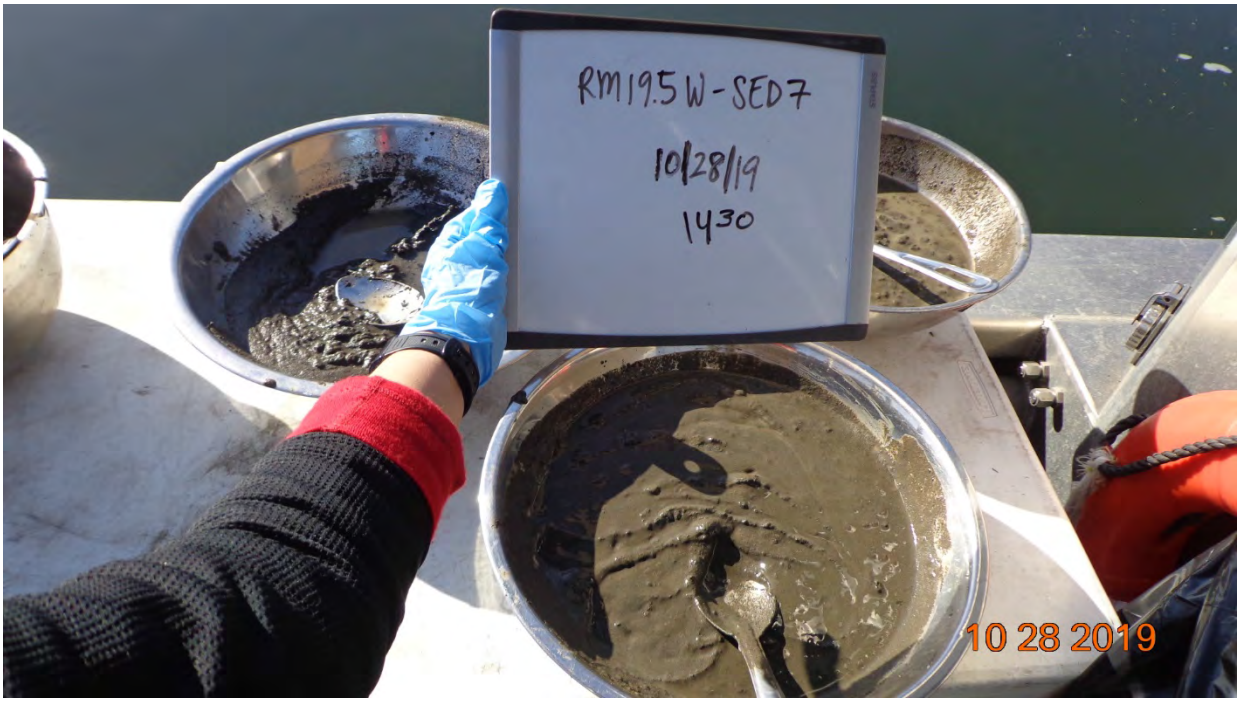
Photograph 5: Close up view of sediment from successful grab sample attempt for RM19.4W-SED6.

Photograph 6: Sediment processing station with sediment from RM19.4W-SED6. Composited sediment is in center bowl in foreground, sediment from discrete grab samples is in the other three bowls.

Photograph 7: Close up view of sediment from successful grab sample attempt for RM19.5W-SED7.

Photograph 8: Unsuccessful grab sample attempt for RM19.5W-SED7. Branch stuck in power-grab sampler jaws causing sample to wash out during retrieval.

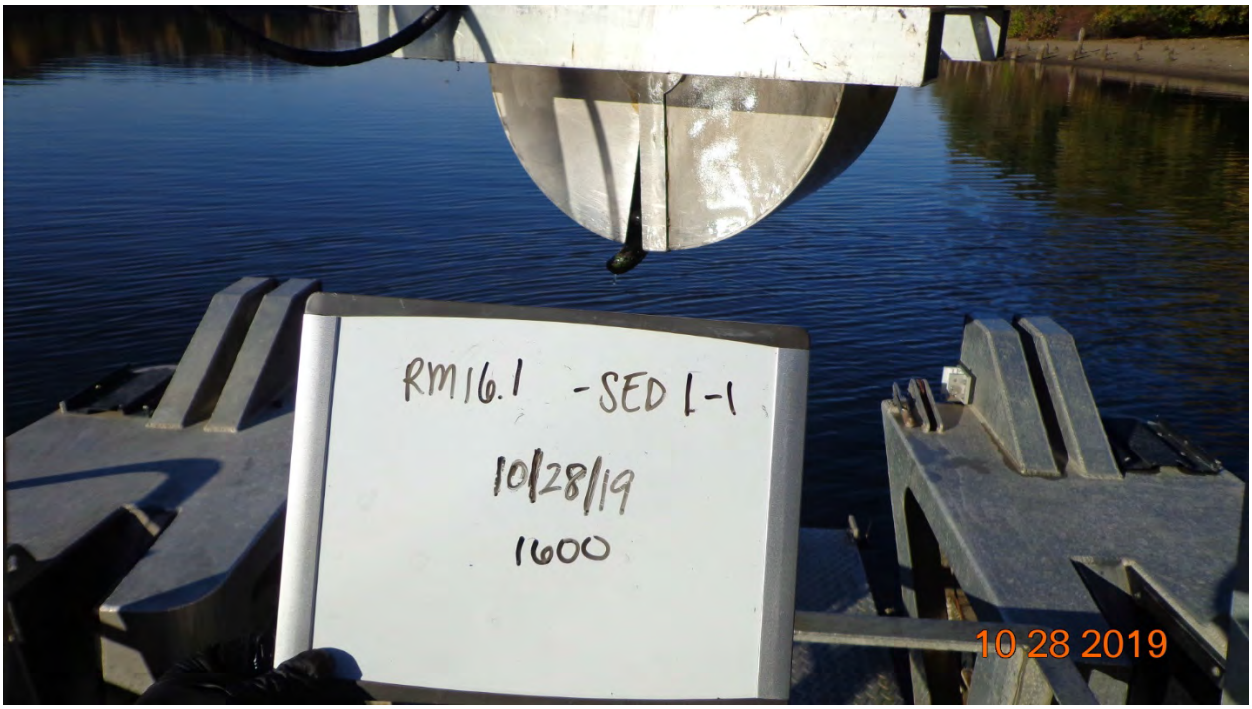
Photograph 9: Deployed power-grab sampler at sample location RM19.5W-SED7 in close proximity to privately owned boathouse. View facing west.



Photograph 10: Sediment processing station with composited and homogenized sediment for RM19.5W-SED7 in bowl in foreground below whiteboard.

Photograph 11: Unsuccessful power-grab sample attempt for RM16.3E-SED2 with partial washout of the sample material. Seven inches of sediment remains in sampler.

Photograph 12: Rocky substrate from unsuccessful power-grab sample attempt for RM16.3E-SED2.



Photograph 13: Unsuccessful power-grab sample attempt at RM16.1E-SED1. Power-grab sampler jaws held open by rocks and sediment washed out during retrieval. View facing south.

Photograph 14: Sediment from successful power-grab sample attempt for RM16.1E-SED1.

Photograph 15: Sediment from successful power-grab sample attempt for RM16.3E-SED2.

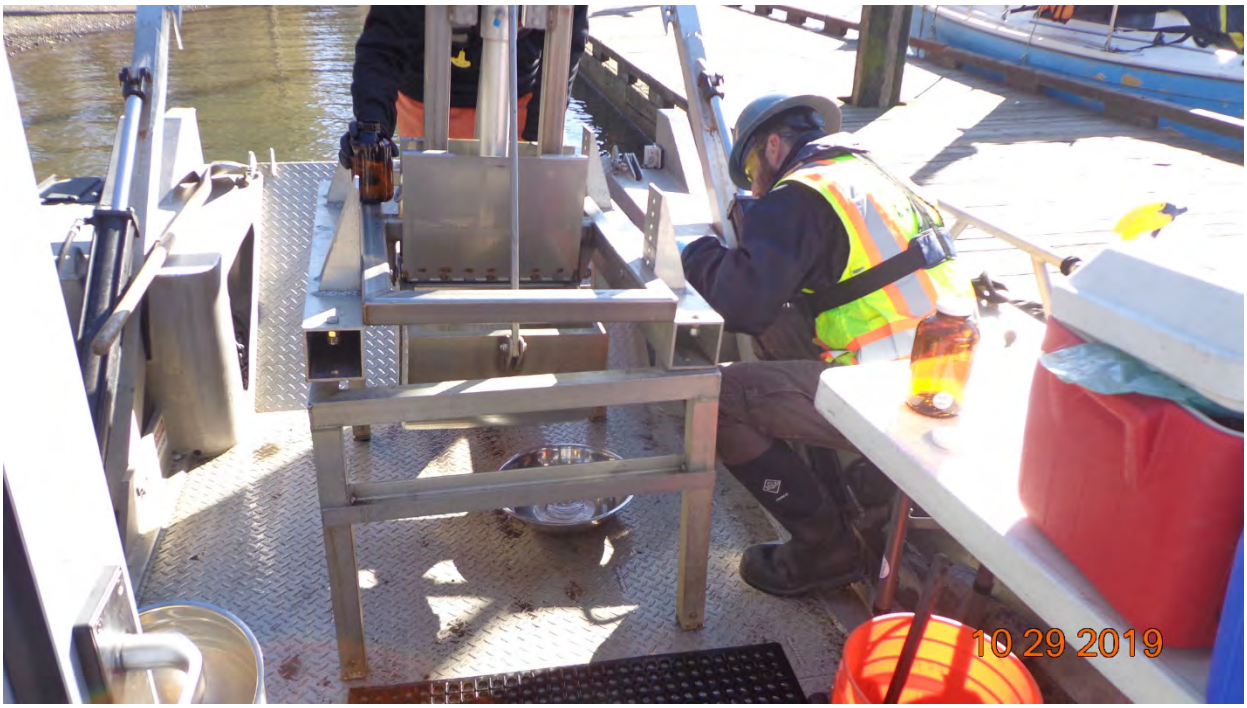
Photograph 16: Homogenization of discrete grab sample sediment for RM16.3E-SED2.

Photograph 17: View facing southeast from sampling vessel of Willamette River shoreline in vicinity of RM16.3E-SED3.

Photograph 18: Sediment sampling along shoreline at RM16.4E-SED5. Sample collected with shovel because rocky shoreline material prevented use of hand-corer sampler.

Photograph 19: RM16.3E-SED4 in center of frame with sampling vessel moored to Sellwood Riverfront Park dock in left-side background of frame. View facing north along the eastern shoreline of the Willamette River.

Photograph 20: Sample location for RM16.3E-SED4 along high water line on shoreline. View facing east.



Photograph 21: Collection of an equipment rinsate blank QC sample from the power-grab sampler aboard the sampling vessel.

APPENDIX B
Laboratory Analytical Reports

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

November 08, 2019

Oregon Dept. of Env. Quality - ODEQ

Sample Delivery Group:	L1155761
Samples Received:	10/31/2019
Project Number:	150-002-017/TASK 4
Description:	Upriver Reach Sediment Investigation

Report To: Madi Novak
700 NE Multnomah St. #600
Portland, OR 97124

Entire Report Reviewed By: Brian Ford

Brian Ford
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

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RM16.1E-SED1 L1155761-01 Solid

Collected by: AC/TL/KW | Collected date/time: 10/28/19 17:05 | Received date/time: 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1376223	1	11/07/19 10:24	11/07/19 10:36	JHH	Mt. Juliet, TN
Wet Chemistry by Method USDA LOI	WG1374319	1	11/05/19 09:26	11/05/19 10:10	TH	Mt. Juliet, TN
Mercury by Method 7471B	WG1374381	1	11/04/19 11:34	11/04/19 21:49	TCT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1374403	5	11/03/19 18:00	11/04/19 19:48	LD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1374054	1	11/02/19 15:28	11/03/19 13:05	KME	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D	WG1374081	1	11/02/19 19:10	11/03/19 19:19	LEA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1374060	1	11/02/19 15:44	11/03/19 01:44	DMG	Mt. Juliet, TN

RM16.1E-SED1-DUP L1155761-02 Solid

Collected by: AC/TL/KW | Collected date/time: 10/28/19 17:05 | Received date/time: 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1376223	1	11/07/19 10:24	11/07/19 10:36	JHH	Mt. Juliet, TN
Wet Chemistry by Method USDA LOI	WG1374319	1	11/05/19 09:26	11/05/19 10:10	TH	Mt. Juliet, TN
Mercury by Method 7471B	WG1374381	1	11/04/19 11:34	11/04/19 22:14	TCT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1374403	5	11/03/19 18:00	11/04/19 18:55	LD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1374054	1	11/02/19 15:28	11/03/19 18:56	KME	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D	WG1374081	1	11/02/19 19:10	11/03/19 17:59	LEA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1374060	1	11/02/19 15:44	11/03/19 02:05	DMG	Mt. Juliet, TN

RM16.3E-SED2 L1155761-03 Solid

Collected by: AC/TL/KW | Collected date/time: 10/29/19 10:00 | Received date/time: 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1376223	1	11/07/19 10:24	11/07/19 10:36	JHH	Mt. Juliet, TN
Wet Chemistry by Method USDA LOI	WG1374319	1	11/05/19 09:26	11/05/19 10:10	TH	Mt. Juliet, TN
Mercury by Method 7471B	WG1374381	1	11/04/19 11:34	11/04/19 22:17	TCT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1374403	5	11/03/19 18:00	11/04/19 19:52	LD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1374054	1	11/02/19 15:28	11/03/19 17:28	KME	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D	WG1374081	1	11/02/19 19:10	11/03/19 16:16	LEA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1374071	1	11/02/19 16:20	11/03/19 04:47	DMG	Mt. Juliet, TN

RM16.3E-SED3 L1155761-04 Solid

Collected by: AC/TL/KW | Collected date/time: 10/29/19 13:00 | Received date/time: 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1376223	1	11/07/19 10:24	11/07/19 10:36	JHH	Mt. Juliet, TN
Wet Chemistry by Method USDA LOI	WG1374319	1	11/05/19 09:26	11/05/19 10:10	TH	Mt. Juliet, TN
Mercury by Method 7471B	WG1374381	1	11/04/19 11:34	11/04/19 22:19	TCT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1374403	5	11/03/19 18:00	11/04/19 19:55	LD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1374054	1	11/02/19 15:28	11/03/19 00:42	KME	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D	WG1374081	1	11/02/19 19:10	11/03/19 19:39	LEA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1374071	1	11/02/19 16:20	11/03/19 05:09	DMG	Mt. Juliet, TN

RM16.3E-SED4 L1155761-05 Solid

Collected by: AC/TL/KW | Collected date/time: 10/29/19 12:05 | Received date/time: 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1376223	1	11/07/19 10:24	11/07/19 10:36	JHH	Mt. Juliet, TN
Wet Chemistry by Method USDA LOI	WG1374319	1	11/05/19 09:26	11/05/19 10:10	TH	Mt. Juliet, TN
Mercury by Method 7471B	WG1374381	1	11/04/19 11:34	11/04/19 22:22	TCT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1374403	5	11/03/19 18:00	11/04/19 19:59	LD	Mt. Juliet, TN

RM16.3E-SED4 L1155761-05 Solid

Collected by: AC/TL/KW | Collected date/time: 10/29/19 12:05 | Received date/time: 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1374054	1	11/02/19 15:28	11/03/19 17:40	KME	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D	WG1374081	1	11/02/19 19:10	11/03/19 16:36	LEA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1374071	1	11/02/19 16:20	11/03/19 05:32	DMG	Mt. Juliet, TN

RM16.4E-SED5 L1155761-06 Solid

Collected by: AC/TL/KW | Collected date/time: 10/29/19 11:35 | Received date/time: 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1376223	1	11/07/19 10:24	11/07/19 10:36	JHH	Mt. Juliet, TN
Wet Chemistry by Method USDA LOI	WG1374319	1	11/05/19 09:26	11/05/19 10:10	TH	Mt. Juliet, TN
Mercury by Method 7471B	WG1374381	1	11/04/19 11:34	11/04/19 22:30	TCT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1374403	5	11/03/19 18:00	11/04/19 20:03	LD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1374054	1	11/02/19 15:28	11/04/19 14:24	KME	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D	WG1374081	1	11/02/19 19:10	11/03/19 16:57	LEA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1374071	1	11/02/19 16:20	11/03/19 05:54	DMG	Mt. Juliet, TN

RM19.4W-SED6 L1155761-07 Solid

Collected by: AC/TL/KW | Collected date/time: 10/28/19 12:00 | Received date/time: 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1376223	1	11/07/19 10:24	11/07/19 10:36	JHH	Mt. Juliet, TN
Wet Chemistry by Method USDA LOI	WG1374319	1	11/05/19 09:26	11/05/19 10:10	TH	Mt. Juliet, TN
Mercury by Method 7471B	WG1374381	1	11/04/19 11:34	11/04/19 22:32	TCT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1374403	5	11/03/19 18:00	11/04/19 20:07	LD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1374054	1	11/02/19 15:28	11/03/19 18:18	KME	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D	WG1374081	1	11/02/19 19:10	11/03/19 18:40	LEA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1374060	1	11/02/19 15:44	11/03/19 02:26	DMG	Mt. Juliet, TN

RM19.5W-SED7 L1155761-08 Solid

Collected by: AC/TL/KW | Collected date/time: 10/28/19 14:30 | Received date/time: 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1376223	1	11/07/19 10:24	11/07/19 10:36	JHH	Mt. Juliet, TN
Wet Chemistry by Method USDA LOI	WG1374319	1	11/05/19 09:26	11/05/19 10:10	TH	Mt. Juliet, TN
Mercury by Method 7471B	WG1374381	1	11/04/19 11:34	11/04/19 22:35	TCT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1374403	5	11/03/19 18:00	11/04/19 20:11	LD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1374054	1	11/02/19 15:28	11/03/19 18:06	KME	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D	WG1374081	1	11/02/19 19:10	11/03/19 18:59	LEA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1374060	1	11/02/19 15:44	11/03/19 02:46	DMG	Mt. Juliet, TN

RM19.6W-SED8 L1155761-09 Solid

Collected by: AC/TL/KW | Collected date/time: 10/28/19 10:15 | Received date/time: 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1376223	1	11/07/19 10:24	11/07/19 10:36	JHH	Mt. Juliet, TN
Wet Chemistry by Method USDA LOI	WG1374319	1	11/05/19 09:26	11/05/19 10:10	TH	Mt. Juliet, TN
Mercury by Method 7471B	WG1374381	1	11/04/19 11:34	11/04/19 22:37	TCT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1374403	5	11/03/19 18:00	11/04/19 20:15	LD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1374054	1	11/02/19 15:28	11/03/19 18:31	KME	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D	WG1374081	1	11/02/19 19:10	11/03/19 18:19	LEA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1374060	1	11/02/19 15:44	11/03/19 03:07	DMG	Mt. Juliet, TN

RINSATE BLANK L1155761-10 GW

Collected by: AC/TL/KW
Collected date/time: 10/29/19 14:00
Received date/time: 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9060A	WG1374098	1	11/03/19 05:37	11/03/19 05:37	VRP	Mt. Juliet, TN
Mercury by Method 7470A	WG1373138	1	10/31/19 21:00	11/01/19 09:12	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1373700	1	11/05/19 13:47	11/05/19 16:58	LD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1373898	1	11/02/19 08:48	11/02/19 19:49	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D	WG1374366	1	11/03/19 17:16	11/05/19 18:50	LEA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1373904	1	11/02/19 07:41	11/02/19 20:47	DMG	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford
Project Manager

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	63.9		1	11/07/2019 10:36	WG1376223

Wet Chemistry by Method USDA LOI

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
TOC (Total Organic Carbon)	20900		3.33	10.0	1	11/05/2019 10:10	WG1374319

Mercury by Method 7471B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Mercury	0.0362	J	0.00438	0.0469	1	11/04/2019 21:49	WG1374381

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Arsenic	3.37		0.196	0.782	5	11/04/2019 19:48	WG1374403
Cadmium	0.157	J	0.125	0.782	5	11/04/2019 19:48	WG1374403
Chromium	27.0		0.422	1.56	5	11/04/2019 19:48	WG1374403
Copper	26.1		0.407	1.56	5	11/04/2019 19:48	WG1374403
Lead	7.75		0.188	0.782	5	11/04/2019 19:48	WG1374403
Manganese	367		0.196	1.56	5	11/04/2019 19:48	WG1374403
Nickel	24.3		0.274	0.782	5	11/04/2019 19:48	WG1374403
Zinc	79.0		2.00	7.82	5	11/04/2019 19:48	WG1374403

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		2.08	6.26	1	11/03/2019 13:05	WG1374054
Residual Range Organics (RRO)	8.25	J	5.21	15.6	1	11/03/2019 13:05	WG1374054
(S) o-Terphenyl	*59.4*			*18.0-148*		*11/03/2019 13:05*	WG1374054

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Benzylbutyl phthalate	U		0.0161	0.521	1	11/03/2019 19:19	WG1374081
Bis(2-ethylhexyl)phthalate	U		0.0188	0.521	1	11/03/2019 19:19	WG1374081
Di-n-butyl phthalate	U		0.0171	0.521	1	11/03/2019 19:19	WG1374081
Diethyl phthalate	U		0.0108	0.521	1	11/03/2019 19:19	WG1374081
Dimethyl phthalate	U		0.00845	0.521	1	11/03/2019 19:19	WG1374081
Di-n-octyl phthalate	U		0.0142	0.521	1	11/03/2019 19:19	WG1374081
4-Chloro-3-methylphenol	U		0.00746	0.521	1	11/03/2019 19:19	WG1374081
2-Chlorophenol	U		0.0130	0.521	1	11/03/2019 19:19	WG1374081
2,4-Dichlorophenol	U		0.0117	0.521	1	11/03/2019 19:19	WG1374081
2,4-Dimethylphenol	U		0.0737	0.521	1	11/03/2019 19:19	WG1374081
4,6-Dinitro-2-methylphenol	U		0.194	0.521	1	11/03/2019 19:19	WG1374081
2,4-Dinitrophenol	U		0.153	0.521	1	11/03/2019 19:19	WG1374081
2-Methylphenol	U		0.0154	0.521	1	11/03/2019 19:19	WG1374081
3&4-Methyl Phenol	0.0208	J	0.0123	0.521	1	11/03/2019 19:19	WG1374081
2-Nitrophenol	U		0.0203	0.521	1	11/03/2019 19:19	WG1374081
4-Nitrophenol	U		0.0821	0.521	1	11/03/2019 19:19	WG1374081
Pentachlorophenol	U		0.0751	0.521	1	11/03/2019 19:19	WG1374081
Phenol	U		0.0109	0.521	1	11/03/2019 19:19	WG1374081
2,4,6-Trichlorophenol	U		0.0122	0.521	1	11/03/2019 19:19	WG1374081

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
2,4,5-Trichlorophenol	U		0.0163	0.521	1	11/03/2019 19:19	WG1374081
(S) 2-Fluorophenol	*73.7*			*12.0-120*		*11/03/2019 19:19*	WG1374081
(S) Phenol-d5	*67.6*			*10.0-120*		*11/03/2019 19:19*	WG1374081
(S) Nitrobenzene-d5	*51.7*			*10.0-122*		*11/03/2019 19:19*	WG1374081
(S) 2-Fluorobiphenyl	*60.7*			*15.0-120*		*11/03/2019 19:19*	WG1374081
(S) 2,4,6-Tribromophenol	*101*			*10.0-127*		*11/03/2019 19:19*	WG1374081
(S) p-Terphenyl-d14	*79.4*			*10.0-120*		*11/03/2019 19:19*	WG1374081

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.000939	0.00939	1	11/03/2019 01:44	WG1374060
Acenaphthene	U		0.000939	0.00939	1	11/03/2019 01:44	WG1374060
Acenaphthylene	U		0.000939	0.00939	1	11/03/2019 01:44	WG1374060
Benzo(a)anthracene	0.00121	J	0.000939	0.00939	1	11/03/2019 01:44	WG1374060
Benzo(a)pyrene	0.00100	J	0.000939	0.00939	1	11/03/2019 01:44	WG1374060
Benzo(b)fluoranthene	0.00131	J	0.000939	0.00939	1	11/03/2019 01:44	WG1374060
Benzo(g,h,i)perylene	0.00160	J	0.000939	0.00939	1	11/03/2019 01:44	WG1374060
Benzo(k)fluoranthene	U		0.000939	0.00939	1	11/03/2019 01:44	WG1374060
Chrysene	U		0.000939	0.00939	1	11/03/2019 01:44	WG1374060
Dibenz(a,h)anthracene	U		0.000939	0.00939	1	11/03/2019 01:44	WG1374060
Fluoranthene	U		0.000939	0.00939	1	11/03/2019 01:44	WG1374060
Fluorene	U		0.000939	0.00939	1	11/03/2019 01:44	WG1374060
Indeno(1,2,3-cd)pyrene	0.00101	J	0.000939	0.00939	1	11/03/2019 01:44	WG1374060
Naphthalene	U		0.00313	0.0313	1	11/03/2019 01:44	WG1374060
Phenanthrene	U		0.000939	0.00939	1	11/03/2019 01:44	WG1374060
Pyrene	0.00188	J	0.000939	0.00939	1	11/03/2019 01:44	WG1374060
1-Methylnaphthalene	U		0.00313	0.0313	1	11/03/2019 01:44	WG1374060
2-Methylnaphthalene	U		0.00313	0.0313	1	11/03/2019 01:44	WG1374060
2-Chloronaphthalene	U		0.00313	0.0313	1	11/03/2019 01:44	WG1374060
(S) Nitrobenzene-d5	*80.6*			*14.0-149*		*11/03/2019 01:44*	WG1374060
(S) 2-Fluorobiphenyl	*79.5*			*34.0-125*		*11/03/2019 01:44*	WG1374060
(S) p-Terphenyl-d14	*91.8*			*23.0-120*		*11/03/2019 01:44*	WG1374060

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	62.3		1	11/07/2019 10:36	WG1376223

Wet Chemistry by Method USDA LOI

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
TOC (Total Organic Carbon)	19900		3.33	10.0	1	11/05/2019 10:10	WG1374319

Mercury by Method 7471B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Mercury	0.0349	J	0.00450	0.0482	1	11/04/2019 22:14	WG1374381

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Arsenic	3.45	O1	0.201	0.803	5	11/04/2019 18:55	WG1374403
Cadmium	U		0.128	0.803	5	11/04/2019 18:55	WG1374403
Chromium	28.2		0.433	1.61	5	11/04/2019 18:55	WG1374403
Copper	26.8		0.417	1.61	5	11/04/2019 18:55	WG1374403
Lead	8.48	O1	0.193	0.803	5	11/04/2019 18:55	WG1374403
Manganese	376		0.201	1.61	5	11/04/2019 18:55	WG1374403
Nickel	25.2		0.281	0.803	5	11/04/2019 18:55	WG1374403
Zinc	80.7		2.05	8.03	5	11/04/2019 18:55	WG1374403

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	14.8		2.14	6.42	1	11/03/2019 18:56	WG1374054
Residual Range Organics (RRO)	26.3		5.35	16.1	1	11/03/2019 18:56	WG1374054
(S) o-Terphenyl	*46.3*			*18.0-148*		*11/03/2019 18:56*	WG1374054

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Benzylbutyl phthalate	U		0.0165	0.535	1	11/03/2019 17:59	WG1374081
Bis(2-ethylhexyl)phthalate	U		0.0193	0.535	1	11/03/2019 17:59	WG1374081
Di-n-butyl phthalate	U		0.0175	0.535	1	11/03/2019 17:59	WG1374081
Diethyl phthalate	U		0.0111	0.535	1	11/03/2019 17:59	WG1374081
Dimethyl phthalate	U		0.00867	0.535	1	11/03/2019 17:59	WG1374081
Di-n-octyl phthalate	U		0.0146	0.535	1	11/03/2019 17:59	WG1374081
4-Chloro-3-methylphenol	U		0.00766	0.535	1	11/03/2019 17:59	WG1374081
2-Chlorophenol	U		0.0133	0.535	1	11/03/2019 17:59	WG1374081
2,4-Dichlorophenol	U		0.0120	0.535	1	11/03/2019 17:59	WG1374081
2,4-Dimethylphenol	U		0.0756	0.535	1	11/03/2019 17:59	WG1374081
4,6-Dinitro-2-methylphenol	U		0.199	0.535	1	11/03/2019 17:59	WG1374081
2,4-Dinitrophenol	U		0.157	0.535	1	11/03/2019 17:59	WG1374081
2-Methylphenol	U		0.0158	0.535	1	11/03/2019 17:59	WG1374081
3&4-Methyl Phenol	0.0146	J	0.0126	0.535	1	11/03/2019 17:59	WG1374081
2-Nitrophenol	U		0.0209	0.535	1	11/03/2019 17:59	WG1374081
4-Nitrophenol	U		0.0843	0.535	1	11/03/2019 17:59	WG1374081
Pentachlorophenol	U		0.0771	0.535	1	11/03/2019 17:59	WG1374081
Phenol	U		0.0112	0.535	1	11/03/2019 17:59	WG1374081
2,4,6-Trichlorophenol	U		0.0125	0.535	1	11/03/2019 17:59	WG1374081

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
2,4,5-Trichlorophenol	U		0.0167	0.535	1	11/03/2019 17:59	WG1374081
(S) 2-Fluorophenol	*78.5*			*12.0-120*		*11/03/2019 17:59*	WG1374081
(S) Phenol-d5	*71.8*			*10.0-120*		*11/03/2019 17:59*	WG1374081
(S) Nitrobenzene-d5	*55.1*			*10.0-122*		*11/03/2019 17:59*	WG1374081
(S) 2-Fluorobiphenyl	*63.6*			*15.0-120*		*11/03/2019 17:59*	WG1374081
(S) 2,4,6-Tribromophenol	*102*			*10.0-127*		*11/03/2019 17:59*	WG1374081
(S) p-Terphenyl-d14	*81.6*			*10.0-120*		*11/03/2019 17:59*	WG1374081

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.000963	0.00963	1	11/03/2019 02:05	WG1374060
Acenaphthene	U		0.000963	0.00963	1	11/03/2019 02:05	WG1374060
Acenaphthylene	U		0.000963	0.00963	1	11/03/2019 02:05	WG1374060
Benzo(a)anthracene	U		0.000963	0.00963	1	11/03/2019 02:05	WG1374060
Benzo(a)pyrene	U		0.000963	0.00963	1	11/03/2019 02:05	WG1374060
Benzo(b)fluoranthene	U		0.000963	0.00963	1	11/03/2019 02:05	WG1374060
Benzo(g,h,i)perylene	U		0.000963	0.00963	1	11/03/2019 02:05	WG1374060
Benzo(k)fluoranthene	U		0.000963	0.00963	1	11/03/2019 02:05	WG1374060
Chrysene	U		0.000963	0.00963	1	11/03/2019 02:05	WG1374060
Dibenz(a,h)anthracene	U		0.000963	0.00963	1	11/03/2019 02:05	WG1374060
Fluoranthene	U		0.000963	0.00963	1	11/03/2019 02:05	WG1374060
Fluorene	U		0.000963	0.00963	1	11/03/2019 02:05	WG1374060
Indeno(1,2,3-cd)pyrene	U		0.000963	0.00963	1	11/03/2019 02:05	WG1374060
Naphthalene	U		0.00321	0.0321	1	11/03/2019 02:05	WG1374060
Phenanthrene	U		0.000963	0.00963	1	11/03/2019 02:05	WG1374060
Pyrene	U		0.000963	0.00963	1	11/03/2019 02:05	WG1374060
1-Methylnaphthalene	U		0.00321	0.0321	1	11/03/2019 02:05	WG1374060
2-Methylnaphthalene	U		0.00321	0.0321	1	11/03/2019 02:05	WG1374060
2-Chloronaphthalene	U		0.00321	0.0321	1	11/03/2019 02:05	WG1374060
(S) Nitrobenzene-d5	*92.2*			*14.0-149*		*11/03/2019 02:05*	WG1374060
(S) 2-Fluorobiphenyl	*91.0*			*34.0-125*		*11/03/2019 02:05*	WG1374060
(S) p-Terphenyl-d14	*110*			*23.0-120*		*11/03/2019 02:05*	WG1374060

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	52.5		1	11/07/2019 10:36	WG1376223

Wet Chemistry by Method USDA LOI

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
TOC (Total Organic Carbon)	35100		3.33	10.0	1	11/05/2019 10:10	WG1374319

Mercury by Method 7471B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Mercury	0.214		0.00533	0.0571	1	11/04/2019 22:17	WG1374381

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Arsenic	4.96		0.238	0.952	5	11/04/2019 19:52	WG1374403
Cadmium	0.304	J	0.152	0.952	5	11/04/2019 19:52	WG1374403
Chromium	34.5		0.514	1.90	5	11/04/2019 19:52	WG1374403
Copper	41.6		0.495	1.90	5	11/04/2019 19:52	WG1374403
Lead	20.5		0.228	0.952	5	11/04/2019 19:52	WG1374403
Manganese	688		0.238	1.90	5	11/04/2019 19:52	WG1374403
Nickel	28.4		0.333	0.952	5	11/04/2019 19:52	WG1374403
Zinc	170		2.44	9.52	5	11/04/2019 19:52	WG1374403

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	9.12		2.53	7.61	1	11/03/2019 17:28	WG1374054
Residual Range Organics (RRO)	23.2		6.34	19.0	1	11/03/2019 17:28	WG1374054
(S) o-Terphenyl	*59.3*			*18.0-148*		*11/03/2019 17:28*	WG1374054

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Benzylbutyl phthalate	U		0.0196	0.634	1	11/03/2019 16:16	WG1374081
Bis(2-ethylhexyl)phthalate	U		0.0228	0.634	1	11/03/2019 16:16	WG1374081
Di-n-butyl phthalate	U		0.0207	0.634	1	11/03/2019 16:16	WG1374081
Diethyl phthalate	U		0.0132	0.634	1	11/03/2019 16:16	WG1374081
Dimethyl phthalate	U		0.0103	0.634	1	11/03/2019 16:16	WG1374081
Di-n-octyl phthalate	U		0.0173	0.634	1	11/03/2019 16:16	WG1374081
4-Chloro-3-methylphenol	U		0.00908	0.634	1	11/03/2019 16:16	WG1374081
2-Chlorophenol	U		0.0158	0.634	1	11/03/2019 16:16	WG1374081
2,4-Dichlorophenol	U		0.0142	0.634	1	11/03/2019 16:16	WG1374081
2,4-Dimethylphenol	U		0.0897	0.634	1	11/03/2019 16:16	WG1374081
4,6-Dinitro-2-methylphenol	U		0.236	0.634	1	11/03/2019 16:16	WG1374081
2,4-Dinitrophenol	U		0.187	0.634	1	11/03/2019 16:16	WG1374081
2-Methylphenol	U		0.0188	0.634	1	11/03/2019 16:16	WG1374081
3&4-Methyl Phenol	0.173	J	0.0149	0.634	1	11/03/2019 16:16	WG1374081
2-Nitrophenol	U		0.0247	0.634	1	11/03/2019 16:16	WG1374081
4-Nitrophenol	U		0.0999	0.634	1	11/03/2019 16:16	WG1374081
Pentachlorophenol	U		0.0914	0.634	1	11/03/2019 16:16	WG1374081
Phenol	U		0.0132	0.634	1	11/03/2019 16:16	WG1374081
2,4,6-Trichlorophenol	U		0.0148	0.634	1	11/03/2019 16:16	WG1374081

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
2,4,5-Trichlorophenol	U		0.0198	0.634	1	11/03/2019 16:16	WG1374081
(S) 2-Fluorophenol	*85.3*			*12.0-120*		*11/03/2019 16:16*	WG1374081
(S) Phenol-d5	*77.2*			*10.0-120*		*11/03/2019 16:16*	WG1374081
(S) Nitrobenzene-d5	*59.8*			*10.0-122*		*11/03/2019 16:16*	WG1374081
(S) 2-Fluorobiphenyl	*63.8*			*15.0-120*		*11/03/2019 16:16*	WG1374081
(S) 2,4,6-Tribromophenol	*105*			*10.0-127*		*11/03/2019 16:16*	WG1374081
(S) p-Terphenyl-d14	*80.8*			*10.0-120*		*11/03/2019 16:16*	WG1374081

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.00246	J	0.00114	0.0114	1	11/03/2019 04:47	WG1374071
Acenaphthene	0.00204	J	0.00114	0.0114	1	11/03/2019 04:47	WG1374071
Acenaphthylene	U		0.00114	0.0114	1	11/03/2019 04:47	WG1374071
Benzo(a)anthracene	0.00666	J	0.00114	0.0114	1	11/03/2019 04:47	WG1374071
Benzo(a)pyrene	0.00565	J	0.00114	0.0114	1	11/03/2019 04:47	WG1374071
Benzo(b)fluoranthene	0.00784	J	0.00114	0.0114	1	11/03/2019 04:47	WG1374071
Benzo(g,h,i)perylene	0.00398	J	0.00114	0.0114	1	11/03/2019 04:47	WG1374071
Benzo(k)fluoranthene	0.00270	J	0.00114	0.0114	1	11/03/2019 04:47	WG1374071
Chrysene	0.00554	J	0.00114	0.0114	1	11/03/2019 04:47	WG1374071
Dibenz(a,h)anthracene	0.00114	J	0.00114	0.0114	1	11/03/2019 04:47	WG1374071
Fluoranthene	0.0134		0.00114	0.0114	1	11/03/2019 04:47	WG1374071
Fluorene	0.00301	J	0.00114	0.0114	1	11/03/2019 04:47	WG1374071
Indeno(1,2,3-cd)pyrene	0.00282	J	0.00114	0.0114	1	11/03/2019 04:47	WG1374071
Naphthalene	0.0122	J	0.00381	0.0381	1	11/03/2019 04:47	WG1374071
Phenanthrene	0.00881	J	0.00114	0.0114	1	11/03/2019 04:47	WG1374071
Pyrene	0.0122		0.00114	0.0114	1	11/03/2019 04:47	WG1374071
1-Methylnaphthalene	0.00385	J	0.00381	0.0381	1	11/03/2019 04:47	WG1374071
2-Methylnaphthalene	0.00411	J	0.00381	0.0381	1	11/03/2019 04:47	WG1374071
2-Chloronaphthalene	U		0.00381	0.0381	1	11/03/2019 04:47	WG1374071
(S) Nitrobenzene-d5	*80.8*			*14.0-149*		*11/03/2019 04:47*	WG1374071
(S) 2-Fluorobiphenyl	*73.1*			*34.0-125*		*11/03/2019 04:47*	WG1374071
(S) p-Terphenyl-d14	*79.0*			*23.0-120*		*11/03/2019 04:47*	WG1374071

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	64.7		1	11/07/2019 10:36	WG1376223

Wet Chemistry by Method USDA LOI

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
TOC (Total Organic Carbon)	20100		3.33	10.0	1	11/05/2019 10:10	WG1374319

Mercury by Method 7471B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Mercury	0.136		0.00433	0.0464	1	11/04/2019 22:19	WG1374381

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Arsenic	3.76		0.193	0.773	5	11/04/2019 19:55	WG1374403
Cadmium	0.181	J	0.124	0.773	5	11/04/2019 19:55	WG1374403
Chromium	30.1		0.417	1.55	5	11/04/2019 19:55	WG1374403
Copper	30.7		0.402	1.55	5	11/04/2019 19:55	WG1374403
Lead	15.6		0.185	0.773	5	11/04/2019 19:55	WG1374403
Manganese	487		0.193	1.55	5	11/04/2019 19:55	WG1374403
Nickel	25.5		0.270	0.773	5	11/04/2019 19:55	WG1374403
Zinc	116		1.98	7.73	5	11/04/2019 19:55	WG1374403

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	6.38		2.06	6.18	1	11/03/2019 00:42	WG1374054
Residual Range Organics (RRO)	72.2		5.15	15.5	1	11/03/2019 00:42	WG1374054
(S) o-Terphenyl	*61.1*			*18.0-148*		*11/03/2019 00:42*	WG1374054

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Benzylbutyl phthalate	U		0.0159	0.515	1	11/03/2019 19:39	WG1374081
Bis(2-ethylhexyl)phthalate	U		0.0185	0.515	1	11/03/2019 19:39	WG1374081
Di-n-butyl phthalate	U		0.0168	0.515	1	11/03/2019 19:39	WG1374081
Diethyl phthalate	U		0.0107	0.515	1	11/03/2019 19:39	WG1374081
Dimethyl phthalate	U		0.00835	0.515	1	11/03/2019 19:39	WG1374081
Di-n-octyl phthalate	U		0.0140	0.515	1	11/03/2019 19:39	WG1374081
4-Chloro-3-methylphenol	U		0.00737	0.515	1	11/03/2019 19:39	WG1374081
2-Chlorophenol	U		0.0128	0.515	1	11/03/2019 19:39	WG1374081
2,4-Dichlorophenol	U		0.0115	0.515	1	11/03/2019 19:39	WG1374081
2,4-Dimethylphenol	U		0.0728	0.515	1	11/03/2019 19:39	WG1374081
4,6-Dinitro-2-methylphenol	U		0.192	0.515	1	11/03/2019 19:39	WG1374081
2,4-Dinitrophenol	U		0.151	0.515	1	11/03/2019 19:39	WG1374081
2-Methylphenol	U		0.0152	0.515	1	11/03/2019 19:39	WG1374081
3&4-Methyl Phenol	0.173	J	0.0121	0.515	1	11/03/2019 19:39	WG1374081
2-Nitrophenol	U		0.0201	0.515	1	11/03/2019 19:39	WG1374081
4-Nitrophenol	U		0.0811	0.515	1	11/03/2019 19:39	WG1374081
Pentachlorophenol	U		0.0742	0.515	1	11/03/2019 19:39	WG1374081
Phenol	U		0.0107	0.515	1	11/03/2019 19:39	WG1374081
2,4,6-Trichlorophenol	U		0.0120	0.515	1	11/03/2019 19:39	WG1374081

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
2,4,5-Trichlorophenol	U		0.0161	0.515	1	11/03/2019 19:39	WG1374081
(S) 2-Fluorophenol	*80.4*			*12.0-120*		*11/03/2019 19:39*	WG1374081
(S) Phenol-d5	*74.2*			*10.0-120*		*11/03/2019 19:39*	WG1374081
(S) Nitrobenzene-d5	*55.7*			*10.0-122*		*11/03/2019 19:39*	WG1374081
(S) 2-Fluorobiphenyl	*63.9*			*15.0-120*		*11/03/2019 19:39*	WG1374081
(S) 2,4,6-Tribromophenol	*106*			*10.0-127*		*11/03/2019 19:39*	WG1374081
(S) p-Terphenyl-d14	*68.7*			*10.0-120*		*11/03/2019 19:39*	WG1374081

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.000927	0.00927	1	11/03/2019 05:09	WG1374071
Acenaphthene	U		0.000927	0.00927	1	11/03/2019 05:09	WG1374071
Acenaphthylene	U		0.000927	0.00927	1	11/03/2019 05:09	WG1374071
Benzo(a)anthracene	0.00317	J	0.000927	0.00927	1	11/03/2019 05:09	WG1374071
Benzo(a)pyrene	0.00337	J	0.000927	0.00927	1	11/03/2019 05:09	WG1374071
Benzo(b)fluoranthene	0.00442	J	0.000927	0.00927	1	11/03/2019 05:09	WG1374071
Benzo(g,h,i)perylene	0.00244	J	0.000927	0.00927	1	11/03/2019 05:09	WG1374071
Benzo(k)fluoranthene	0.00134	J	0.000927	0.00927	1	11/03/2019 05:09	WG1374071
Chrysene	0.00286	J	0.000927	0.00927	1	11/03/2019 05:09	WG1374071
Dibenz(a,h)anthracene	U		0.000927	0.00927	1	11/03/2019 05:09	WG1374071
Fluoranthene	0.00566	J	0.000927	0.00927	1	11/03/2019 05:09	WG1374071
Fluorene	U		0.000927	0.00927	1	11/03/2019 05:09	WG1374071
Indeno(1,2,3-cd)pyrene	0.00187	J	0.000927	0.00927	1	11/03/2019 05:09	WG1374071
Naphthalene	0.00679	J	0.00309	0.0309	1	11/03/2019 05:09	WG1374071
Phenanthrene	0.00257	J	0.000927	0.00927	1	11/03/2019 05:09	WG1374071
Pyrene	0.00566	J	0.000927	0.00927	1	11/03/2019 05:09	WG1374071
1-Methylnaphthalene	U		0.00309	0.0309	1	11/03/2019 05:09	WG1374071
2-Methylnaphthalene	0.00617	J	0.00309	0.0309	1	11/03/2019 05:09	WG1374071
2-Chloronaphthalene	U		0.00309	0.0309	1	11/03/2019 05:09	WG1374071
(S) Nitrobenzene-d5	*79.5*			*14.0-149*		*11/03/2019 05:09*	WG1374071
(S) 2-Fluorobiphenyl	*76.9*			*34.0-125*		*11/03/2019 05:09*	WG1374071
(S) p-Terphenyl-d14	*85.4*			*23.0-120*		*11/03/2019 05:09*	WG1374071

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	75.0		1	11/07/2019 10:36	WG1376223

Wet Chemistry by Method USDA LOI

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
TOC (Total Organic Carbon)	17700		3.33	10.0	1	11/05/2019 10:10	WG1374319

Mercury by Method 7471B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Mercury	0.0183	J	0.00373	0.0400	1	11/04/2019 22:22	WG1374381

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Arsenic	2.56		0.167	0.666	5	11/04/2019 19:59	WG1374403
Cadmium	U		0.107	0.666	5	11/04/2019 19:59	WG1374403
Chromium	17.0		0.360	1.33	5	11/04/2019 19:59	WG1374403
Copper	17.7		0.346	1.33	5	11/04/2019 19:59	WG1374403
Lead	12.8		0.160	0.666	5	11/04/2019 19:59	WG1374403
Manganese	252		0.167	1.33	5	11/04/2019 19:59	WG1374403
Nickel	55.8		0.233	0.666	5	11/04/2019 19:59	WG1374403
Zinc	55.1		1.71	6.66	5	11/04/2019 19:59	WG1374403

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	6.93		1.77	5.33	1	11/03/2019 17:40	WG1374054
Residual Range Organics (RRO)	15.1		4.44	13.3	1	11/03/2019 17:40	WG1374054
(S) o-Terphenyl	*59.9*			*18.0-148*		*11/03/2019 17:40*	WG1374054

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Benzylbutyl phthalate	U		0.0137	0.444	1	11/03/2019 16:36	WG1374081
Bis(2-ethylhexyl)phthalate	U		0.0160	0.444	1	11/03/2019 16:36	WG1374081
Di-n-butyl phthalate	U		0.0145	0.444	1	11/03/2019 16:36	WG1374081
Diethyl phthalate	U		0.00921	0.444	1	11/03/2019 16:36	WG1374081
Dimethyl phthalate	U		0.00720	0.444	1	11/03/2019 16:36	WG1374081
Di-n-octyl phthalate	U		0.0121	0.444	1	11/03/2019 16:36	WG1374081
4-Chloro-3-methylphenol	U		0.00636	0.444	1	11/03/2019 16:36	WG1374081
2-Chlorophenol	U		0.0111	0.444	1	11/03/2019 16:36	WG1374081
2,4-Dichlorophenol	U		0.00994	0.444	1	11/03/2019 16:36	WG1374081
2,4-Dimethylphenol	U		0.0628	0.444	1	11/03/2019 16:36	WG1374081
4,6-Dinitro-2-methylphenol	U		0.165	0.444	1	11/03/2019 16:36	WG1374081
2,4-Dinitrophenol	U		0.131	0.444	1	11/03/2019 16:36	WG1374081
2-Methylphenol	U		0.0131	0.444	1	11/03/2019 16:36	WG1374081
3&4-Methyl Phenol	U		0.0104	0.444	1	11/03/2019 16:36	WG1374081
2-Nitrophenol	U		0.0173	0.444	1	11/03/2019 16:36	WG1374081
4-Nitrophenol	U		0.0700	0.444	1	11/03/2019 16:36	WG1374081
Pentachlorophenol	U		0.0640	0.444	1	11/03/2019 16:36	WG1374081
Phenol	U		0.00926	0.444	1	11/03/2019 16:36	WG1374081
2,4,6-Trichlorophenol	U		0.0104	0.444	1	11/03/2019 16:36	WG1374081

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
2,4,5-Trichlorophenol	U		0.0139	0.444	1	11/03/2019 16:36	WG1374081
(S) 2-Fluorophenol	*80.5*			*12.0-120*		*11/03/2019 16:36*	WG1374081
(S) Phenol-d5	*74.0*			*10.0-120*		*11/03/2019 16:36*	WG1374081
(S) Nitrobenzene-d5	*54.6*			*10.0-122*		*11/03/2019 16:36*	WG1374081
(S) 2-Fluorobiphenyl	*54.6*			*15.0-120*		*11/03/2019 16:36*	WG1374081
(S) 2,4,6-Tribromophenol	*95.7*			*10.0-127*		*11/03/2019 16:36*	WG1374081
(S) p-Terphenyl-d14	*72.2*			*10.0-120*		*11/03/2019 16:36*	WG1374081

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.000800	0.00800	1	11/03/2019 05:32	WG1374071
Acenaphthene	U		0.000800	0.00800	1	11/03/2019 05:32	WG1374071
Acenaphthylene	U		0.000800	0.00800	1	11/03/2019 05:32	WG1374071
Benzo(a)anthracene	0.000942	J	0.000800	0.00800	1	11/03/2019 05:32	WG1374071
Benzo(a)pyrene	U		0.000800	0.00800	1	11/03/2019 05:32	WG1374071
Benzo(b)fluoranthene	0.00102	J	0.000800	0.00800	1	11/03/2019 05:32	WG1374071
Benzo(g,h,i)perylene	0.00121	J	0.000800	0.00800	1	11/03/2019 05:32	WG1374071
Benzo(k)fluoranthene	U		0.000800	0.00800	1	11/03/2019 05:32	WG1374071
Chrysene	U		0.000800	0.00800	1	11/03/2019 05:32	WG1374071
Dibenz(a,h)anthracene	U		0.000800	0.00800	1	11/03/2019 05:32	WG1374071
Fluoranthene	0.00141	J	0.000800	0.00800	1	11/03/2019 05:32	WG1374071
Fluorene	U		0.000800	0.00800	1	11/03/2019 05:32	WG1374071
Indeno(1,2,3-cd)pyrene	U		0.000800	0.00800	1	11/03/2019 05:32	WG1374071
Naphthalene	0.00936	J	0.00267	0.0267	1	11/03/2019 05:32	WG1374071
Phenanthrene	0.00169	J	0.000800	0.00800	1	11/03/2019 05:32	WG1374071
Pyrene	0.00153	J	0.000800	0.00800	1	11/03/2019 05:32	WG1374071
1-Methylnaphthalene	U		0.00267	0.0267	1	11/03/2019 05:32	WG1374071
2-Methylnaphthalene	U		0.00267	0.0267	1	11/03/2019 05:32	WG1374071
2-Chloronaphthalene	U		0.00267	0.0267	1	11/03/2019 05:32	WG1374071
(S) Nitrobenzene-d5	*73.5*			*14.0-149*		*11/03/2019 05:32*	WG1374071
(S) 2-Fluorobiphenyl	*68.3*			*34.0-125*		*11/03/2019 05:32*	WG1374071
(S) p-Terphenyl-d14	*77.1*			*23.0-120*		*11/03/2019 05:32*	WG1374071

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	80.1		1	11/07/2019 10:36	WG1376223

Wet Chemistry by Method USDA LOI

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
TOC (Total Organic Carbon)	6870		3.33	10.0	1	11/05/2019 10:10	WG1374319

Mercury by Method 7471B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Mercury	0.0157	J	0.00350	0.0375	1	11/04/2019 22:30	WG1374381

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Arsenic	2.23		0.156	0.624	5	11/04/2019 20:03	WG1374403
Cadmium	U		0.0999	0.624	5	11/04/2019 20:03	WG1374403
Chromium	25.3		0.337	1.25	5	11/04/2019 20:03	WG1374403
Copper	29.5		0.325	1.25	5	11/04/2019 20:03	WG1374403
Lead	20.7		0.150	0.624	5	11/04/2019 20:03	WG1374403
Manganese	382		0.156	1.25	5	11/04/2019 20:03	WG1374403
Nickel	26.0		0.219	0.624	5	11/04/2019 20:03	WG1374403
Zinc	56.1		1.60	6.24	5	11/04/2019 20:03	WG1374403

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		1.66	4.99	1	11/04/2019 14:24	WG1374054
Residual Range Organics (RRO)	5.33	J	4.16	12.5	1	11/04/2019 14:24	WG1374054
(S) o-Terphenyl	*70.2*			*18.0-148*		*11/04/2019 14:24*	WG1374054

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Benzylbutyl phthalate	U		0.0129	0.416	1	11/03/2019 16:57	WG1374081
Bis(2-ethylhexyl)phthalate	U		0.0150	0.416	1	11/03/2019 16:57	WG1374081
Di-n-butyl phthalate	U		0.0136	0.416	1	11/03/2019 16:57	WG1374081
Diethyl phthalate	U		0.00863	0.416	1	11/03/2019 16:57	WG1374081
Dimethyl phthalate	U		0.00674	0.416	1	11/03/2019 16:57	WG1374081
Di-n-octyl phthalate	U		0.0113	0.416	1	11/03/2019 16:57	WG1374081
4-Chloro-3-methylphenol	U		0.00596	0.416	1	11/03/2019 16:57	WG1374081
2-Chlorophenol	U		0.0104	0.416	1	11/03/2019 16:57	WG1374081
2,4-Dichlorophenol	U		0.00931	0.416	1	11/03/2019 16:57	WG1374081
2,4-Dimethylphenol	U		0.0588	0.416	1	11/03/2019 16:57	WG1374081
4,6-Dinitro-2-methylphenol	U		0.155	0.416	1	11/03/2019 16:57	WG1374081
2,4-Dinitrophenol	U		0.122	0.416	1	11/03/2019 16:57	WG1374081
2-Methylphenol	U		0.0123	0.416	1	11/03/2019 16:57	WG1374081
3&4-Methyl Phenol	U		0.00978	0.416	1	11/03/2019 16:57	WG1374081
2-Nitrophenol	U		0.0162	0.416	1	11/03/2019 16:57	WG1374081
4-Nitrophenol	U		0.0656	0.416	1	11/03/2019 16:57	WG1374081
Pentachlorophenol	U		0.0599	0.416	1	11/03/2019 16:57	WG1374081
Phenol	0.0636	J	0.00868	0.416	1	11/03/2019 16:57	WG1374081
2,4,6-Trichlorophenol	U		0.00973	0.416	1	11/03/2019 16:57	WG1374081

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
2,4,5-Trichlorophenol	U		0.0130	0.416	1	11/03/2019 16:57	WG1374081
(S) 2-Fluorophenol	*80.6*			*12.0-120*		*11/03/2019 16:57*	WG1374081
(S) Phenol-d5	*72.7*			*10.0-120*		*11/03/2019 16:57*	WG1374081
(S) Nitrobenzene-d5	*56.4*			*10.0-122*		*11/03/2019 16:57*	WG1374081
(S) 2-Fluorobiphenyl	*62.4*			*15.0-120*		*11/03/2019 16:57*	WG1374081
(S) 2,4,6-Tribromophenol	*99.4*			*10.0-127*		*11/03/2019 16:57*	WG1374081
(S) p-Terphenyl-d14	*79.9*			*10.0-120*		*11/03/2019 16:57*	WG1374081

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.000749	0.00749	1	11/03/2019 05:54	WG1374071
Acenaphthene	U		0.000749	0.00749	1	11/03/2019 05:54	WG1374071
Acenaphthylene	U		0.000749	0.00749	1	11/03/2019 05:54	WG1374071
Benzo(a)anthracene	U		0.000749	0.00749	1	11/03/2019 05:54	WG1374071
Benzo(a)pyrene	U		0.000749	0.00749	1	11/03/2019 05:54	WG1374071
Benzo(b)fluoranthene	U		0.000749	0.00749	1	11/03/2019 05:54	WG1374071
Benzo(g,h,i)perylene	U		0.000749	0.00749	1	11/03/2019 05:54	WG1374071
Benzo(k)fluoranthene	U		0.000749	0.00749	1	11/03/2019 05:54	WG1374071
Chrysene	U		0.000749	0.00749	1	11/03/2019 05:54	WG1374071
Dibenz(a,h)anthracene	U		0.000749	0.00749	1	11/03/2019 05:54	WG1374071
Fluoranthene	0.000862	J	0.000749	0.00749	1	11/03/2019 05:54	WG1374071
Fluorene	U		0.000749	0.00749	1	11/03/2019 05:54	WG1374071
Indeno(1,2,3-cd)pyrene	U		0.000749	0.00749	1	11/03/2019 05:54	WG1374071
Naphthalene	U		0.00250	0.0250	1	11/03/2019 05:54	WG1374071
Phenanthrene	0.00101	J	0.000749	0.00749	1	11/03/2019 05:54	WG1374071
Pyrene	0.000828	J	0.000749	0.00749	1	11/03/2019 05:54	WG1374071
1-Methylnaphthalene	U		0.00250	0.0250	1	11/03/2019 05:54	WG1374071
2-Methylnaphthalene	U		0.00250	0.0250	1	11/03/2019 05:54	WG1374071
2-Chloronaphthalene	U		0.00250	0.0250	1	11/03/2019 05:54	WG1374071
(S) Nitrobenzene-d5	*75.6*			*14.0-149*		*11/03/2019 05:54*	WG1374071
(S) 2-Fluorobiphenyl	*77.1*			*34.0-125*		*11/03/2019 05:54*	WG1374071
(S) p-Terphenyl-d14	*87.7*			*23.0-120*		*11/03/2019 05:54*	WG1374071

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	69.9		1	11/07/2019 10:36	WG1376223

Wet Chemistry by Method USDA LOI

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
TOC (Total Organic Carbon)	11700		3.33	10.0	1	11/05/2019 10:10	WG1374319

Mercury by Method 7471B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Mercury	0.0220	J	0.00401	0.0429	1	11/04/2019 22:32	WG1374381

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Arsenic	3.70		0.179	0.716	5	11/04/2019 20:07	WG1374403
Cadmium	U		0.115	0.716	5	11/04/2019 20:07	WG1374403
Chromium	26.4		0.386	1.43	5	11/04/2019 20:07	WG1374403
Copper	21.5		0.372	1.43	5	11/04/2019 20:07	WG1374403
Lead	6.52		0.172	0.716	5	11/04/2019 20:07	WG1374403
Manganese	480		0.179	1.43	5	11/04/2019 20:07	WG1374403
Nickel	23.5		0.250	0.716	5	11/04/2019 20:07	WG1374403
Zinc	72.4		1.83	7.16	5	11/04/2019 20:07	WG1374403

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	3.02	J	1.90	5.73	1	11/03/2019 18:18	WG1374054
Residual Range Organics (RRO)	12.4	J	4.77	14.3	1	11/03/2019 18:18	WG1374054
(S) o-Terphenyl	*60.6*			*18.0-148*		*11/03/2019 18:18*	WG1374054

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Benzylbutyl phthalate	U		0.0147	0.477	1	11/03/2019 18:40	WG1374081
Bis(2-ethylhexyl)phthalate	U		0.0172	0.477	1	11/03/2019 18:40	WG1374081
Di-n-butyl phthalate	U		0.0156	0.477	1	11/03/2019 18:40	WG1374081
Diethyl phthalate	U		0.00989	0.477	1	11/03/2019 18:40	WG1374081
Dimethyl phthalate	U		0.00773	0.477	1	11/03/2019 18:40	WG1374081
Di-n-octyl phthalate	U		0.0130	0.477	1	11/03/2019 18:40	WG1374081
4-Chloro-3-methylphenol	U		0.00683	0.477	1	11/03/2019 18:40	WG1374081
2-Chlorophenol	U		0.0119	0.477	1	11/03/2019 18:40	WG1374081
2,4-Dichlorophenol	U		0.0107	0.477	1	11/03/2019 18:40	WG1374081
2,4-Dimethylphenol	U		0.0674	0.477	1	11/03/2019 18:40	WG1374081
4,6-Dinitro-2-methylphenol	U		0.177	0.477	1	11/03/2019 18:40	WG1374081
2,4-Dinitrophenol	U		0.140	0.477	1	11/03/2019 18:40	WG1374081
2-Methylphenol	U		0.0141	0.477	1	11/03/2019 18:40	WG1374081
3&4-Methyl Phenol	U		0.0112	0.477	1	11/03/2019 18:40	WG1374081
2-Nitrophenol	U		0.0186	0.477	1	11/03/2019 18:40	WG1374081
4-Nitrophenol	U		0.0751	0.477	1	11/03/2019 18:40	WG1374081
Pentachlorophenol	U		0.0687	0.477	1	11/03/2019 18:40	WG1374081
Phenol	U		0.00995	0.477	1	11/03/2019 18:40	WG1374081
2,4,6-Trichlorophenol	U		0.0112	0.477	1	11/03/2019 18:40	WG1374081

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
2,4,5-Trichlorophenol	U		0.0149	0.477	1	11/03/2019 18:40	WG1374081
(S) 2-Fluorophenol	*74.6*			*12.0-120*		*11/03/2019 18:40*	WG1374081
(S) Phenol-d5	*67.9*			*10.0-120*		*11/03/2019 18:40*	WG1374081
(S) Nitrobenzene-d5	*55.9*			*10.0-122*		*11/03/2019 18:40*	WG1374081
(S) 2-Fluorobiphenyl	*63.5*			*15.0-120*		*11/03/2019 18:40*	WG1374081
(S) 2,4,6-Tribromophenol	*106*			*10.0-127*		*11/03/2019 18:40*	WG1374081
(S) p-Terphenyl-d14	*78.7*			*10.0-120*		*11/03/2019 18:40*	WG1374081

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.000859	0.00859	1	11/03/2019 02:26	WG1374060
Acenaphthene	U		0.000859	0.00859	1	11/03/2019 02:26	WG1374060
Acenaphthylene	U		0.000859	0.00859	1	11/03/2019 02:26	WG1374060
Benzo(a)anthracene	U		0.000859	0.00859	1	11/03/2019 02:26	WG1374060
Benzo(a)pyrene	U		0.000859	0.00859	1	11/03/2019 02:26	WG1374060
Benzo(b)fluoranthene	U		0.000859	0.00859	1	11/03/2019 02:26	WG1374060
Benzo(g,h,i)perylene	U		0.000859	0.00859	1	11/03/2019 02:26	WG1374060
Benzo(k)fluoranthene	U		0.000859	0.00859	1	11/03/2019 02:26	WG1374060
Chrysene	U		0.000859	0.00859	1	11/03/2019 02:26	WG1374060
Dibenz(a,h)anthracene	U		0.000859	0.00859	1	11/03/2019 02:26	WG1374060
Fluoranthene	0.000863	J	0.000859	0.00859	1	11/03/2019 02:26	WG1374060
Fluorene	U		0.000859	0.00859	1	11/03/2019 02:26	WG1374060
Indeno(1,2,3-cd)pyrene	U		0.000859	0.00859	1	11/03/2019 02:26	WG1374060
Naphthalene	U		0.00286	0.0286	1	11/03/2019 02:26	WG1374060
Phenanthrene	0.000909	J	0.000859	0.00859	1	11/03/2019 02:26	WG1374060
Pyrene	0.00121	J	0.000859	0.00859	1	11/03/2019 02:26	WG1374060
1-Methylnaphthalene	U		0.00286	0.0286	1	11/03/2019 02:26	WG1374060
2-Methylnaphthalene	U		0.00286	0.0286	1	11/03/2019 02:26	WG1374060
2-Chloronaphthalene	U		0.00286	0.0286	1	11/03/2019 02:26	WG1374060
(S) Nitrobenzene-d5	*83.6*			*14.0-149*		*11/03/2019 02:26*	WG1374060
(S) 2-Fluorobiphenyl	*83.1*			*34.0-125*		*11/03/2019 02:26*	WG1374060
(S) p-Terphenyl-d14	*98.0*			*23.0-120*		*11/03/2019 02:26*	WG1374060

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	70.8		1	11/07/2019 10:36	WG1376223

Wet Chemistry by Method USDA LOI

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
TOC (Total Organic Carbon)	11700		3.33	10.0	1	11/05/2019 10:10	WG1374319

Mercury by Method 7471B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Mercury	0.0249	J	0.00396	0.0424	1	11/04/2019 22:35	WG1374381

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Arsenic	3.33		0.177	0.707	5	11/04/2019 20:11	WG1374403
Cadmium	U		0.113	0.707	5	11/04/2019 20:11	WG1374403
Chromium	23.2		0.382	1.41	5	11/04/2019 20:11	WG1374403
Copper	20.9		0.367	1.41	5	11/04/2019 20:11	WG1374403
Lead	7.54		0.170	0.707	5	11/04/2019 20:11	WG1374403
Manganese	443		0.177	1.41	5	11/04/2019 20:11	WG1374403
Nickel	23.0		0.247	0.707	5	11/04/2019 20:11	WG1374403
Zinc	92.2		1.81	7.07	5	11/04/2019 20:11	WG1374403

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	2.09	J	1.88	5.65	1	11/03/2019 18:06	WG1374054
Residual Range Organics (RRO)	6.84	J	4.71	14.1	1	11/03/2019 18:06	WG1374054
(S) o-Terphenyl	*67.9*			*18.0-148*		*11/03/2019 18:06*	WG1374054

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Benzylbutyl phthalate	U		0.0146	0.471	1	11/03/2019 18:59	WG1374081
Bis(2-ethylhexyl)phthalate	U		0.0170	0.471	1	11/03/2019 18:59	WG1374081
Di-n-butyl phthalate	U		0.0154	0.471	1	11/03/2019 18:59	WG1374081
Diethyl phthalate	U		0.00976	0.471	1	11/03/2019 18:59	WG1374081
Dimethyl phthalate	U		0.00763	0.471	1	11/03/2019 18:59	WG1374081
Di-n-octyl phthalate	U		0.0128	0.471	1	11/03/2019 18:59	WG1374081
4-Chloro-3-methylphenol	U		0.00674	0.471	1	11/03/2019 18:59	WG1374081
2-Chlorophenol	U		0.0117	0.471	1	11/03/2019 18:59	WG1374081
2,4-Dichlorophenol	U		0.0105	0.471	1	11/03/2019 18:59	WG1374081
2,4-Dimethylphenol	U		0.0666	0.471	1	11/03/2019 18:59	WG1374081
4,6-Dinitro-2-methylphenol	U		0.175	0.471	1	11/03/2019 18:59	WG1374081
2,4-Dinitrophenol	U		0.138	0.471	1	11/03/2019 18:59	WG1374081
2-Methylphenol	U		0.0139	0.471	1	11/03/2019 18:59	WG1374081
3&4-Methyl Phenol	0.0148	J	0.0111	0.471	1	11/03/2019 18:59	WG1374081
2-Nitrophenol	U		0.0184	0.471	1	11/03/2019 18:59	WG1374081
4-Nitrophenol	U		0.0742	0.471	1	11/03/2019 18:59	WG1374081
Pentachlorophenol	U		0.0678	0.471	1	11/03/2019 18:59	WG1374081
Phenol	U		0.00982	0.471	1	11/03/2019 18:59	WG1374081
2,4,6-Trichlorophenol	U		0.0110	0.471	1	11/03/2019 18:59	WG1374081

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
2,4,5-Trichlorophenol	U		0.0147	0.471	1	11/03/2019 18:59	WG1374081
(S) 2-Fluorophenol	*83.0*			*12.0-120*		*11/03/2019 18:59*	WG1374081
(S) Phenol-d5	*77.0*			*10.0-120*		*11/03/2019 18:59*	WG1374081
(S) Nitrobenzene-d5	*56.5*			*10.0-122*		*11/03/2019 18:59*	WG1374081
(S) 2-Fluorobiphenyl	*62.2*			*15.0-120*		*11/03/2019 18:59*	WG1374081
(S) 2,4,6-Tribromophenol	*104*			*10.0-127*		*11/03/2019 18:59*	WG1374081
(S) p-Terphenyl-d14	*83.5*			*10.0-120*		*11/03/2019 18:59*	WG1374081

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.000848	0.00848	1	11/03/2019 02:46	WG1374060
Acenaphthene	U		0.000848	0.00848	1	11/03/2019 02:46	WG1374060
Acenaphthylene	U		0.000848	0.00848	1	11/03/2019 02:46	WG1374060
Benzo(a)anthracene	0.00650	J	0.000848	0.00848	1	11/03/2019 02:46	WG1374060
Benzo(a)pyrene	0.00557	J	0.000848	0.00848	1	11/03/2019 02:46	WG1374060
Benzo(b)fluoranthene	0.00731	J	0.000848	0.00848	1	11/03/2019 02:46	WG1374060
Benzo(g,h,i)perylene	0.00322	J	0.000848	0.00848	1	11/03/2019 02:46	WG1374060
Benzo(k)fluoranthene	0.00290	J	0.000848	0.00848	1	11/03/2019 02:46	WG1374060
Chrysene	0.00545	J	0.000848	0.00848	1	11/03/2019 02:46	WG1374060
Dibenz(a,h)anthracene	0.000865	J	0.000848	0.00848	1	11/03/2019 02:46	WG1374060
Fluoranthene	0.00937		0.000848	0.00848	1	11/03/2019 02:46	WG1374060
Fluorene	U		0.000848	0.00848	1	11/03/2019 02:46	WG1374060
Indeno(1,2,3-cd)pyrene	0.00267	J	0.000848	0.00848	1	11/03/2019 02:46	WG1374060
Naphthalene	0.00355	J	0.00283	0.0283	1	11/03/2019 02:46	WG1374060
Phenanthrene	0.00285	J	0.000848	0.00848	1	11/03/2019 02:46	WG1374060
Pyrene	0.00918		0.000848	0.00848	1	11/03/2019 02:46	WG1374060
1-Methylnaphthalene	U		0.00283	0.0283	1	11/03/2019 02:46	WG1374060
2-Methylnaphthalene	U		0.00283	0.0283	1	11/03/2019 02:46	WG1374060
2-Chloronaphthalene	U		0.00283	0.0283	1	11/03/2019 02:46	WG1374060
(S) Nitrobenzene-d5	*87.3*			*14.0-149*		*11/03/2019 02:46*	WG1374060
(S) 2-Fluorobiphenyl	*88.8*			*34.0-125*		*11/03/2019 02:46*	WG1374060
(S) p-Terphenyl-d14	*104*			*23.0-120*		*11/03/2019 02:46*	WG1374060

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	60.7		1	11/07/2019 10:36	WG1376223

Wet Chemistry by Method USDA LOI

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
TOC (Total Organic Carbon)	20000		3.33	10.0	1	11/05/2019 10:10	WG1374319

Mercury by Method 7471B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Mercury	0.0329	J	0.00461	0.0494	1	11/04/2019 22:37	WG1374381

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Arsenic	3.64		0.206	0.823	5	11/04/2019 20:15	WG1374403
Cadmium	0.142	J	0.132	0.823	5	11/04/2019 20:15	WG1374403
Chromium	28.2		0.445	1.65	5	11/04/2019 20:15	WG1374403
Copper	28.3		0.428	1.65	5	11/04/2019 20:15	WG1374403
Lead	7.34		0.198	0.823	5	11/04/2019 20:15	WG1374403
Manganese	485		0.206	1.65	5	11/04/2019 20:15	WG1374403
Nickel	25.1		0.288	0.823	5	11/04/2019 20:15	WG1374403
Zinc	80.4		2.11	8.23	5	11/04/2019 20:15	WG1374403

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Diesel Range Organics (DRO)	U		2.19	6.59	1	11/03/2019 18:31	WG1374054
Residual Range Organics (RRO)	9.65	J	5.48	16.5	1	11/03/2019 18:31	WG1374054
(S) o-Terphenyl	*71.8*			*18.0-148*		*11/03/2019 18:31*	WG1374054

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Benzylbutyl phthalate	U		0.0170	0.548	1	11/03/2019 18:19	WG1374081
Bis(2-ethylhexyl)phthalate	U		0.0198	0.548	1	11/03/2019 18:19	WG1374081
Di-n-butyl phthalate	U		0.0179	0.548	1	11/03/2019 18:19	WG1374081
Diethyl phthalate	U		0.0114	0.548	1	11/03/2019 18:19	WG1374081
Dimethyl phthalate	U		0.00889	0.548	1	11/03/2019 18:19	WG1374081
Di-n-octyl phthalate	U		0.0149	0.548	1	11/03/2019 18:19	WG1374081
4-Chloro-3-methylphenol	U		0.00785	0.548	1	11/03/2019 18:19	WG1374081
2-Chlorophenol	U		0.0137	0.548	1	11/03/2019 18:19	WG1374081
2,4-Dichlorophenol	U		0.0123	0.548	1	11/03/2019 18:19	WG1374081
2,4-Dimethylphenol	U		0.0776	0.548	1	11/03/2019 18:19	WG1374081
4,6-Dinitro-2-methylphenol	U		0.204	0.548	1	11/03/2019 18:19	WG1374081
2,4-Dinitrophenol	U		0.161	0.548	1	11/03/2019 18:19	WG1374081
2-Methylphenol	U		0.0162	0.548	1	11/03/2019 18:19	WG1374081
3&4-Methyl Phenol	U		0.0129	0.548	1	11/03/2019 18:19	WG1374081
2-Nitrophenol	U		0.0214	0.548	1	11/03/2019 18:19	WG1374081
4-Nitrophenol	U		0.0864	0.548	1	11/03/2019 18:19	WG1374081
Pentachlorophenol	U		0.0790	0.548	1	11/03/2019 18:19	WG1374081
Phenol	U		0.0114	0.548	1	11/03/2019 18:19	WG1374081
2,4,6-Trichlorophenol	U		0.0128	0.548	1	11/03/2019 18:19	WG1374081

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
2,4,5-Trichlorophenol	U		0.0171	0.548	1	11/03/2019 18:19	WG1374081
(S) 2-Fluorophenol	*79.9*			*12.0-120*		*11/03/2019 18:19*	WG1374081
(S) Phenol-d5	*74.6*			*10.0-120*		*11/03/2019 18:19*	WG1374081
(S) Nitrobenzene-d5	*57.3*			*10.0-122*		*11/03/2019 18:19*	WG1374081
(S) 2-Fluorobiphenyl	*64.8*			*15.0-120*		*11/03/2019 18:19*	WG1374081
(S) 2,4,6-Tribromophenol	*102*			*10.0-127*		*11/03/2019 18:19*	WG1374081
(S) p-Terphenyl-d14	*76.3*			*10.0-120*		*11/03/2019 18:19*	WG1374081

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.000988	0.00988	1	11/03/2019 03:07	WG1374060
Acenaphthene	U		0.000988	0.00988	1	11/03/2019 03:07	WG1374060
Acenaphthylene	U		0.000988	0.00988	1	11/03/2019 03:07	WG1374060
Benzo(a)anthracene	0.00263	J	0.000988	0.00988	1	11/03/2019 03:07	WG1374060
Benzo(a)pyrene	0.00244	J	0.000988	0.00988	1	11/03/2019 03:07	WG1374060
Benzo(b)fluoranthene	0.00331	J	0.000988	0.00988	1	11/03/2019 03:07	WG1374060
Benzo(g,h,i)perylene	0.00216	J	0.000988	0.00988	1	11/03/2019 03:07	WG1374060
Benzo(k)fluoranthene	0.00115	J	0.000988	0.00988	1	11/03/2019 03:07	WG1374060
Chrysene	0.00227	J	0.000988	0.00988	1	11/03/2019 03:07	WG1374060
Dibenz(a,h)anthracene	U		0.000988	0.00988	1	11/03/2019 03:07	WG1374060
Fluoranthene	0.00540	J	0.000988	0.00988	1	11/03/2019 03:07	WG1374060
Fluorene	U		0.000988	0.00988	1	11/03/2019 03:07	WG1374060
Indeno(1,2,3-cd)pyrene	0.00152	J	0.000988	0.00988	1	11/03/2019 03:07	WG1374060
Naphthalene	U		0.00329	0.0329	1	11/03/2019 03:07	WG1374060
Phenanthrene	0.00221	J	0.000988	0.00988	1	11/03/2019 03:07	WG1374060
Pyrene	0.00441	J	0.000988	0.00988	1	11/03/2019 03:07	WG1374060
1-Methylnaphthalene	U		0.00329	0.0329	1	11/03/2019 03:07	WG1374060
2-Methylnaphthalene	U		0.00329	0.0329	1	11/03/2019 03:07	WG1374060
2-Chloronaphthalene	U		0.00329	0.0329	1	11/03/2019 03:07	WG1374060
(S) Nitrobenzene-d5	*86.9*			*14.0-149*		*11/03/2019 03:07*	WG1374060
(S) 2-Fluorobiphenyl	*87.9*			*34.0-125*		*11/03/2019 03:07*	WG1374060
(S) p-Terphenyl-d14	*103*			*23.0-120*		*11/03/2019 03:07*	WG1374060

Wet Chemistry by Method 9060A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
TOC (Total Organic Carbon)	349	B J	102	1000	1	11/03/2019 05:37	WG1374098

Mercury by Method 7470A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Mercury	U	J3 J6	0.0490	0.200	1	11/01/2019 09:12	WG1373138

Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Arsenic	U		0.250	2.00	1	11/05/2019 16:58	WG1373700
Cadmium	U		0.160	1.00	1	11/05/2019 16:58	WG1373700
Chromium	1.44	B J	0.540	2.00	1	11/05/2019 16:58	WG1373700
Copper	U		0.520	5.00	1	11/05/2019 16:58	WG1373700
Lead	0.594	J	0.240	2.00	1	11/05/2019 16:58	WG1373700
Manganese	1.71	B J	0.250	5.00	1	11/05/2019 16:58	WG1373700
Nickel	U		0.350	2.00	1	11/05/2019 16:58	WG1373700
Zinc	4.24	J	2.56	25.0	1	11/05/2019 16:58	WG1373700

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Diesel Range Organics (DRO)	100	J	33.3	100	1	11/02/2019 19:49	WG1373898
Residual Range Organics (RRO)	U		83.3	250	1	11/02/2019 19:49	WG1373898
(S) o-Terphenyl	*65.0*			*31.0-160*		*11/02/2019 19:49*	WG1373898

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Benzylbutyl phthalate	U		0.275	3.00	1	11/05/2019 18:50	WG1374366
Bis(2-ethylhexyl)phthalate	U		0.709	3.00	1	11/05/2019 18:50	WG1374366
Di-n-butyl phthalate	U		0.266	3.00	1	11/05/2019 18:50	WG1374366
Diethyl phthalate	U		0.282	3.00	1	11/05/2019 18:50	WG1374366
Dimethyl phthalate	U		0.283	3.00	1	11/05/2019 18:50	WG1374366
Di-n-octyl phthalate	U		0.278	3.00	1	11/05/2019 18:50	WG1374366
4-Chloro-3-methylphenol	U		0.263	10.0	1	11/05/2019 18:50	WG1374366
2-Chlorophenol	U		0.283	10.0	1	11/05/2019 18:50	WG1374366
2,4-Dichlorophenol	U		0.284	10.0	1	11/05/2019 18:50	WG1374366
2,4-Dimethylphenol	U		0.264	10.0	1	11/05/2019 18:50	WG1374366
4,6-Dinitro-2-methylphenol	U		2.62	10.0	1	11/05/2019 18:50	WG1374366
2,4-Dinitrophenol	U		3.25	10.0	1	11/05/2019 18:50	WG1374366
2-Methylphenol	U		0.312	10.0	1	11/05/2019 18:50	WG1374366
3&4-Methyl Phenol	U		0.266	10.0	1	11/05/2019 18:50	WG1374366
2-Nitrophenol	U		0.320	10.0	1	11/05/2019 18:50	WG1374366
4-Nitrophenol	U		2.01	10.0	1	11/05/2019 18:50	WG1374366
Pentachlorophenol	U		0.313	10.0	1	11/05/2019 18:50	WG1374366
Phenol	3.56	J	0.334	10.0	1	11/05/2019 18:50	WG1374366
2,4,6-Trichlorophenol	U		0.297	10.0	1	11/05/2019 18:50	WG1374366
2,4,5-Trichlorophenol	U		0.236	10.0	1	11/05/2019 18:50	WG1374366
(S) 2-Fluorophenol	*29.1*			*10.0-120*		*11/05/2019 18:50*	WG1374366
(S) Phenol-d5	*18.9*			*10.0-120*		*11/05/2019 18:50*	WG1374366
(S) Nitrobenzene-d5	*40.6*			*10.0-127*		*11/05/2019 18:50*	WG1374366
(S) 2-Fluorobiphenyl	*48.8*			*10.0-130*		*11/05/2019 18:50*	WG1374366
(S) 2,4,6-Tribromophenol	*45.1*			*10.0-155*		*11/05/2019 18:50*	WG1374366

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
(S) p-Terphenyl-d14	*54.7*			*10.0-128*		*11/05/2019 18:50*	WG1374366

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Anthracene	U		0.0140	0.0500	1	11/02/2019 20:47	WG1373904
Acenaphthene	U		0.0100	0.0500	1	11/02/2019 20:47	WG1373904
Acenaphthylene	U		0.0120	0.0500	1	11/02/2019 20:47	WG1373904
Benzo(a)anthracene	U		0.00410	0.0500	1	11/02/2019 20:47	WG1373904
Benzo(a)pyrene	U		0.0116	0.0500	1	11/02/2019 20:47	WG1373904
Benzo(b)fluoranthene	U		0.00212	0.0500	1	11/02/2019 20:47	WG1373904
Benzo(g,h,i)perylene	U		0.00227	0.0500	1	11/02/2019 20:47	WG1373904
Benzo(k)fluoranthene	U		0.0136	0.0500	1	11/02/2019 20:47	WG1373904
Chrysene	U		0.0108	0.0500	1	11/02/2019 20:47	WG1373904
Dibenz(a,h)anthracene	U		0.00396	0.0500	1	11/02/2019 20:47	WG1373904
Fluoranthene	U		0.0157	0.0500	1	11/02/2019 20:47	WG1373904
Fluorene	U		0.00850	0.0500	1	11/02/2019 20:47	WG1373904
Indeno(1,2,3-cd)pyrene	U		0.0148	0.0500	1	11/02/2019 20:47	WG1373904
Naphthalene	0.0228	B J	0.0198	0.250	1	11/02/2019 20:47	WG1373904
Phenanthrene	U		0.00820	0.0500	1	11/02/2019 20:47	WG1373904
Pyrene	U		0.0117	0.0500	1	11/02/2019 20:47	WG1373904
1-Methylnaphthalene	U		0.00821	0.250	1	11/02/2019 20:47	WG1373904
2-Methylnaphthalene	0.0100	B J	0.00902	0.250	1	11/02/2019 20:47	WG1373904
2-Chloronaphthalene	U		0.00647	0.250	1	11/02/2019 20:47	WG1373904
(S) Nitrobenzene-d5	*112*			*31.0-160*		*11/02/2019 20:47*	WG1373904
(S) 2-Fluorobiphenyl	*104*			*48.0-148*		*11/02/2019 20:47*	WG1373904
(S) p-Terphenyl-d14	*108*			*37.0-146*		*11/02/2019 20:47*	WG1373904

Method Blank (MB)

(MB) R3469930-1 11/07/19 10:36

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.000			

L1155761-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1155761-01 11/07/19 10:36 • (DUP) R3469930-3 11/07/19 10:36

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	63.9	64.2	1	0.385		10

Laboratory Control Sample (LCS)

(LCS) R3469930-2 11/07/19 10:36

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	49.9	99.8	85.0-115	

Method Blank (MB)

(MB) R3468492-1 11/02/19 22:57

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
TOC (Total Organic Carbon)	387	J	102	1000

L1155639-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1155639-02 11/03/19 00:50 • (DUP) R3468492-3 11/03/19 01:03

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOC	508	480	1	5.69	J	20

L1155683-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1155683-01 11/03/19 03:10 • (DUP) R3468492-6 11/03/19 03:24

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOC	1260	1210	1	4.46		20

Laboratory Control Sample (LCS)

(LCS) R3468492-2 11/02/19 23:27

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TOC	75000	72300	96.4	85.0-115	

L1155644-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155644-02 11/03/19 01:35 • (MS) R3468492-4 11/03/19 01:53 • (MSD) R3468492-5 11/03/19 02:09

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TOC	50000	2330	50000	50500	95.3	96.4	1	80.0-120			1.09	20

L1155761-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155761-10 11/03/19 05:37 • (MS) R3468492-7 11/03/19 05:56 • (MSD) R3468492-8 11/03/19 06:12

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TOC	50000	349	47400	48800	94.2	96.9	1	80.0-120			2.85	20

Method Blank (MB)

(MB) R3468995-1 11/05/19 10:10

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TOC (Total Organic Carbon)	U		3.33	10.0

L1155761-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1155761-05 11/05/19 10:10 • (DUP) R3468995-3 11/05/19 10:10

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOC (Total Organic Carbon)	17700	14700	1	19.0		20

Laboratory Control Sample (LCS)

(LCS) R3468995-2 11/05/19 10:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TOC (Total Organic Carbon)	3620	5180	143	38.6-176	

Method Blank (MB)

(MB) R3467443-1 11/01/19 09:06

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Mercury	U		0.0490	0.200

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3467443-5 11/01/19 12:06 • (LCSD) R3467443-2 11/01/19 09:10

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Mercury	3.00	3.16	3.48	105	116	80.0-120			9.74	20

L1155761-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155761-10 11/01/19 09:12 • (MS) R3467443-3 11/01/19 09:14 • (MSD) R3467443-4 11/01/19 09:16

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Mercury	3.00	U	1.93	2.77	64.2	92.2	1	75.0-125	J6	J3	35.7	20

Method Blank (MB)

(MB) R3468360-1 11/04/19 21:41

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Mercury	U		0.00280	0.0300

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3468360-2 11/04/19 21:43 • (LCSD) R3468360-3 11/04/19 21:46

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Mercury	0.500	0.476	0.479	95.2	95.9	80.0-120			0.669	20

L1155761-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155761-01 11/04/19 21:49 • (MS) R3468360-4 11/04/19 21:51 • (MSD) R3468360-5 11/04/19 21:59

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	0.782	0.0362	0.821	0.764	100	93.0	1	75.0-125			7.17	20

Method Blank (MB)

(MB) R3468712-1 11/05/19 15:58

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Arsenic	U		0.250	2.00
Cadmium	U		0.160	1.00
Chromium	1.03	J	0.540	2.00
Copper	U		0.520	5.00
Lead	U		0.240	2.00
Manganese	0.609	J	0.250	5.00
Nickel	U		0.350	2.00
Zinc	U		2.56	25.0

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3468712-2 11/05/19 16:02 • (LCSD) R3468712-3 11/05/19 16:05

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Arsenic	50.0	47.5	49.2	95.0	98.3	80.0-120			3.42	20
Cadmium	50.0	49.2	49.3	98.5	98.7	80.0-120			0.155	20
Chromium	50.0	48.6	50.0	97.1	100	80.0-120			2.88	20
Copper	50.0	47.4	48.3	94.8	96.6	80.0-120			1.89	20
Lead	50.0	49.7	50.7	99.4	101	80.0-120			1.92	20
Manganese	50.0	47.3	49.1	94.7	98.3	80.0-120			3.73	20
Nickel	50.0	47.3	48.9	94.6	97.8	80.0-120			3.26	20
Zinc	50.0	49.3	50.5	98.6	101	80.0-120			2.41	20

L1155830-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155830-07 11/05/19 16:09 • (MS) R3468712-5 11/05/19 16:17 • (MSD) R3468712-6 11/05/19 16:21

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	50.0	1.75	50.6	51.9	97.7	100	1	75.0-125			2.45	20
Cadmium	50.0	U	50.8	49.9	102	99.7	1	75.0-125			1.86	20
Chromium	50.0	13.0	61.6	60.6	97.2	95.1	1	75.0-125			1.74	20
Copper	50.0	1.57	48.5	47.9	93.9	92.8	1	75.0-125			1.15	20
Lead	50.0	U	50.7	49.9	101	99.9	1	75.0-125			1.44	20
Manganese	50.0	20.3	69.5	68.6	98.4	96.7	1	75.0-125			1.26	20
Nickel	50.0	1.35	51.0	50.3	99.3	98.0	1	75.0-125			1.27	20
Zinc	50.0	4.98	51.9	53.1	93.8	96.3	1	75.0-125			2.35	20

Method Blank (MB)

(MB) R3468349-1 11/04/19 18:43

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.125	0.500
Cadmium	U		0.0800	0.500
Chromium	0.480	J	0.270	1.00
Copper	U		0.260	1.00
Lead	U		0.120	0.500
Manganese	U		0.125	1.00
Nickel	U		0.175	0.500
Zinc	U		1.28	5.00

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3468349-2 11/04/19 18:47 • (LCSD) R3468349-3 11/04/19 18:51

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Arsenic	100	96.2	94.8	96.2	94.8	80.0-120			1.38	20
Cadmium	100	103	99.3	103	99.3	80.0-120			3.44	20
Chromium	100	102	99.9	102	99.9	80.0-120			1.85	20
Copper	100	93.0	91.6	93.0	91.6	80.0-120			1.53	20
Lead	100	99.7	96.6	99.7	96.6	80.0-120			3.21	20
Manganese	100	103	101	103	101	80.0-120			2.18	20
Nickel	100	103	101	103	101	80.0-120			1.45	20
Zinc	100	101	99.3	101	99.3	80.0-120			2.05	20

L1155761-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155761-02 11/04/19 18:55 • (MS) R3468349-6 11/04/19 19:07 • (MSD) R3468349-7 11/04/19 19:11

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	32.1	3.45	145	142	88.3	86.6	5	75.0-125			1.92	20
Cadmium	32.1	U	164	153	102	95.6	5	75.0-125			6.96	20
Chromium	32.1	28.2	179	176	93.9	92.2	5	75.0-125			1.53	20
Copper	32.1	26.8	176	167	92.7	87.4	5	75.0-125			5.00	20
Lead	32.1	8.48	167	158	98.5	93.4	5	75.0-125			4.97	20
Manganese	32.1	376	520	547	89.6	106	5	75.0-125			4.97	20
Nickel	32.1	25.2	179	175	95.9	93.6	5	75.0-125			2.14	20
Zinc	32.1	80.7	234	233	95.4	94.7	5	75.0-125			0.455	20

Method Blank (MB)

(MB) R3467794-1 11/02/19 18:30

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Residual Range Organics (RRO)	U		83.3	250
Diesel Range Organics (DRO)	U		33.3	100
(S) o-Terphenyl	*66.5*			*31.0-160*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3467794-2 11/02/19 18:57 • (LCSD) R3467794-3 11/02/19 19:23

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Diesel Range Organics (DRO)	1500	1270	1320	84.7	88.0	50.0-150			3.86	20
(S) o-Terphenyl				*72.5*	*76.0*	*31.0-160*				

Method Blank (MB)

(MB) R3467876-1 11/02/19 22:14

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Diesel Range Organics (DRO)	U		1.33	4.00
Residual Range Organics (RRO)	U		3.33	10.0
(S) o-Terphenyl	*67.0*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3467876-2 11/02/19 22:27

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Diesel Range Organics (DRO)	50.0	40.8	81.6	50.0-150	
(S) o-Terphenyl			*105*	*18.0-148*	

Method Blank (MB)

(MB) R3467881-2 11/03/19 12:30

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzylbutyl phthalate	U		0.0103	0.333
Bis(2-ethylhexyl)phthalate	U		0.0120	0.333
Di-n-butyl phthalate	U		0.0109	0.333
Diethyl phthalate	U		0.00691	0.333
Dimethyl phthalate	U		0.00540	0.333
Di-n-octyl phthalate	U		0.00907	0.333
4-Chloro-3-methylphenol	U		0.00477	0.333
2-Chlorophenol	U		0.00831	0.333
2-Methylphenol	U		0.00986	0.333
3&4-Methyl Phenol	U		0.00783	0.333
2,4-Dichlorophenol	U		0.00746	0.333
2,4-Dimethylphenol	U		0.0471	0.333
4,6-Dinitro-2-methylphenol	U		0.124	0.333
2,4-Dinitrophenol	U		0.0980	0.333
2-Nitrophenol	U		0.0130	0.333
4-Nitrophenol	U		0.0525	0.333
Pentachlorophenol	U		0.0480	0.333
Phenol	U		0.00695	0.333
2,4,5-Trichlorophenol	U		0.0104	0.333
2,4,6-Trichlorophenol	U		0.00779	0.333
(S) Nitrobenzene-d5	*60.4*			*10.0-122*
(S) 2-Fluorobiphenyl	*70.3*			*15.0-120*
(S) p-Terphenyl-d14	*76.0*			*10.0-120*
(S) Phenol-d5	*69.7*			*10.0-120*
(S) 2-Fluorophenol	*77.8*			*12.0-120*
(S) 2,4,6-Tribromophenol	*91.9*			*10.0-127*

Laboratory Control Sample (LCS)

(LCS) R3467881-1 11/03/19 12:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzylbutyl phthalate	0.666	0.472	70.9	40.0-120	
Bis(2-ethylhexyl)phthalate	0.666	0.476	71.5	41.0-120	
Di-n-butyl phthalate	0.666	0.512	76.9	43.0-120	
Diethyl phthalate	0.666	0.460	69.1	43.0-120	
Dimethyl phthalate	0.666	0.446	67.0	43.0-120	
Di-n-octyl phthalate	0.666	0.490	73.6	40.0-120	
4-Chloro-3-methylphenol	0.666	0.411	61.7	28.0-120	

Laboratory Control Sample (LCS)

(LCS) R3467881-1 11/03/19 12:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
2-Chlorophenol	0.666	0.441	66.2	28.0-120	
2-Methylphenol	0.666	0.422	63.4	35.0-120	
3&4-Methyl Phenol	0.666	0.496	74.5	42.0-120	
2,4-Dichlorophenol	0.666	0.440	66.1	25.0-120	
2,4-Dimethylphenol	0.666	0.374	56.2	15.0-120	
4,6-Dinitro-2-methylphenol	0.666	0.482	72.4	16.0-120	
2,4-Dinitrophenol	0.666	0.319	47.9	10.0-120	
2-Nitrophenol	0.666	0.438	65.8	20.0-120	
4-Nitrophenol	0.666	0.431	64.7	27.0-120	
Pentachlorophenol	0.666	0.540	81.1	29.0-120	
Phenol	0.666	0.416	62.5	28.0-120	
2,4,5-Trichlorophenol	0.666	0.561	84.2	38.0-120	
2,4,6-Trichlorophenol	0.666	0.519	77.9	37.0-120	
(S) Nitrobenzene-d5			*48.9*	*10.0-122*	
(S) 2-Fluorobiphenyl			*67.6*	*15.0-120*	
(S) p-Terphenyl-d14			*75.7*	*10.0-120*	
(S) Phenol-d5			*66.8*	*10.0-120*	
(S) 2-Fluorophenol			*74.9*	*12.0-120*	
(S) 2,4,6-Tribromophenol			*105*	*10.0-127*	

L1155819-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155819-01 11/03/19 21:20 • (MS) R3467881-3 11/03/19 21:39 • (MSD) R3467881-4 11/03/19 21:59

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzylbutyl phthalate	0.656	ND	0.544	0.565	82.9	84.8	2	23.0-120			3.79	30
Bis(2-ethylhexyl)phthalate	0.656	ND	0.525	0.560	80.0	84.1	2	17.0-126			6.45	30
Di-n-butyl phthalate	0.656	ND	0.545	0.556	83.1	83.5	2	30.0-120			2.00	29
Diethyl phthalate	0.656	ND	0.454	0.444	69.2	66.7	2	26.0-120			2.23	28
Dimethyl phthalate	0.656	ND	0.426	0.400	64.9	60.1	2	25.0-120			6.30	29
Di-n-octyl phthalate	0.656	ND	0.545	0.563	83.1	84.5	2	21.0-123			3.25	29
4-Chloro-3-methylphenol	0.656	ND	0.495	0.485	75.5	72.8	2	15.0-120			2.04	30
2-Chlorophenol	0.656	ND	0.381	0.380	58.1	57.1	2	15.0-120			0.263	37
2-Methylphenol	0.656	ND	0.379	0.360	57.8	54.1	2	11.0-120			5.14	40
3&4-Methyl Phenol	0.656	ND	0.432	0.407	65.9	61.1	2	12.0-123			5.96	38
2,4-Dichlorophenol	0.656	ND	0.541	0.490	82.5	73.6	2	20.0-120			9.89	31
2,4-Dimethylphenol	0.656	ND	0.526	0.464	80.2	69.7	2	10.0-120			12.5	33
4,6-Dinitro-2-methylphenol	0.656	ND	0.380	0.390	57.9	58.6	2	10.0-120			2.60	39
2,4-Dinitrophenol	0.656	ND	ND	ND	0.000	0.000	2	10.0-121	J6	J6	0.000	40

L1155819-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155819-01 11/03/19 21:20 • (MS) R3467881-3 11/03/19 21:39 • (MSD) R3467881-4 11/03/19 21:59

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
2-Nitrophenol	0.656	ND	0.480	0.525	73.2	78.8	2	12.0-120			8.96	39
4-Nitrophenol	0.656	ND	0.411	0.404	62.7	60.7	2	10.0-137			1.72	32
Pentachlorophenol	0.656	ND	0.374	0.291	57.0	43.7	2	10.0-160			25.0	31
Phenol	0.656	ND	0.351	0.340	53.5	51.1	2	12.0-120			3.18	38
2,4,5-Trichlorophenol	0.656	ND	0.544	0.470	82.9	70.6	2	20.0-120			14.6	30
2,4,6-Trichlorophenol	0.656	ND	0.482	0.433	73.5	65.0	2	19.0-120			10.7	32
(S) Nitrobenzene-d5					*58.2*	*59.2*		*10.0-122*				
(S) 2-Fluorobiphenyl					*59.1*	*51.1*		*15.0-120*				
(S) p-Terphenyl-d14					*89.9*	*85.0*		*10.0-120*				
(S) Phenol-d5					*60.9*	*57.4*		*10.0-120*				
(S) 2-Fluorophenol					*59.8*	*58.0*		*12.0-120*				
(S) 2,4,6-Tribromophenol					*97.9*	*91.6*		*10.0-127*				

Method Blank (MB)

(MB) R3468610-2 11/05/19 13:16

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Benzylbutyl phthalate	U		0.275	3.00
Bis(2-ethylhexyl)phthalate	U		0.709	3.00
Di-n-butyl phthalate	U		0.266	3.00
Diethyl phthalate	U		0.282	3.00
Dimethyl phthalate	U		0.283	3.00
Di-n-octyl phthalate	U		0.278	3.00
4-Chloro-3-methylphenol	U		0.263	10.0
2-Chlorophenol	U		0.283	10.0
2-Methylphenol	U		0.312	10.0
3&4-Methyl Phenol	U		0.266	10.0
2,4-Dichlorophenol	U		0.284	10.0
2,4-Dimethylphenol	U		0.264	10.0
4,6-Dinitro-2-methylphenol	U		2.62	10.0
2,4-Dinitrophenol	U		3.25	10.0
2-Nitrophenol	U		0.320	10.0
4-Nitrophenol	U		2.01	10.0
Pentachlorophenol	U		0.313	10.0
Phenol	U		0.334	10.0
2,4,5-Trichlorophenol	U		0.236	10.0
2,4,6-Trichlorophenol	U		0.297	10.0
(S) Nitrobenzene-d5	*35.2*			*10.0-127*
(S) 2-Fluorobiphenyl	*42.5*			*10.0-130*
(S) p-Terphenyl-d14	*73.4*			*10.0-128*
(S) Phenol-d5	*17.3*			*10.0-120*
(S) 2-Fluorophenol	*25.7*			*10.0-120*
(S) 2,4,6-Tribromophenol	*39.0*			*10.0-155*

Laboratory Control Sample (LCS)

(LCS) R3468610-1 11/05/19 12:55

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzylbutyl phthalate	50.0	41.8	83.6	43.0-121	
Bis(2-ethylhexyl)phthalate	50.0	41.0	82.0	43.0-122	
Di-n-butyl phthalate	50.0	41.4	82.8	49.0-121	
Diethyl phthalate	50.0	39.3	78.6	48.0-122	
Dimethyl phthalate	50.0	36.4	72.8	48.0-120	
Di-n-octyl phthalate	50.0	39.1	78.2	42.0-125	
4-Chloro-3-methylphenol	50.0	28.3	56.6	40.0-120	

Laboratory Control Sample (LCS)

(LCS) R3468610-1 11/05/19 12:55

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
2-Chlorophenol	50.0	23.1	46.2	25.0-120	
2-Methylphenol	50.0	22.5	45.0	28.0-120	
3&4-Methyl Phenol	50.0	24.8	49.6	31.0-120	
2,4-Dichlorophenol	50.0	25.0	50.0	36.0-120	
2,4-Dimethylphenol	50.0	24.1	48.2	33.0-120	
4,6-Dinitro-2-methylphenol	50.0	36.2	72.4	38.0-138	
2,4-Dinitrophenol	50.0	32.9	65.8	10.0-120	
2-Nitrophenol	50.0	24.4	48.8	31.0-120	
4-Nitrophenol	50.0	18.2	36.4	10.0-120	
Pentachlorophenol	50.0	36.0	72.0	23.0-120	
Phenol	50.0	12.9	25.8	10.0-120	
2,4,5-Trichlorophenol	50.0	35.3	70.6	44.0-120	
2,4,6-Trichlorophenol	50.0	31.6	63.2	42.0-120	
(S) Nitrobenzene-d5			*40.3*	*10.0-127*	
(S) 2-Fluorobiphenyl			*58.5*	*10.0-130*	
(S) p-Terphenyl-d14			*73.1*	*10.0-128*	
(S) Phenol-d5			*23.5*	*10.0-120*	
(S) 2-Fluorophenol			*33.0*	*10.0-120*	
(S) 2,4,6-Tribromophenol			*64.0*	*10.0-155*	

L1155700-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155700-01 11/04/19 16:32 • (MS) R3468663-1 11/04/19 16:54 • (MSD) R3468663-2 11/04/19 17:16

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzylbutyl phthalate	50.0	U	39.2	40.3	78.4	80.6	1	34.0-126			2.77	24
Bis(2-ethylhexyl)phthalate	50.0	U	33.5	30.2	67.0	60.4	1	33.0-126			10.4	25
Di-n-butyl phthalate	50.0	U	42.2	45.0	84.4	90.0	1	35.0-128			6.42	23
Diethyl phthalate	50.0	U	37.5	42.5	75.0	85.0	1	39.0-125			12.5	24
Dimethyl phthalate	50.0	U	30.3	35.1	60.6	70.2	1	37.0-120			14.7	24
Di-n-octyl phthalate	50.0	U	35.6	31.9	71.2	63.8	1	25.0-135			11.0	26
4-Chloro-3-methylphenol	50.0	U	20.2	23.6	40.4	47.2	1	26.0-120			15.5	27
2-Chlorophenol	50.0	U	11.9	15.9	23.8	31.8	1	18.0-120			28.8	34
2-Methylphenol	50.0	U	12.0	16.1	24.0	32.2	1	10.0-120			29.2	30
3&4-Methyl Phenol	50.0	U	13.5	18.0	27.0	36.0	1	10.0-120			28.6	36
2,4-Dichlorophenol	50.0	U	15.4	19.4	30.8	38.8	1	19.0-120			23.0	27
2,4-Dimethylphenol	50.0	U	14.7	18.3	29.4	36.6	1	15.0-120			21.8	28
4,6-Dinitro-2-methylphenol	50.0	U	26.0	28.5	52.0	57.0	1	10.0-144			9.17	39
2,4-Dinitrophenol	50.0	U	10.8	15.1	21.6	30.2	1	10.0-120			33.2	40

L1155700-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155700-01 11/04/19 16:32 • (MS) R3468663-1 11/04/19 16:54 • (MSD) R3468663-2 11/04/19 17:16

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
2-Nitrophenol	50.0	U	14.8	19.3	29.6	38.6	1	20.0-120			26.4	30
4-Nitrophenol	50.0	U	12.7	16.6	25.4	33.2	1	10.0-120			26.6	40
Pentachlorophenol	50.0	U	15.2	20.2	30.4	40.4	1	10.0-128			28.2	37
Phenol	50.0	U	6.50	9.13	13.0	18.3	1	10.0-120			33.7	40
2,4,5-Trichlorophenol	50.0	U	23.0	27.7	46.0	55.4	1	33.0-120			18.5	31
2,4,6-Trichlorophenol	50.0	U	20.3	24.9	40.6	49.8	1	26.0-120			20.4	31
(S) Nitrobenzene-d5					*25.4*	*35.8*		*10.0-127*				
(S) 2-Fluorobiphenyl					*34.8*	*50.1*		*10.0-130*				
(S) p-Terphenyl-d14					*68.9*	*65.4*		*10.0-128*				
(S) Phenol-d5					*12.3*	*17.1*		*10.0-120*				
(S) 2-Fluorophenol					*17.4*	*25.1*		*10.0-120*				
(S) 2,4,6-Tribromophenol					*51.0*	*63.0*		*10.0-155*				

Method Blank (MB)

(MB) R3467909-2 11/02/19 19:17

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Anthracene	U		0.0140	0.0500
Acenaphthene	U		0.0100	0.0500
Acenaphthylene	U		0.0120	0.0500
Benzo(a)anthracene	U		0.00410	0.0500
Benzo(a)pyrene	U		0.0116	0.0500
Benzo(b)fluoranthene	U		0.00212	0.0500
Benzo(g,h,i)perylene	U		0.00227	0.0500
Benzo(k)fluoranthene	U		0.0136	0.0500
Chrysene	U		0.0108	0.0500
Dibenz(a,h)anthracene	U		0.00396	0.0500
Fluoranthene	U		0.0157	0.0500
Fluorene	U		0.00850	0.0500
Indeno(1,2,3-cd)pyrene	U		0.0148	0.0500
Naphthalene	0.0227	J	0.0198	0.250
Phenanthrene	U		0.00820	0.0500
Pyrene	U		0.0117	0.0500
1-Methylnaphthalene	U		0.00821	0.250
2-Methylnaphthalene	0.00903	J	0.00902	0.250
2-Chloronaphthalene	U		0.00647	0.250
(S) Nitrobenzene-d5	*118*			*31.0-160*
(S) 2-Fluorobiphenyl	*112*			*48.0-148*
(S) p-Terphenyl-d14	*121*			*37.0-146*

Laboratory Control Sample (LCS)

(LCS) R3467909-1 11/02/19 18:54

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	2.00	1.94	97.0	67.0-150	
Acenaphthene	2.00	1.90	95.0	65.0-138	
Acenaphthylene	2.00	2.05	102	66.0-140	
Benzo(a)anthracene	2.00	2.00	100	61.0-140	
Benzo(a)pyrene	2.00	1.81	90.5	60.0-143	
Benzo(b)fluoranthene	2.00	1.72	86.0	58.0-141	
Benzo(g,h,i)perylene	2.00	1.68	84.0	52.0-153	
Benzo(k)fluoranthene	2.00	1.87	93.5	58.0-148	
Chrysene	2.00	1.96	98.0	64.0-144	
Dibenz(a,h)anthracene	2.00	1.69	84.5	52.0-155	
Fluoranthene	2.00	2.11	105	69.0-153	

Laboratory Control Sample (LCS)

(LCS) R3467909-1 11/02/19 18:54

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	2.00	2.02	101	64.0-136	
Indeno(1,2,3-cd)pyrene	2.00	1.66	83.0	54.0-153	
Naphthalene	2.00	2.11	105	61.0-137	
Phenanthrene	2.00	1.99	99.5	62.0-137	
Pyrene	2.00	1.82	91.0	60.0-142	
1-Methylnaphthalene	2.00	2.19	109	66.0-142	
2-Methylnaphthalene	2.00	2.08	104	62.0-136	
2-Chloronaphthalene	2.00	1.82	91.0	64.0-140	
(S) Nitrobenzene-d5			*109*	*31.0-160*	
(S) 2-Fluorobiphenyl			*103*	*48.0-148*	
(S) p-Terphenyl-d14			*107*	*37.0-146*	

L1156001-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1156001-06 11/02/19 19:39 • (MS) R3467909-3 11/02/19 20:02 • (MSD) R3467909-4 11/02/19 20:24

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	1.90	U	1.87	1.86	98.4	97.9	1	56.0-156			0.536	20
Acenaphthene	1.90	U	1.81	1.79	95.3	94.2	1	44.0-153			1.11	20
Acenaphthylene	1.90	U	1.97	1.94	104	102	1	53.0-150			1.53	20
Benzo(a)anthracene	1.90	U	1.92	1.93	101	102	1	47.0-151			0.519	20
Benzo(a)pyrene	1.90	U	1.79	1.82	94.2	95.8	1	45.0-146			1.66	20
Benzo(b)fluoranthene	1.90	U	1.85	1.75	97.4	92.1	1	43.0-142			5.56	20
Benzo(g,h,i)perylene	1.90	U	1.67	1.70	87.9	89.5	1	40.0-147			1.78	20
Benzo(k)fluoranthene	1.90	U	1.72	1.87	90.5	98.4	1	43.0-148			8.36	21
Chrysene	1.90	U	1.85	1.85	97.4	97.4	1	50.0-148			0.000	20
Dibenz(a,h)anthracene	1.90	U	1.71	1.71	90.0	90.0	1	37.0-151			0.000	20
Fluoranthene	1.90	U	2.06	2.05	108	108	1	56.0-157			0.487	20
Fluorene	1.90	U	1.94	1.91	102	101	1	48.0-148			1.56	20
Indeno(1,2,3-cd)pyrene	1.90	U	1.65	1.68	86.8	88.4	1	41.0-148			1.80	20
Naphthalene	1.90	0.147	2.17	2.17	106	106	1	10.0-160			0.000	20
Phenanthrene	1.90	0.0133	1.89	1.91	98.8	99.8	1	47.0-147			1.05	20
Pyrene	1.90	U	1.70	1.71	89.5	90.0	1	51.0-148			0.587	20
1-Methylnaphthalene	1.90	0.0321	2.09	2.07	108	107	1	21.0-160			0.962	20
2-Methylnaphthalene	1.90	0.0224	1.96	1.93	102	100	1	31.0-160			1.54	20
2-Chloronaphthalene	1.90	U	1.75	1.73	92.1	91.1	1	52.0-148			1.15	20
(S) Nitrobenzene-d5					*111*	*113*		*31.0-160*				
(S) 2-Fluorobiphenyl					*104*	*105*		*48.0-148*				
(S) p-Terphenyl-d14					*109*	*112*		*37.0-146*				

Method Blank (MB)

(MB) R3467850-2 11/02/19 23:59

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.000600	0.00600
Acenaphthene	U		0.000600	0.00600
Acenaphthylene	U		0.000600	0.00600
Benzo(a)anthracene	U		0.000600	0.00600
Benzo(a)pyrene	U		0.000600	0.00600
Benzo(b)fluoranthene	U		0.000600	0.00600
Benzo(g,h,i)perylene	U		0.000600	0.00600
Benzo(k)fluoranthene	U		0.000600	0.00600
Chrysene	U		0.000600	0.00600
Dibenz(a,h)anthracene	U		0.000600	0.00600
Fluoranthene	U		0.000600	0.00600
Fluorene	U		0.000600	0.00600
Indeno(1,2,3-cd)pyrene	U		0.000600	0.00600
Naphthalene	U		0.00200	0.0200
Phenanthrene	U		0.000600	0.00600
Pyrene	U		0.000600	0.00600
1-Methylnaphthalene	U		0.00200	0.0200
2-Methylnaphthalene	U		0.00200	0.0200
2-Chloronaphthalene	U		0.00200	0.0200
(S) Nitrobenzene-d5	*88.1*			*14.0-149*
(S) 2-Fluorobiphenyl	*88.7*			*34.0-125*
(S) p-Terphenyl-d14	*112*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3467850-1 11/02/19 23:38

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0924	116	50.0-126	
Acenaphthene	0.0800	0.0898	112	50.0-120	
Acenaphthylene	0.0800	0.0947	118	50.0-120	
Benzo(a)anthracene	0.0800	0.0881	110	45.0-120	
Benzo(a)pyrene	0.0800	0.0780	97.5	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0796	99.5	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0821	103	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0824	103	49.0-125	
Chrysene	0.0800	0.0842	105	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0803	100	47.0-125	
Fluoranthene	0.0800	0.0815	102	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3467850-1 11/02/19 23:38

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0846	106	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0824	103	46.0-125	
Naphthalene	0.0800	0.0781	97.6	50.0-120	
Phenanthrene	0.0800	0.0912	114	47.0-120	
Pyrene	0.0800	0.0954	119	43.0-123	
1-Methylnaphthalene	0.0800	0.0771	96.4	51.0-121	
2-Methylnaphthalene	0.0800	0.0736	92.0	50.0-120	
2-Chloronaphthalene	0.0800	0.0828	104	50.0-120	
(S) Nitrobenzene-d5			*98.7*	*14.0-149*	
(S) 2-Fluorobiphenyl			*96.3*	*34.0-125*	
(S) p-Terphenyl-d14			*117*	*23.0-120*	

L1155748-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155748-01 11/03/19 00:19 • (MS) R3467850-3 11/03/19 00:40 • (MSD) R3467850-4 11/03/19 01:01

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0800	U	0.0664	0.0948	83.0	119	1	10.0-145		J3	35.2	30
Acenaphthene	0.0800	U	0.0636	0.0902	79.5	113	1	14.0-127		J3	34.6	27
Acenaphthylene	0.0800	U	0.0694	0.0964	86.8	121	1	21.0-124		J3	32.6	25
Benzo(a)anthracene	0.0800	U	0.0649	0.0899	81.1	112	1	10.0-139		J3	32.3	30
Benzo(a)pyrene	0.0800	U	0.0595	0.0819	74.4	102	1	10.0-141		J3	31.7	31
Benzo(b)fluoranthene	0.0800	U	0.0548	0.0815	68.5	102	1	10.0-140		J3	39.2	36
Benzo(g,h,i)perylene	0.0800	U	0.0591	0.0827	73.9	103	1	10.0-140		J3	33.3	33
Benzo(k)fluoranthene	0.0800	U	0.0620	0.0810	77.5	101	1	10.0-137			26.6	31
Chrysene	0.0800	U	0.0642	0.0854	80.3	107	1	10.0-145			28.3	30
Dibenz(a,h)anthracene	0.0800	U	0.0615	0.0812	76.9	102	1	10.0-132			27.6	31
Fluoranthene	0.0800	U	0.0551	0.0832	68.9	104	1	10.0-153		J3	40.6	33
Fluorene	0.0800	U	0.0595	0.0865	74.4	108	1	11.0-130		J3	37.0	29
Indeno(1,2,3-cd)pyrene	0.0800	U	0.0604	0.0828	75.5	104	1	10.0-137			31.3	32
Naphthalene	0.0800	U	0.0604	0.0774	75.5	96.8	1	10.0-135			24.7	27
Phenanthrene	0.0800	U	0.0618	0.0926	77.3	116	1	10.0-144		J3	39.9	31
Pyrene	0.0800	U	0.0635	0.0962	79.4	120	1	10.0-148		J3	41.0	35
1-Methylnaphthalene	0.0800	U	0.0565	0.0778	70.6	97.3	1	10.0-142		J3	31.7	28
2-Methylnaphthalene	0.0800	U	0.0539	0.0739	67.4	92.4	1	10.0-137		J3	31.3	28
2-Chloronaphthalene	0.0800	U	0.0606	0.0834	75.8	104	1	29.0-120		J3	31.7	24
(S) Nitrobenzene-d5					*88.5*	*99.8*		*14.0-149*				
(S) 2-Fluorobiphenyl					*84.8*	*96.2*		*34.0-125*				
(S) p-Terphenyl-d14					*98.7*	*114*		*23.0-120*				

Method Blank (MB)

(MB) R3467886-2 11/02/19 22:39

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.000600	0.00600
Acenaphthene	U		0.000600	0.00600
Acenaphthylene	U		0.000600	0.00600
Benzo(a)anthracene	U		0.000600	0.00600
Benzo(a)pyrene	U		0.000600	0.00600
Benzo(b)fluoranthene	U		0.000600	0.00600
Benzo(g,h,i)perylene	U		0.000600	0.00600
Benzo(k)fluoranthene	U		0.000600	0.00600
Chrysene	U		0.000600	0.00600
Dibenz(a,h)anthracene	U		0.000600	0.00600
Fluoranthene	U		0.000600	0.00600
Fluorene	U		0.000600	0.00600
Indeno(1,2,3-cd)pyrene	U		0.000600	0.00600
Naphthalene	U		0.00200	0.0200
Phenanthrene	U		0.000600	0.00600
Pyrene	U		0.000600	0.00600
1-Methylnaphthalene	U		0.00200	0.0200
2-Methylnaphthalene	U		0.00200	0.0200
2-Chloronaphthalene	U		0.00200	0.0200
(S) Nitrobenzene-d5	*85.5*			*14.0-149*
(S) 2-Fluorobiphenyl	*86.2*			*34.0-125*
(S) p-Terphenyl-d14	*102*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3467886-1 11/02/19 22:16

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0829	104	50.0-126	
Acenaphthene	0.0800	0.0782	97.8	50.0-120	
Acenaphthylene	0.0800	0.0797	99.6	50.0-120	
Benzo(a)anthracene	0.0800	0.0845	106	45.0-120	
Benzo(a)pyrene	0.0800	0.0710	88.8	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0851	106	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0714	89.3	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0776	97.0	49.0-125	
Chrysene	0.0800	0.0813	102	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0774	96.8	47.0-125	
Fluoranthene	0.0800	0.0880	110	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3467886-1 11/02/19 22:16

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0860	108	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0749	93.6	46.0-125	
Naphthalene	0.0800	0.0715	89.4	50.0-120	
Phenanthrene	0.0800	0.0819	102	47.0-120	
Pyrene	0.0800	0.0833	104	43.0-123	
1-Methylnaphthalene	0.0800	0.0803	100	51.0-121	
2-Methylnaphthalene	0.0800	0.0772	96.5	50.0-120	
2-Chloronaphthalene	0.0800	0.0762	95.3	50.0-120	
(S) Nitrobenzene-d5			*89.2*	*14.0-149*	
(S) 2-Fluorobiphenyl			*86.1*	*34.0-125*	
(S) p-Terphenyl-d14			*99.5*	*23.0-120*	

L1155748-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155748-13 11/02/19 23:01 • (MS) R3467886-3 11/02/19 23:24 • (MSD) R3467886-4 11/02/19 23:46

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0800	U	0.0349	0.0487	43.6	60.9	1	10.0-145		J3	33.0	30
Acenaphthene	0.0800	U	0.0350	0.0455	43.8	56.9	1	14.0-127			26.1	27
Acenaphthylene	0.0800	U	0.0354	0.0463	44.3	57.9	1	21.0-124		J3	26.7	25
Benzo(a)anthracene	0.0800	U	0.0327	0.0488	40.9	61.0	1	10.0-139		J3	39.5	30
Benzo(a)pyrene	0.0800	U	0.0303	0.0468	37.9	58.5	1	10.0-141		J3	42.8	31
Benzo(b)fluoranthene	0.0800	U	0.0305	0.0462	38.1	57.8	1	10.0-140		J3	40.9	36
Benzo(g,h,i)perylene	0.0800	U	0.0275	0.0419	34.4	52.4	1	10.0-140		J3	41.5	33
Benzo(k)fluoranthene	0.0800	U	0.0317	0.0478	39.6	59.8	1	10.0-137		J3	40.5	31
Chrysene	0.0800	U	0.0320	0.0487	40.0	60.9	1	10.0-145		J3	41.4	30
Dibenz(a,h)anthracene	0.0800	U	0.0289	0.0459	36.1	57.4	1	10.0-132		J3	45.5	31
Fluoranthene	0.0800	U	0.0349	0.0505	43.6	63.1	1	10.0-153		J3	36.5	33
Fluorene	0.0800	U	0.0368	0.0492	46.0	61.5	1	11.0-130			28.8	29
Indeno(1,2,3-cd)pyrene	0.0800	U	0.0282	0.0435	35.3	54.4	1	10.0-137		J3	42.7	32
Naphthalene	0.0800	U	0.0368	0.0438	46.0	54.8	1	10.0-135			17.4	27
Phenanthrene	0.0800	U	0.0344	0.0471	43.0	58.9	1	10.0-144		J3	31.2	31
Pyrene	0.0800	U	0.0343	0.0477	42.9	59.6	1	10.0-148			32.7	35
1-Methylnaphthalene	0.0800	U	0.0400	0.0482	50.0	60.3	1	10.0-142			18.6	28
2-Methylnaphthalene	0.0800	U	0.0388	0.0465	48.5	58.1	1	10.0-137			18.1	28
2-Chloronaphthalene	0.0800	U	0.0358	0.0452	44.8	56.5	1	29.0-120			23.2	24
(S) Nitrobenzene-d5					*46.3*	*59.0*		*14.0-149*				
(S) 2-Fluorobiphenyl					*42.6*	*55.3*		*34.0-125*				
(S) p-Terphenyl-d14					*38.7*	*60.1*		*23.0-120*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
MDL (dry)	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
RDL (dry)	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

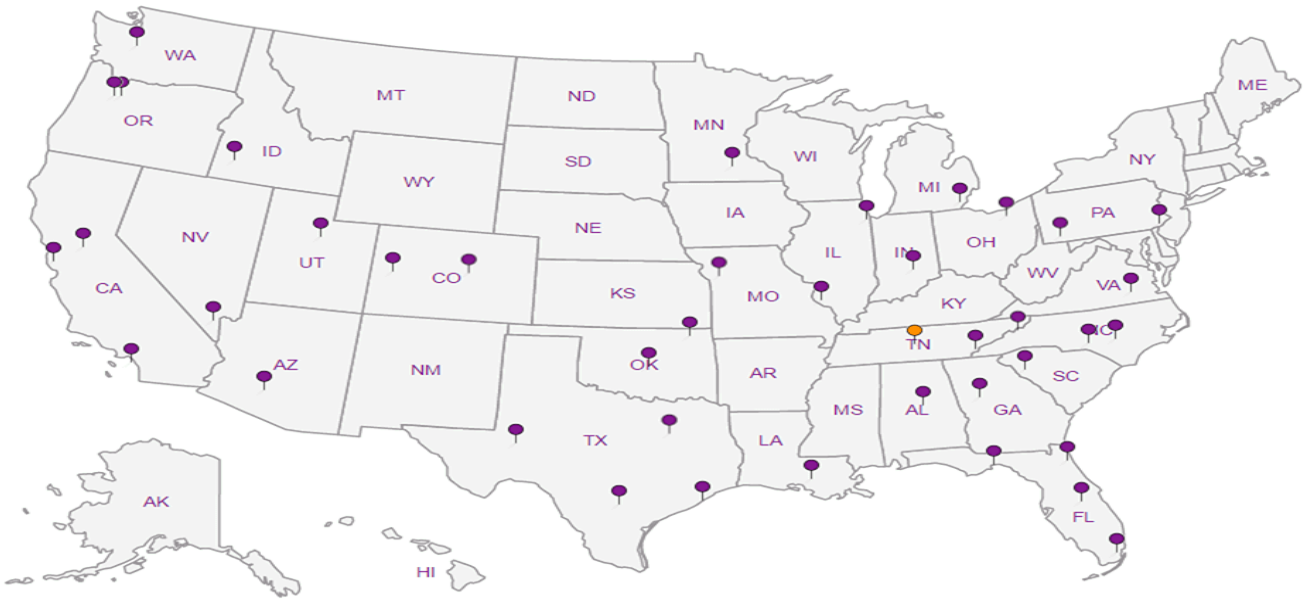
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



State of Oregon Sample Chain of Custody

Agency, Authorized Purchaser or Agent: Hart Crowser for ODEQ	**Contract Laboratory Name:** Pace Analytical **Lab Batch #:**	**Lab Selection Criteria:** ☐ Proximity (if TAT < 48 hrs) ☐ Prior work on same project ☒ Cost (for anticipated analyses) ☐ Other labs disqualified or unable to perform requested services ☐ Emergency work	**Turn Around Time:** ☒ 10 days (std.) ☐ 5 days ☐ 72 hours ☐ 48 hours ☐ 24 hours ☐ Other
Send Lab Report To: Madi Novak Address: 700 NE Multnomah Street, Suite 600 Portland, OR 97232-4100 Tel. #: (503) 229-6932 E-mail: Madi.NOVAK@state.or.us	**Invoice To:** Address: ODEQ/Business Office 811 SW 6th Ave Portland, OR 97204 Tel. #: (800) 452-4011		

Project Name: Upriver Reach Sediment Investigation
Project #: 150-002-017/Task 4
Sampler Name: AC/TL/KW

L1155761

Sample ID#	Collection Date/Time	Matrix	# of Containers	Total Organic Carbon	Metals by 6020	Mercury by 7470/7471	TPHd by NWTPH-Dx	PAHs, phthalate, phenols by 8270	Grain Size by ASTM D422		Comments M129
				Sample Preservative							
				Requested Analyses							
RM16.1E-SED1	10/28/19	1705	3 2	X	X	X	X	X	X		-01
RM16.1E-SED1-DUP	10/28/19	1705	3 2	X	X	X	X	X	X		-02
RM16.3E-SED2	10/29/19	1000	3 2	X	X	X	X	X	X		-03
RM16.3E-SED3	10/29/19	1300	3 2	X	X	X	X	X	X		-04
RM16.3E-SED4	10/29/19	1205	3 2	X	X	X	X	X	X		-05
RM16.4E-SED5	10/29/19	1135	3 2	X	X	X	X	X	X		-06
RM19.4W-SED6	10/28/19	1200	3 2	X	X	X	X	X	X		-07
RM19.5W-SED7	10/28/19	1430	3 2	X	X	X	X	X	X		-08
RM19.6W-SED8	10/28/19	1015	3 2	X	X	X	X	X	X		-09
RINSTAE BLANK	10/29/19	1400	8 6 MeOH	X	X	X	X	X			-10

METALS= As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Zn
Copy lab report to: Kevin.woodhouse@hartcrowser.com

Relinquished By: Kevin Woodhouse	Agency/Agent: Hart Crowser	Received By: Ed Kenner	Agency/Agent: PACEPDX
Signature: Kevin Woodhouse	Time & Date: 10/30/19 1147	Signature: Ed Kenner	Time & Date: 10/30/19 1147
Relinquished By: Ed Kenner	Agency/Agent: PACEPDX	Received By: M Papps	Agency/Agent:
Signature: Ed Kenner	Time & Date: 1400 10/30/19	Signature: M Papps	Time & Date: 10/31/19 0900

THIS PURCHASE IS SUBMITTED PURSUANT TO STATE OF OREGON SOLICITATION **#102-1098-07** AND PRICE AGREEMENT # 8903. THE PRICE AGREEMENT INCLUDING CONTRACT TERMS AND CONDITIONS AND SPECIAL CONTRACT TERMS AND CONDITIONS (T'S &C'S) CONTAINED IN THE PRICE AGREEMENT ARE HEREBY INCORPORATED BY REFERENCE AND SHALL APPLY TO THIS PURCHASE AND SHALL TAKE PRECEDENCE OVER ALL OTHER CONFLICTING T'S AND C'S, EXPRESS OR IMPLIED.

7466 1466 3108 NoTB 1.3+0-1.3 24 Total

RAD SCREEN: <0.5 mR/hr

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client:	L1155761	
Cooler Received/Opened On: 10/3/19 Temperature:	1.3	
Received By: Mike Pappas		
Signature:		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?		✓	
Preservation Correct / Checked?		✓	

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

November 14, 2019

Oregon Dept. of Env. Quality - ODEQ

Sample Delivery Group:	L1155786
Samples Received:	10/31/2019
Project Number:	150-002-017/TANK 4
Description:	Upriver Reach Sediment Investigation

Report To: Madi Novak
700 NE Multnomah St. #600
Portland, OR 97124

Entire Report Reviewed By: Brian Ford

Brian Ford
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

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Gl: Glossary of Terms 6

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RM16.1E-SED1 L1155786-01 Solid

Collected by: AC/TL/KW | Collected date/time: 10/28/19 17:05 | Received date/time: 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Subcontracted Analyses	WG1373416	1	11/14/19 00:00	11/14/19 00:00	MS	Subcontract

RM16.1E-SED1-DUP L1155786-02 Solid

Collected by: AC/TL/KW | Collected date/time: 10/28/19 17:05 | Received date/time: 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Subcontracted Analyses	WG1373416	1	11/14/19 00:00	11/14/19 00:00	MS	Subcontract

RM16.3E-SED2 L1155786-03 Solid

Collected by: AC/TL/KW | Collected date/time: 10/29/19 10:00 | Received date/time: 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Subcontracted Analyses	WG1373416	1	11/14/19 00:00	11/14/19 00:00	MS	Subcontract

RM16.3E-SED3 L1155786-04 Solid

Collected by: AC/TL/KW | Collected date/time: 10/29/19 13:00 | Received date/time: 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Subcontracted Analyses	WG1373416	1	11/14/19 00:00	11/14/19 00:00	MS	Subcontract

RM16.3E-SED4 L1155786-05 Solid

Collected by: AC/TL/KW | Collected date/time: 10/29/19 12:05 | Received date/time: 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Subcontracted Analyses	WG1373416	1	11/14/19 00:00	11/14/19 00:00	MS	Subcontract

RM16.4E-SED5 L1155786-06 Solid

Collected by: AC/TL/KW | Collected date/time: 10/29/19 11:35 | Received date/time: 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Subcontracted Analyses	WG1373416	1	11/14/19 00:00	11/14/19 00:00	MS	Subcontract

RM19.4W-SED6 L1155786-07 Solid

Collected by: AC/TL/KW | Collected date/time: 10/28/19 12:00 | Received date/time: 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Subcontracted Analyses	WG1373416	1	11/14/19 00:00	11/14/19 00:00	MS	Subcontract

RM19.5W-SED7 L1155786-08 Solid

Collected by: AC/TL/KW | Collected date/time: 10/28/19 14:30 | Received date/time: 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Subcontracted Analyses	WG1373416	1	11/14/19 00:00	11/14/19 00:00	MS	Subcontract

RM19.6W-SED8 L1155786-09 Solid

Collected by: AC/TL/KW
Collected date/time: 10/28/19 10:15
Received date/time: 10/31/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Subcontracted Analyses	WG1373416	1	11/14/19 00:00	11/14/19 00:00	MS	Subcontract

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford
Project Manager

Project Narrative

L1155786 -01, -02, -03, -04, -05, -06, -07, -08, -09 contains subout data that is included after the chain of custody.

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

SDG	Sample Delivery Group.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

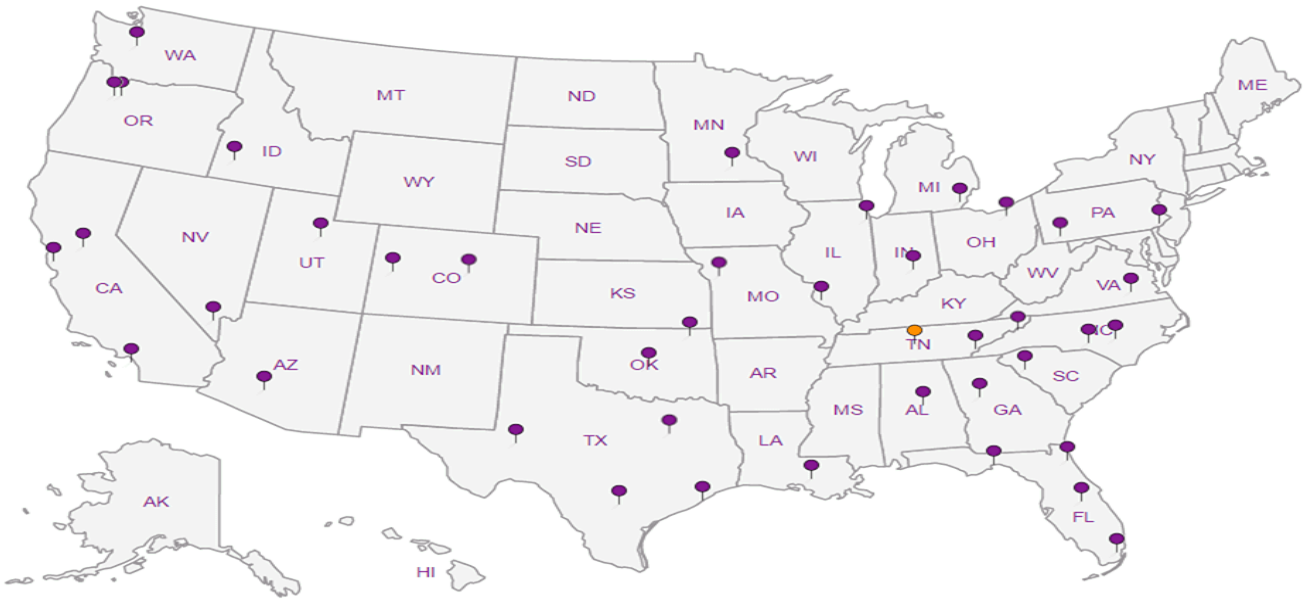
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



State of Oregon Sample Chain of Custody

Agency, Authorized Purchaser or Agent: Hart Crowser for ODEQ	**Contract Laboratory Name:** Pace Analytical	**Lab Selection Criteria:**	**Turn Around Time:**
Send Lab Report To: Madi Novak	**Lab Batch #:**	☐ Proximity (if TAT < 48 hrs)	☒ 10 days (std.)
Address: 700 NE Multnomah Street, Suite 600 Portland, OR 97232-4100	**Invoice To:**	☐ Prior work on same project	☐ 5 days
Tel. #: (503) 229-6932	Address: ODEQ/Business Office 811 SW 6th Ave Portland, OR 97204	☒ Cost (for anticipated analyses)	☐ 72 hours
E-mail: Madi.NOVAK@state.or.us	Tel. #: (800) 452-4011	☐ Other labs disqualified or unable to perform requested services	☐ 48 hours
		☐ Emergency work	☐ 24 hours
			☐ Other

Project Name: Upriver Reach Sediment Investigation
Project #: 150-002-017/Task 4
Sampler Name: AC/TL/KW

Sample Preservative

L1155~~761~~ 86 10/31

Requested Analyses

Sample ID#	Collection Date/Time	Matrix	# of Containers	Total Organic Carbon	Metals by 6020	Mercury by 7470/7471	TPHd by NWTPH-Dx	PAHs, phthalate, phenols by 8270	Grain Size by ASTM D422		Comments M129
RM16.1E-SED1	10/28/19	1705	~~3~~ 2	X	X	X	X	X	X		-01
RM16.1E-SED1-DUP	10/28/19	1705	~~3~~ 2	X	X	X	X	X	X		-02
RM16.3E-SED2	10/29/19	1000	~~3~~ 2	X	X	X	X	X	X		-03
RM16.3E-SED3	10/29/19	1300	~~3~~ 2	X	X	X	X	X	X		-04
RM16.3E-SED4	10/29/19	1205	~~3~~ 2	X	X	X	X	X	X		-05
RM16.4E-SED5	10/29/19	1135	~~3~~ 2	X	X	X	X	X	X		-06
RM19.4W-SED6	10/28/19	1200	~~3~~ 2	X	X	X	X	X	X		-07
RM19.5W-SED7	10/28/19	1430	~~3~~ 2	X	X	X	X	X	X		-08
RM19.6W-SED8	10/28/19	1015	~~3~~ 2	X	X	X	X	X	X		-09
RINSTAE BLANK	10/29/19	1400	~~8~~ 6	X	X	X	X	X			10/31

METALS= As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Zn
Copy lab report to: Kevin.woodhouse@hartcrowser.com

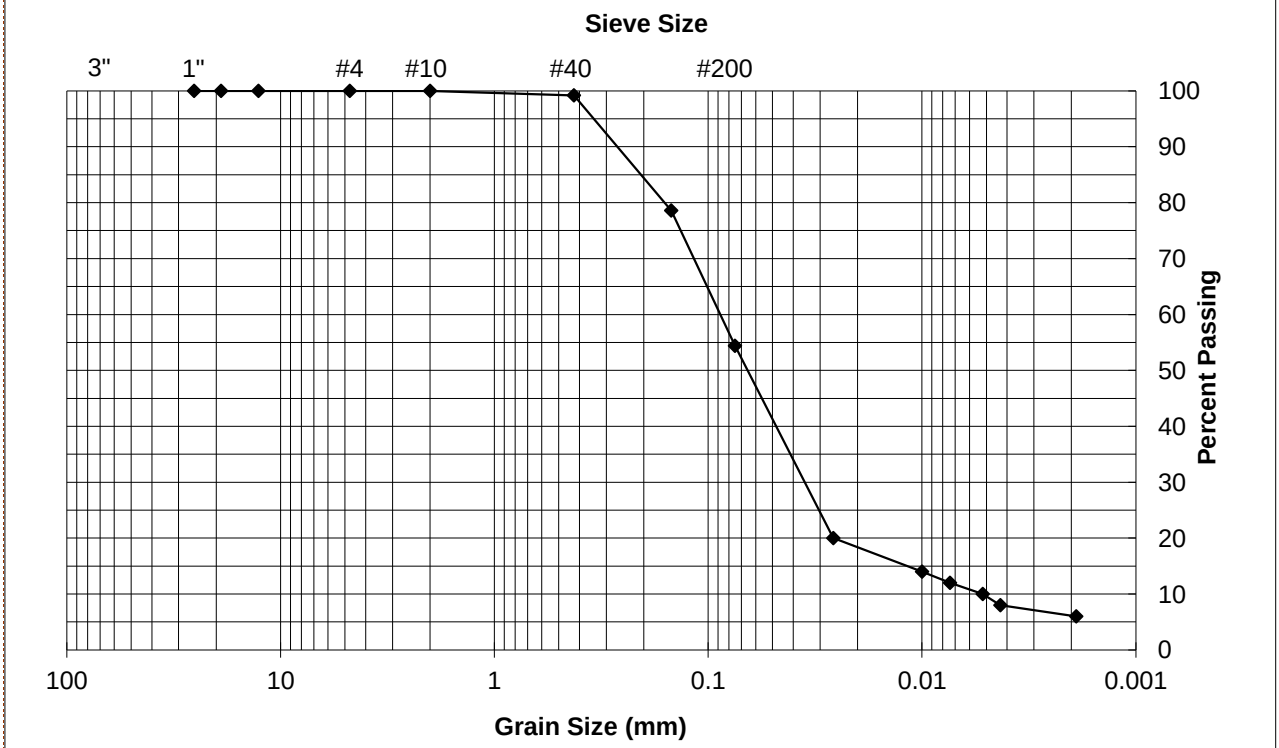
Relinquished By: Kevin Woodhouse	Agency/Agent: Hart Crowser	Received By: Reid Kenner	Agency/Agent: PACEPOR
Signature: [signature]	Time & Date: 10/30/19 1147	Signature: [signature]	Time & Date: 10/30/19 1147
Relinquished By: Reid Kenner	Agency/Agent: PACEPOR	Received By: M Pappas	Agency/Agent:
Signature: [signature]	Time & Date: 1400 10/30/19	Signature: [signature]	Time & Date: 10/31/19 0900

THIS PURCHASE IS SUBMITTED PURSUANT TO STATE OF OREGON SOLICITATION #102-1098-07 AND PRICE AGREEMENT # 8903. THE PRICE AGREEMENT INCLUDING CONTRACT TERMS AND CONDITIONS AND SPECIAL CONTRACT TERMS AND CONDITIONS (T'S &C'S) CONTAINED IN THE PRICE AGREEMENT ARE HEREBY INCORPORATED BY REFERENCE AND SHALL APPLY TO THIS PURCHASE AND SHALL TAKE PRECEDENCE OVER ALL OTHER CONFLICTING T'S AND C'S, EXPRESS OR IMPLIED.

7466 1466 3108 NO TB 1.3±0=1.3 cc 24 Total

RAD SCREEN: <0.5 mR/hr

GRAIN SIZE DISTRIBUTION REPORT
ASTM D 422



PERCENT PASSING

SAMPLE ID	Sieve Sizes for Mechanical Analysis								Diameters for Hydrometer Analysis (mm)					
	1.0(in)	0.75(in)	0.50(in)	#4	#10	#40	#100	#200	0.026	0.01	0.007	0.0052	0.004	0.002
RM16.1E-SED1														
L 1155786-01	100	100	100	100	100	99	79	54	20	14	12	10	8	6
29810908	0%			46%				44%				10%		
LAB ID J 5018	GRAVEL			SAND				SILT				CLAY		

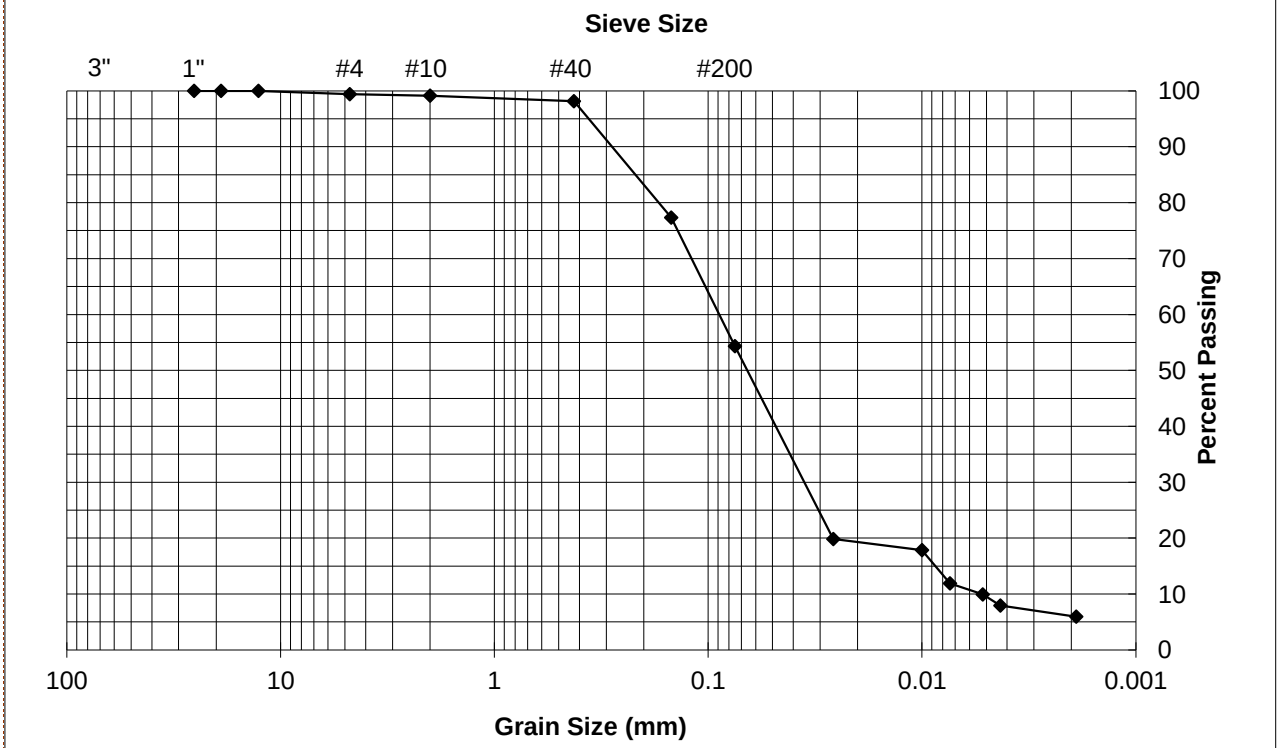
BEAVER ENGINEERING 50 YEARS

PROJECT: PACE ANALYTICAL
L 1155786

PROJECT NUMBER: 19-7479

DATE: NOVEMBER 13, 2019

GRAIN SIZE DISTRIBUTION REPORT
ASTM D 422



PERCENT PASSING

SAMPLE ID	Sieve Sizes for Mechanical Analysis								Diameters for Hydrometer Analysis (mm)					
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RM16.1E-SED1-DUP														
L 1155786-02	100	100	100	99	99	98	77	54	20	18	12	10	8	6
29810909	1%			45%					44%			10%		
LAB ID J 5019	GRAVEL			SAND					SILT			CLAY		

BEAVER ENGINEERING 50 YEARS

PROJECT: PACE ANALYTICAL
L 1155786

PROJECT NUMBER: 19-7479

DATE: NOVEMBER 13, 2019

GRAIN SIZE DISTRIBUTION REPORT
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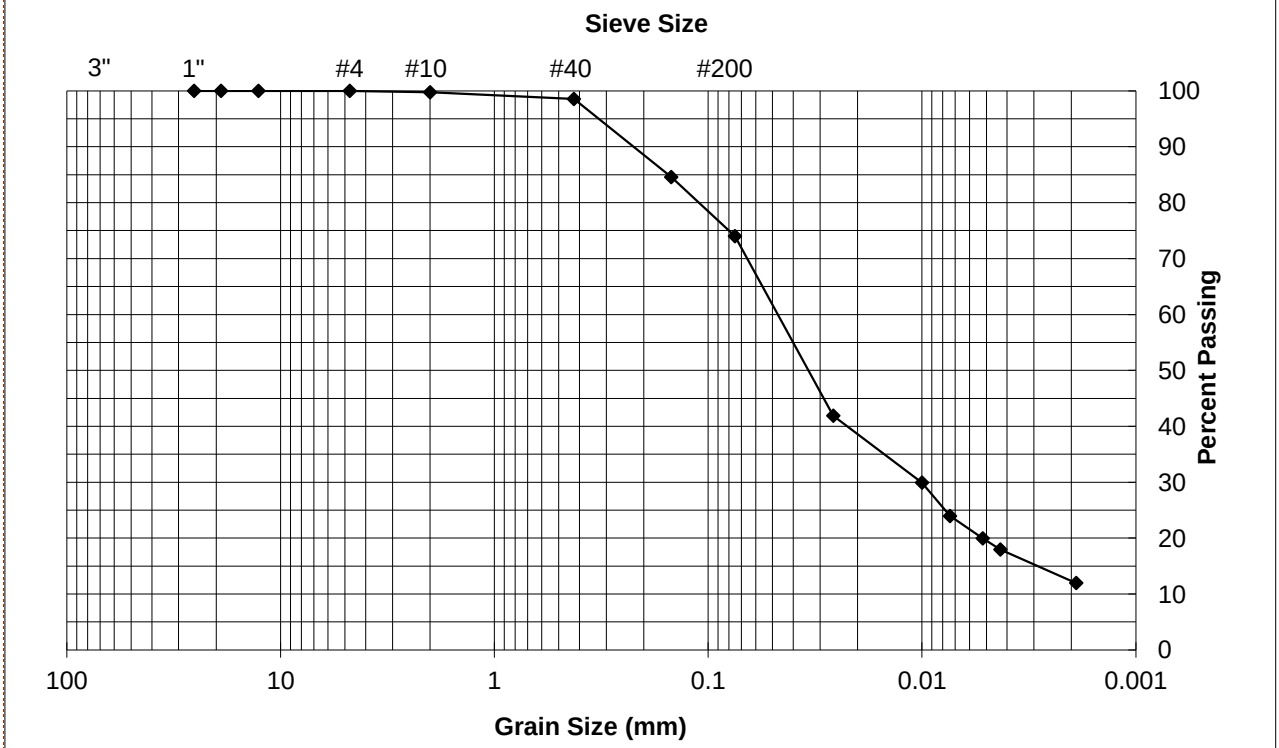

PERCENT PASSING

SAMPLE ID	Sieve Sizes for Mechanical Analysis								Diameters for Hydrometer Analysis (mm)					
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RM16.3E-SED2														
L 1155786-03	100	100	100	100	100	99	85	74	42	30	24	20	18	12
29810910	0%			26%				54%				20%		
LAB ID J 5020	GRAVEL			SAND				SILT				CLAY		

BEAVER ENGINEERING 50 YEARS

PROJECT: PACE ANALYTICAL
L 1155786

PROJECT NUMBER: 19-7479

DATE: NOVEMBER 13, 2019

GRAIN SIZE DISTRIBUTION REPORT
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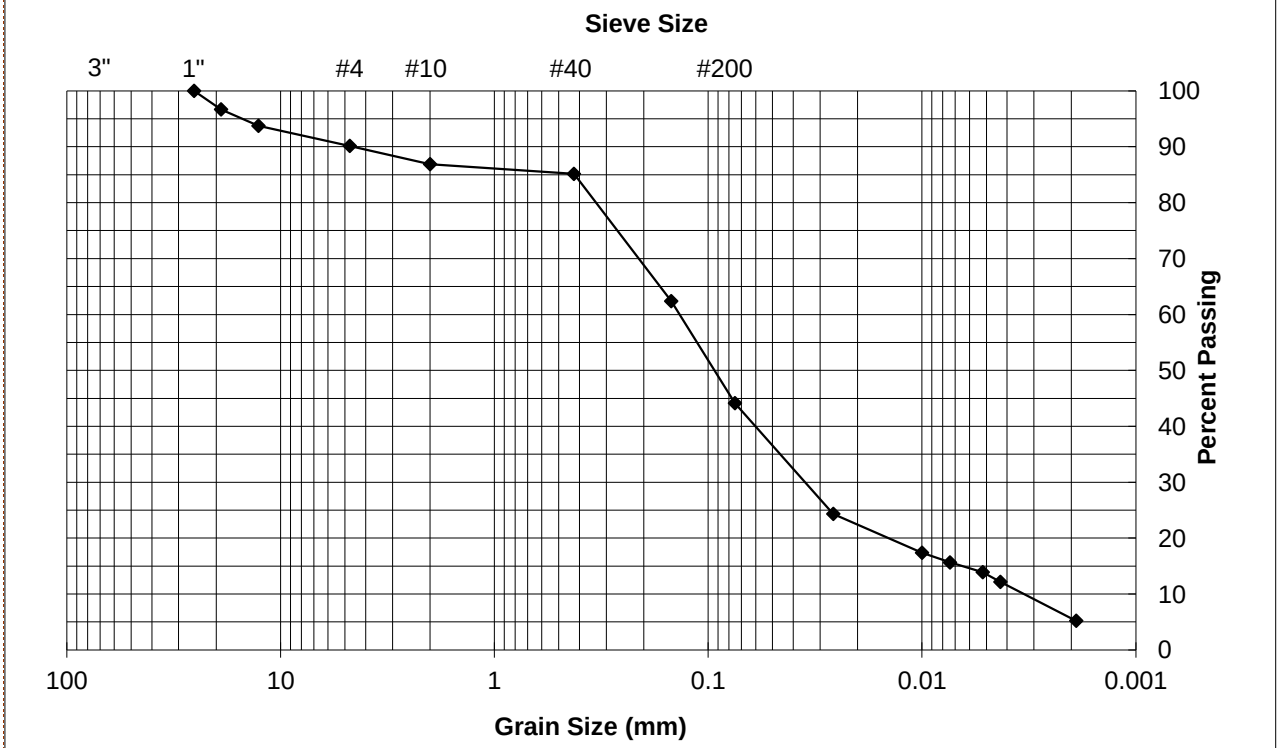
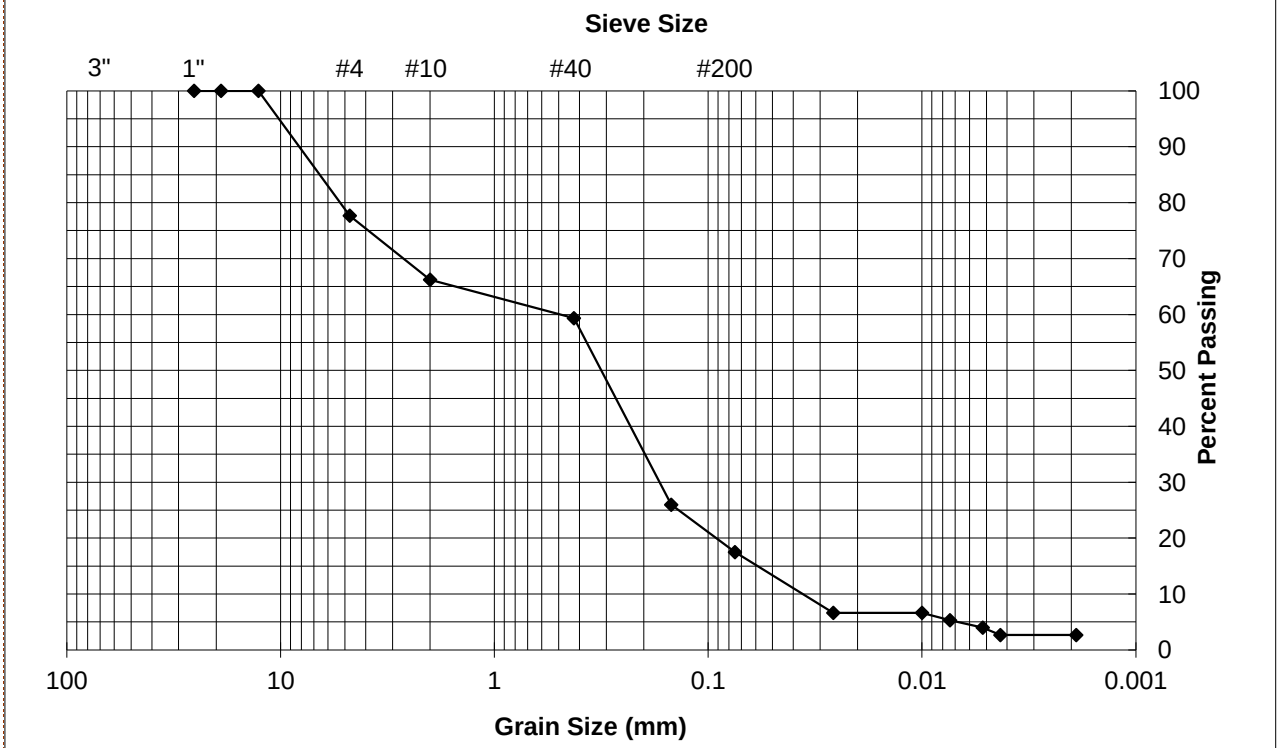


PERCENT PASSING

SAMPLE ID	Sieve Sizes for Mechanical Analysis								Diameters for Hydrometer Analysis (mm)					
	1.0(in)	0.75(in)	0.50(in)	#4	#10	#40	#100	#200	0.026	0.01	0.007	0.0052	0.004	0.002
RM16.3E-SED3														
L 1155786-04	100	97	94	90	87	85	62	44	24	17	16	14	12	5
29810911	10%			46%				30%				14%		
LAB ID J 5021	GRAVEL			SAND				SILT				CLAY		

PROJECT:	**PACE ANALYTICAL**
	L 1155786
PROJECT NUMBER:	**19-7479**
DATE:	**NOVEMBER 13, 2019**

GRAIN SIZE DISTRIBUTION REPORT
ASTM D 422



PERCENT PASSING

SAMPLE ID	Sieve Sizes for Mechanical Analysis								Diameters for Hydrometer Analysis (mm)					
	1.0(in)	0.75(in)	0.50(in)	#4	#10	#40	#100	#200	0.026	0.01	0.007	0.0052	0.004	0.002
RM16.3E-SED4														
L 1155786-05	100	100	100	78	66	59	26	17	7	7	5	4	3	3
29810912	22%			60%					14%			4%		
LAB ID J 5022	GRAVEL			SAND					SILT			CLAY		

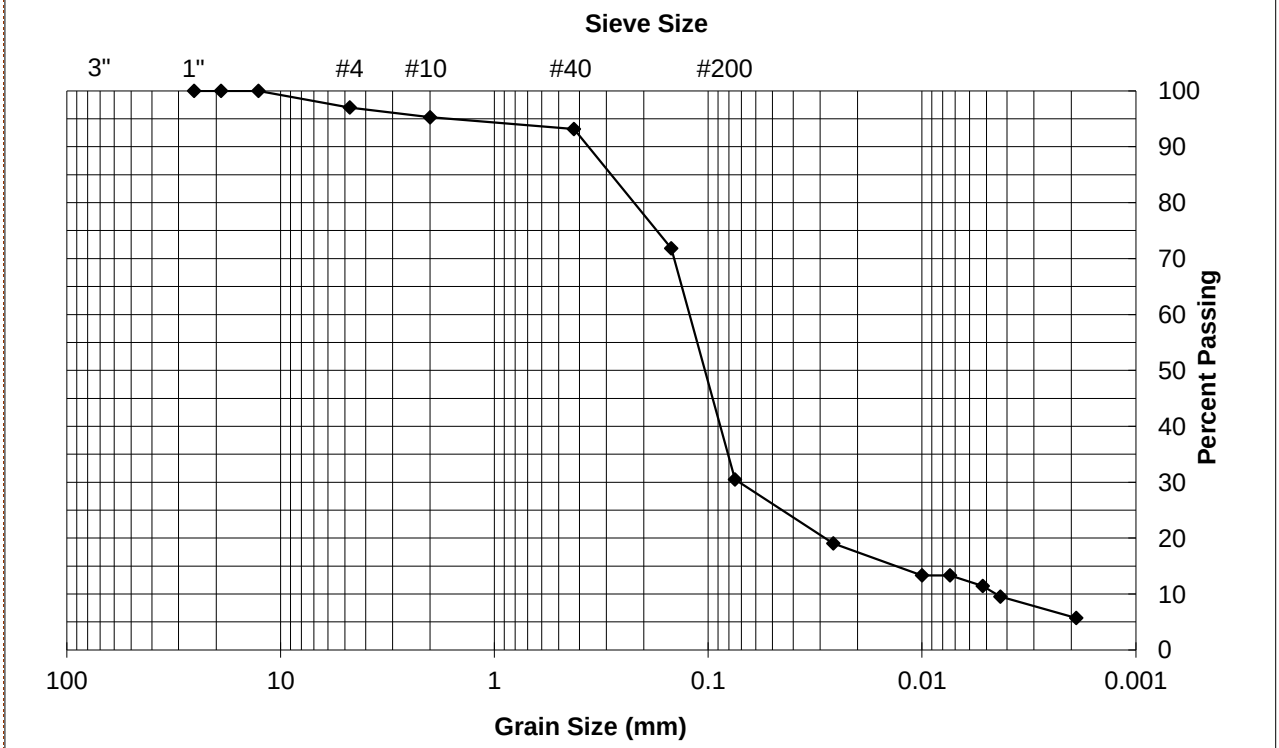
BEAVER ENGINEERING 50 YEARS

PROJECT: PACE ANALYTICAL
L 1155786

PROJECT NUMBER: 19-7479

DATE: NOVEMBER 13, 2019

GRAIN SIZE DISTRIBUTION REPORT
ASTM D 422



PERCENT PASSING

SAMPLE ID	Sieve Sizes for Mechanical Analysis								Diameters for Hydrometer Analysis (mm)					
	1.0(in)	0.75(in)	0.50(in)	#4	#10	#40	#100	#200	0.026	0.01	0.007	0.0052	0.004	0.002
RM16.4E-SED5														
L 1155786-06	100	100	100	97	95	93	72	30	19	13	13	11	10	6
29810913	3%			67%					19%			11%		
LAB ID J 5023	GRAVEL			SAND					SILT			CLAY		

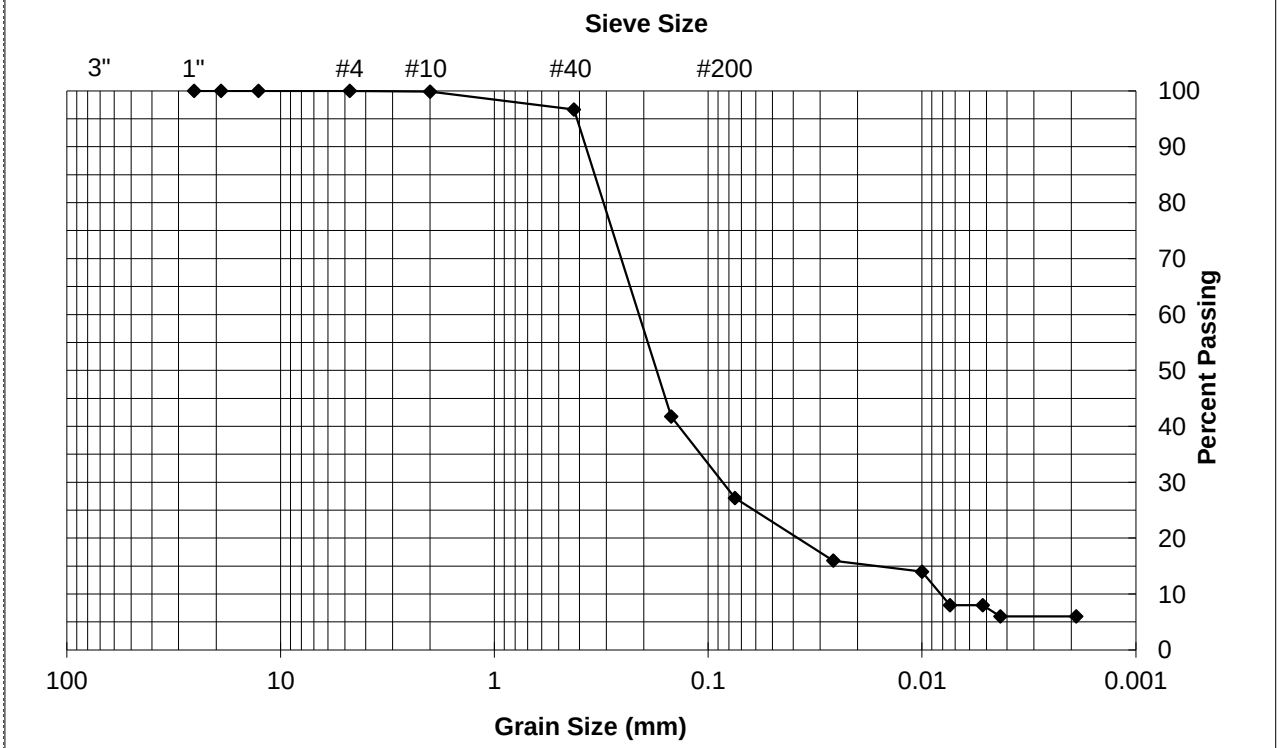
BEAVER ENGINEERING 50 YEARS

PROJECT: PACE ANALYTICAL
L 1155786

PROJECT NUMBER: 19-7479

DATE: NOVEMBER 13, 2019

GRAIN SIZE DISTRIBUTION REPORT
ASTM D 422



PERCENT PASSING

SAMPLE ID	Sieve Sizes for Mechanical Analysis								Diameters for Hydrometer Analysis (mm)					
	1.0(in)	0.75(in)	0.50(in)	#4	#10	#40	#100	#200	0.026	0.01	0.007	0.0052	0.004	0.002
RM19.4W-SED6														
L 1155786-07	100	100	100	100	100	97	42	27	16	14	8	8	6	6
29810914	0%			73%					19%			8%		
LAB ID J 5020	GRAVEL			SAND					SILT			CLAY		

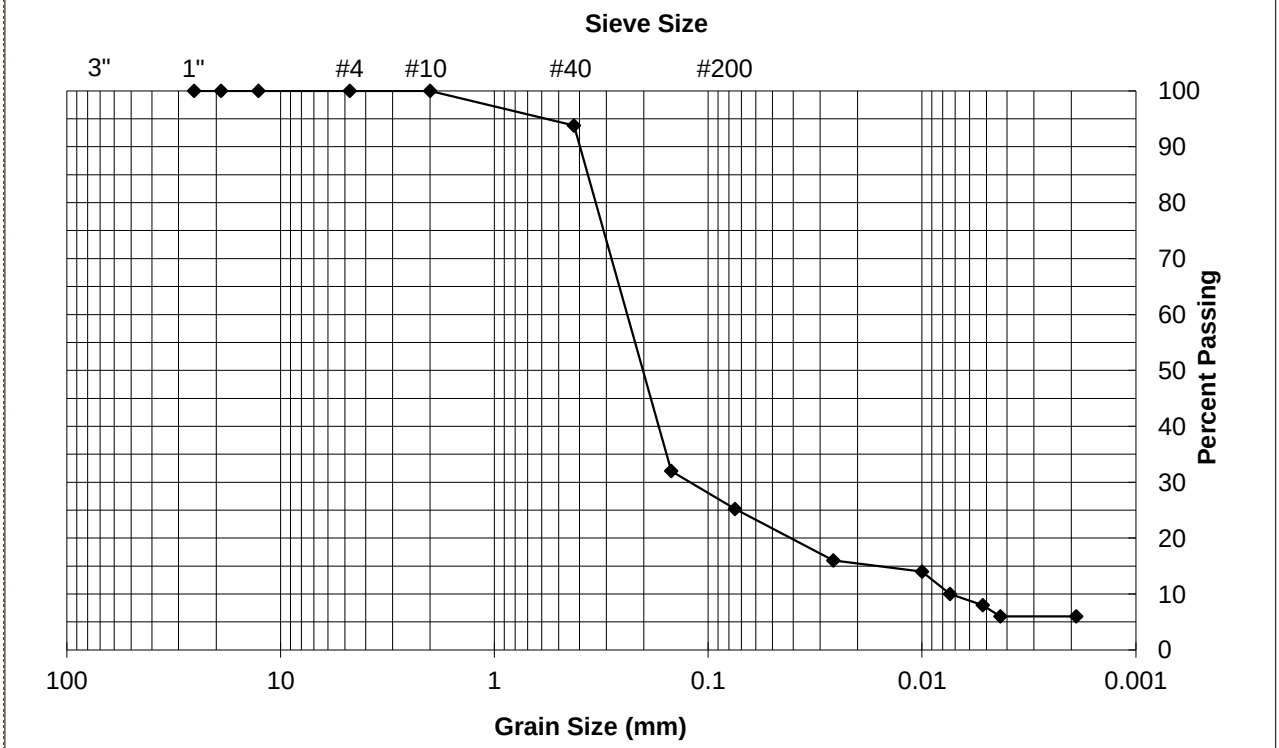
BEAVER ENGINEERING 50 YEARS

PROJECT: PACE ANALYTICAL
L 1155786

PROJECT NUMBER: 19-7479

DATE: NOVEMBER 13, 2019

GRAIN SIZE DISTRIBUTION REPORT
ASTM D 422



PERCENT PASSING

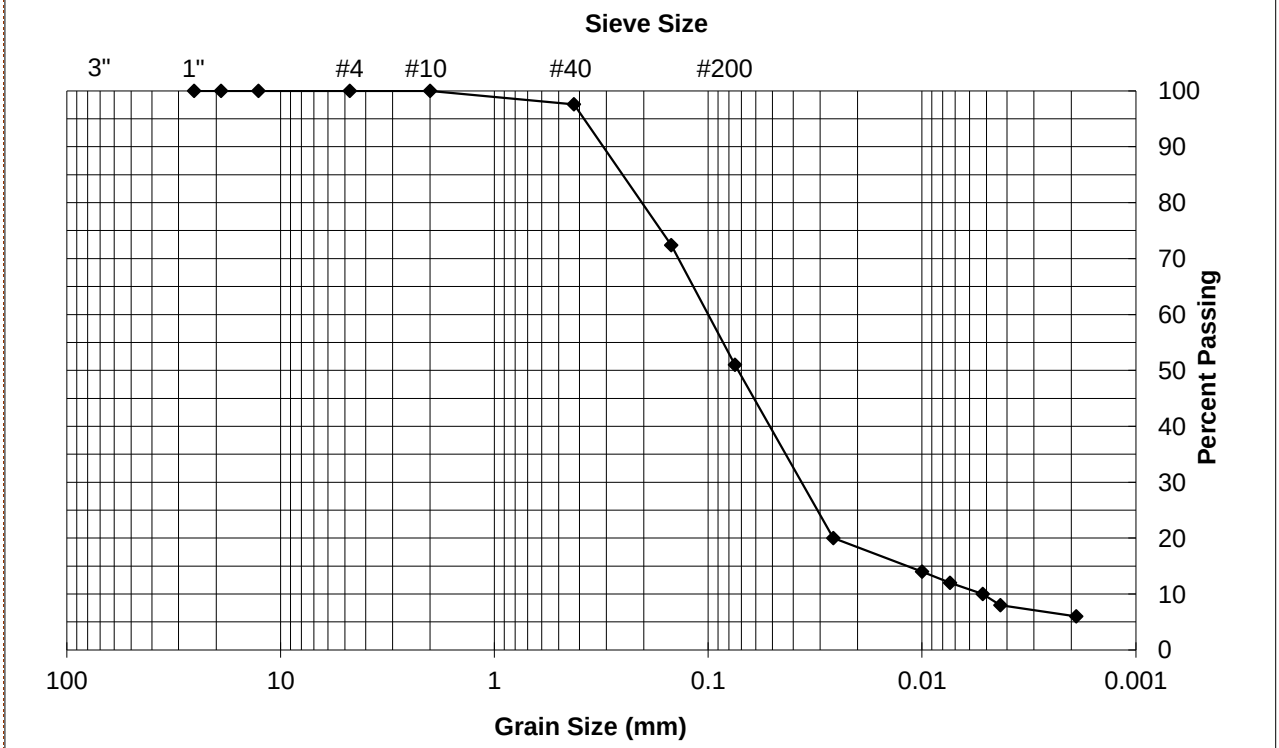
SAMPLE ID	Sieve Sizes for Mechanical Analysis								Diameters for Hydrometer Analysis (mm)					
	1.0(in)	0.75(in)	0.50(in)	#4	#10	#40	#100	#200	0.026	0.01	0.007	0.0052	0.004	0.002
RM19.5W-SED7														
L 1155786-08	100	100	100	100	100	94	32	25	16	14	10	8	6	6
29810915	0%			75%					17%			8%		
LAB ID J 5024	GRAVEL			SAND					SILT			CLAY		

PROJECT: PACE ANALYTICAL
L 1155786

PROJECT NUMBER: 19-7479

DATE: NOVEMBER 13, 2019

GRAIN SIZE DISTRIBUTION REPORT
ASTM D 422



PERCENT PASSING

SAMPLE ID	Sieve Sizes for Mechanical Analysis								Diameters for Hydrometer Analysis (mm)					
	1.0(in)	0.75(in)	0.50(in)	#4	#10	#40	#100	#200	0.026	0.01	0.007	0.0052	0.004	0.002
RM19.6W-SED8														
L 1155786-09	100	100	100	100	100	98	72	51	20	14	12	10	8	6
29810916	0%			49%					41%			10%		
LAB ID J 5024	GRAVEL			SAND					SILT			CLAY		

PROJECT: PACE ANALYTICAL
L 1155786

PROJECT NUMBER: 19-7479

DATE: NOVEMBER 13, 2019

1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6

SVOC DATA PACKAGE

PROJECT NARRATIVE

ALSE Project Information

Project ID: BUR100

Contact: Claire Kocharakkal

Submission ID(s): L2375251

Client Project Information

Project ID: 150-002-017/TASK 4

Project Description: UPRIVER REACH SEDIMENT INVESTIGATION

Contact: Kevin Woodhouse

Analytical Method: Chlorinated Pesticides by EPA 1699 (modified)

ALS Sample ID	Client Sample Descriptions	Matrix	Date Sampled	Date Received	Date Extracted	Date Analyzed
L2375251-1	RM16.1E-SED1	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	23-Nov-19
WG3209717-4	Duplicate	QC	n/a	n/a	12-Nov-19	23-Nov-19
L2375251-2	RM16.1E-SED1-DUP	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	23-Nov-19
L2375251-3	RM16.3E-SED2	Sediment	29-Oct-19	31-Oct-19	12-Nov-19	23-Nov-19
L2375251-4	RM16.3E-SED3	Sediment	29-Oct-19	31-Oct-19	12-Nov-19	23-Nov-19
L2375251-5	RM16.3E-SED4	Sediment	29-Oct-19	31-Oct-19	12-Nov-19	23-Nov-19
L2375251-6	RM16.4E-SED5	Sediment	29-Oct-19	31-Oct-19	12-Nov-19	23-Nov-19
L2375251-7	RM19.4W-SED6	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	23-Nov-19
L2375251-8	RM19.5W-SED7	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	23-Nov-19
L2375251-9	RM19.6W-SED8	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	23-Nov-19
WG3209717-1	Method Blank	QC	n/a	n/a	12-Nov-19	23-Nov-19
WG3209717-2	Laboratory Control Sample	QC	n/a	n/a	12-Nov-19	23-Nov-19

Comments and Notes:
a) Sample Integrity:

The samples were received at ALS Burlington in good condition at 1.6 degrees C.

b) Instrumental Analysis:

All results have been reported on a dry weight basis.

For the mid-run continuing calibration verification (CCV), The recoveries of three of the labelled extraction standards (surrogates) are below the method control limit. As a result, the reported recoveries of these standards may be biased low. However, the native target quantification is not biased,and the labelled standard recoveries are within control for the samples.

For the post-run CCV, a few of the last-eluting targets and standards were not acquired due to lost filament continuity. The recoveries of the labelled standards are likely also biased low. There is no indication of loss of control of the native targets. Sample target data are not expected to be biased as a result.

The relative percent difference (RPD) between the sample and laboratory duplicate is marginally above the method control limit for 2,4'-DDE and 4,4'-DDE. All other detected targets replicate within limits. Sample contained grass and sticks and was not homogeneous.

I certify that this data package is in compliance with the terms and condition of the contract , both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package (hardcopy and/or electronic version) has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Steve Kennedy, Technical Supervisor

3-Dec-19
Date

1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Claire Kocharakkal	**Client Name:**	Hart Crowser
ALS Project ID:	BUR100	**Client Address:**	6420 SW Macadam Avenue, Suite 100
ALS WO#:	L2375251		Portland,OR 97239
Date of Report	2-Dec-19		USA
Date of Sample Receipt	31-Oct-19	**Client Contact:**	Kevin Woodhouse
		Client Project ID:	150-002-017/TASK 4 UPRIVER REACH SEDIMENT INVESTIGATION

COMMENTS: **Chlorinated Pesticides by EPA 1699 (modified)**

Certified by:

Steve Kennedy
Technical Supervisor

Results in this certificate relate only to the samples as submitted to the laboratory.
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Sample Analysis Summary Report

Sample Name	RM16.1E-SED1	Duplicate of RM16.1E-SED1	RM16.1E-SED1-DUP	RM16.3E-SED2	RM16.3E-SED3	RM16.3E-SED4
ALS Sample ID	L2375251-1	WG3209717-4	L2375251-2	L2375251-3	L2375251-4	L2375251-5
Sample Size	10.84	11.12	11.01	10.53	13.42	14.46
Sample size units	g	g	g	g	g	g
Percent Moisture	46.8%	44.6%	45.6%	48.3%	33.6%	28.1%
Sample Matrix	Sediment	QC	Sediment	Sediment	Sediment	Sediment
Sampling Date	28-Oct-19	n/a	28-Oct-19	29-Oct-19	29-Oct-19	29-Oct-19
Extraction Date	12-Nov-19	12-Nov-19	12-Nov-19	12-Nov-19	12-Nov-19	12-Nov-19
Target Analytes	**ng/g**	**ng/g**	**ng/g**	**ng/g**	**ng/g**	**ng/g**
Hexachlorobenzene	0.0824	0.0702	0.0801	0.0458	0.0393	0.0320
alpha-BHC	<0.035	<0.036	<0.025	<0.028	<0.023	<0.026
beta-BHC	<0.047	<0.050	<0.033	<0.041	<0.029	<0.036
gamma-BHC	<0.043	<0.047	<0.030	<0.037	<0.028	<0.033
delta-BHC	<0.045	<0.053	<0.033	<0.042	<0.029	<0.032
Heptachlor	<0.0033	<0.0021	<0.0017	<0.0031	<0.0017	<0.0021
Aldrin	<0.023	0.0158	<0.016	0.0230	0.0346	0.00999
Chlorpyrifos	0.955	0.723	0.392	0.742	0.563	0.551
Isodrin	<0.0048	<0.0094	<0.0048	<0.0089	<0.0065	<0.0070
Octachlorostyrene	0.00972	<0.0043	<0.0041	<0.0059	<0.0052	<0.0032
Heptachlor Epoxide B	<0.0063	<0.0040	<0.0041	<0.0055	<0.0031	<0.0033
Heptachlor Epoxide A	<0.048	<0.030	<0.031	<0.042	<0.024	<0.025
Oxychlordane	<0.0047	<0.014	<0.0073	<0.0063	<0.0034	<0.0049
trans-Chlordane	0.0695	0.0775	0.0673	0.0463	<0.033	<0.020
cis-Chlordane	0.0640	0.0537	0.0429	<0.031	<0.030	<0.018
trans-Nonachlor	<0.050	<0.024	<0.043	<0.032	<0.030	<0.018
Dieldrin	<0.031	0.0555	0.0400	<0.045	0.0900	0.0271
Endrin	<0.012	<0.022	<0.017	<0.013	<0.017	<0.011
cis-Nonachlor	<0.032	0.0340	<0.028	<0.028	<0.025	<0.013
Endosulfan I	<0.042	<0.029	0.0351	<0.043	<0.043	<0.019
Endosulfan II	<0.053	<0.072	<0.037	<0.088	<0.022	<0.048
Endosulfan Sulfate	<0.0090	<0.012	<0.0077	<0.016	<0.011	<0.0059
2,4'-DDE	<0.016	<0.012	<0.016	0.0607	0.0524	<0.012
4,4'-DDE	0.631	0.372	0.420	0.983	0.839	0.0597
2,4'-DDD	0.128	0.0740	0.124	0.265	0.319	<0.022
4,4'-DDD	0.353	0.226	0.505	0.958	1.43	<0.030
2,4'-DDT	<0.037	<0.033	<0.033	<0.034	<0.023	<0.021
4,4'-DDT	<0.20	0.180	0.135	0.219	<0.026	<0.021
Endrin Aldehyde	<0.011	<0.011	<0.012	<0.0079	<0.0077	<0.011
Endrin Ketone	<0.038	<0.038	<0.034	<0.032	<0.030	<0.025
Methoxychlor	<0.012	<0.014	<0.0095	<0.0095	<0.0079	<0.0072
Mirex	<0.0067	<0.0067	<0.0039	<0.0045	<0.0036	<0.0034
Upper Bound Sums	**ng/g**	**ng/g**	**ng/g**	**ng/g**	**ng/g**	**ng/g**
Total DDE	0.647	0.384	0.436	1.04	0.891	0.0717
Total DDD	0.481	0.300	0.629	1.22	1.75	0.0520
Total DDT	0.237	0.213	0.168	0.253	0.0490	0.0420
Total DDE, DDD, DDT	1.37	0.897	1.23	2.51	2.69	0.166
Total c & t-Chlordane & nonachlor, oxychlordane	0.220	0.203	0.189	0.144	0.121	0.0739
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
Hexachlorobenzene, 13C6-	49	42	51	57	43	45
alpha-BHC, 13C6-	69	70	72	74	67	66
beta-BHC, 13C6-	66	65	69	66	66	62
gamma-BHC, 13C6-	69	66	70	70	67	64
delta-BHC, 13C6-	66	65	71	68	68	64
Heptachlor, 13C10-	73	73	78	77	75	71
Oxychlordane, 13C10-	75	74	77	74	74	72
trans-Nonachlor, 13C10-	74	71	74	76	76	71
Dieldrin, 13C12-	73	75	77	75	74	72
Endrin, 13C12-	73	71	77	78	81	75
Endosulfan II, 13C9-	61	60	69	63	66	64
2,4'-DDE, 13C12-	87	86	86	91	89	82
4,4'-DDE, 13C12-	77	73	78	78	79	73
4,4'-DDD, 13C12-	55	53	58	58	60	55
4,4'-DDT, 13C12-	48	48	53	54	54	48
Methoxychlor, 13C12-	33	30	39	37	40	35
Mirex, 13C10-	36	34	43	37	36	40

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Sample Analysis summary Report

Sample Name	RM16.4E-SED5	RM19.4W-SED6	RM19.5W-SED7	RM19.6W-SED8
ALS Sample ID	L2375251-6	L2375251-7	L2375251-8	L2375251-9
Sample Size	16.55	12.39	11.96	10.76
Sample size units	g	g	g	g
Percent Moisture	18.4%	38.9%	40.9%	46.7%
Sample Matrix	Sediment	Sediment	Sediment	Sediment
Sampling Date	29-Oct-19	28-Oct-19	28-Oct-19	28-Oct-19
Extraction Date	12-Nov-19	12-Nov-19	12-Nov-19	12-Nov-19
Target Analytes	**ng/g**	**ng/g**	**ng/g**	**ng/g**
Hexachlorobenzene	0.0253	0.0376	0.0473	<0.0020
alpha-BHC	<0.024	<0.028	<0.030	<0.030
beta-BHC	<0.035	<0.038	<0.038	<0.042
gamma-BHC	<0.033	<0.037	<0.037	<0.036
delta-BHC	<0.034	<0.037	<0.037	<0.040
Heptachlor	<0.0026	<0.0042	<0.0017	<0.0011
Aldrin	<0.0030	<0.0037	<0.0046	<0.0087
Chlorpyrifos	0.719	0.501	0.236	0.947
Isodrin	<0.0039	<0.0062	<0.0063	<0.0042
Octachlorostyrene	<0.0042	<0.0032	<0.0032	<0.0039
Heptachlor Epoxide B	<0.0042	<0.0021	<0.0060	<0.0040
Heptachlor Epoxide A	<0.032	<0.016	<0.045	<0.030
Oxychlordane	<0.0022	<0.0044	<0.0070	<0.0060
trans-Chlordane	<0.015	<0.031	<0.029	<0.053
cis-Chlordane	<0.014	<0.028	<0.026	<0.048
trans-Nonachlor	<0.014	<0.029	<0.027	<0.049
Dieldrin	0.0639	<0.017	<0.017	<0.020
Endrin	<0.032	<0.019	<0.018	<0.020
cis-Nonachlor	<0.011	<0.027	<0.011	<0.017
Endosulfan I	<0.023	<0.021	<0.026	<0.046
Endosulfan II	<0.031	<0.070	<0.037	<0.074
Endosulfan Sulfate	<0.0093	<0.011	<0.0087	<0.0081
2,4'-DDE	<0.0076	<0.019	<0.015	<0.015
4,4'-DDE	<0.014	0.112	0.163	0.303
2,4'-DDD	<0.019	<0.026	<0.024	<0.024
4,4'-DDD	<0.013	<0.027	0.0761	0.123
2,4'-DDT	<0.018	<0.038	<0.033	<0.028
4,4'-DDT	<0.022	<0.035	<0.023	<0.041
Endrin Aldehyde	<0.011	<0.014	<0.0080	<0.014
Endrin Ketone	<0.023	<0.028	<0.035	<0.033
Methoxychlor	<0.0080	<0.0081	<0.0063	<0.0099
Mirex	<0.0026	<0.0028	<0.0019	<0.0019
Upper Bound Sums	**ng/g**	**ng/g**	**ng/g**	**ng/g**
Total DDE	0.0216	0.131	0.178	0.318
Total DDD	0.0320	0.0530	0.100	0.147
Total DDT	0.0400	0.0730	0.0560	0.0690
Total DDE, DDD, DDT	0.0936	0.257	0.334	0.534
Total c & t-Chlordane & nonachlor, oxychlordane	0.0562	0.119	0.100	0.173
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**
Hexachlorobenzene, 13C6-	55	32	45	40
alpha-BHC, 13C6-	68	64	61	66
beta-BHC, 13C6-	63	65	63	61
gamma-BHC, 13C6-	64	63	61	65
delta-BHC, 13C6-	64	65	63	63
Heptachlor, 13C10-	71	69	68	69
Oxychlordane, 13C10-	71	71	70	68
trans-Nonachlor, 13C10-	72	71	70	67
Dieldrin, 13C12-	73	73	72	64
Endrin, 13C12-	69	70	73	69
Endosulfan II, 13C9-	57	60	62	56
2,4'-DDE, 13C12-	78	80	78	74
4,4'-DDE, 13C12-	70	69	71	65
4,4'-DDD, 13C12-	50	49	55	49
4,4'-DDT, 13C12-	45	44	53	46
Methoxychlor, 13C12-	33	32	39	34
Mirex, 13C10-	37	37	43	37

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Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG3209717-1	WG3209717-2
Sample Size	10.00	1
Sample size units	g	n/a
Percent Moisture	n/a	n/a
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	12-Nov-19	12-Nov-19
Target Analytes	**ng/g**	**% Rec**
Hexachlorobenzene	<0.065	100
alpha-BHC	<0.13	88
beta-BHC	<0.084	84
gamma-BHC	<0.13	90
delta-BHC	0.768	88
Heptachlor	<0.0069	95
Aldrin	<0.013	64
Chlorpyrifos	1.10	103
Isodrin	<0.012	76
Octachlorostyrene	<0.0091	40
Heptachlor Epoxide B	<0.012	108
Heptachlor Epoxide A	<0.088	97
Oxychlordane	<0.0092	94
trans-Chlordane	<0.037	93
cis-Chlordane	<0.034	102
trans-Nonachlor	<0.035	92
Dieldrin	<0.021	95
Endrin	<0.024	89
cis-Nonachlor	<0.035	97
Endosulfan I	0.128	102
Endosulfan II	<0.049	93
Endosulfan Sulfate	<0.0091	77
2,4'-DDE	<0.018	97
4,4'-DDE	<0.027	92
2,4'-DDD	<0.032	126
4,4'-DDD	<0.028	96
2,4'-DDT	<0.040	114
4,4'-DDT	<0.054	93
Endrin Aldehyde	<0.030	73
Endrin Ketone	<0.063	69
Methoxychlor	<0.0089	88
Mirex	<0.0063	91
Upper Bound Sums	**ng/g**	
Total DDE	0.0450	
Total DDD	0.0600	
Total DDT	0.0940	
Total DDE, DDD, DDT	0.199	
Total c & t-Chlordane & nonachlor, oxychlordane	0.150	
Extraction Standards	**% Rec**	**% Rec**
Hexachlorobenzene, 13C6-	14	15
alpha-BHC, 13C6-	42	30
beta-BHC, 13C6-	83	47
gamma-BHC, 13C6-	51	34
delta-BHC, 13C6-	90	49
Heptachlor, 13C10-	58	38
Oxychlordane, 13C10-	88	50
trans-Nonachlor, 13C10-	106	57
Dieldrin, 13C12-	111	65
Endrin, 13C12-	109	63
Endosulfan II, 13C9-	118	62
2,4'-DDE, 13C12-	118	62
4,4'-DDE, 13C12-	118	56
4,4'-DDD, 13C12-	109	50
4,4'-DDT, 13C12-	90	46
Methoxychlor, 13C12-	64	34
Mirex, 13C10-	71	25

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Sample Analysis Report

Sample Name	**RM16.1E-SED1**	Sampling Date	28-Oct-19		
ALS Sample ID	L2375251-1	Extraction Date	12-Nov-19		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	10.84	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Moisture	46.8%		--e-signature--
Sample Matrix	Sediment	Split Ratio	2		28-Nov-2019

Run Information	**Run 1**
Filename	9-191122B12
Run Date	23-Nov-19 07:06
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	ng/g
Instrument - Column	HRMS-9 HP5ms UST709916H

Target Analytes	**Ret. Time**	**Conc. ng/g**	**EDL ng/g**	**Flags**	**EMPC ng/g**	**LQL**
Hexachlorobenzene	15.15	0.0824	0.0016	J		0.38
alpha-BHC	NotFnd	<0.035	0.035	U		0.38
beta-BHC	NotFnd	<0.047	0.047	U		0.38
gamma-BHC	NotFnd	<0.043	0.043	U		0.38
delta-BHC	NotFnd	<0.045	0.045	U		0.38
Heptachlor	18.22	<0.0033	0.0018	M,J,R	0.0033	0.38
Aldrin	19.27	<0.023	0.0044	M,J,R	0.023	0.38
Chlorpyrifos	19.54	0.955	0.017	J,B		1.9
Isodrin	NotFnd	<0.0048	0.0048	U		0.38
Octachlorostyrene	20.38	0.00972	0.0060	M,J		0.38
Heptachlor Epoxide B	NotFnd	<0.0063	0.0063	U		0.38
Heptachlor Epoxide A	NotFnd	<0.048	0.048	U		0.38
Oxychlordane	NotFnd	<0.0047	0.0047	U		0.38
trans-Chlordane	21.20	0.0695	0.054	M,J		0.38
cis-Chlordane	21.66	0.0640	0.049	M,J		0.38
trans-Nonachlor	NotFnd	<0.050	0.050	U		0.38
Dieldrin	22.33	<0.031	0.011	M,J,R	0.031	0.38
Endrin	NotFnd	<0.012	0.012	U		0.38
cis-Nonachlor	23.62	<0.032	0.015	M,J,R	0.032	0.38
Endosulfan I	NotFnd	<0.042	0.042	U		0.38
Endosulfan II	NotFnd	<0.053	0.053	U		0.38
Endosulfan Sulfate	24.47	<0.0090	0.0090	M,U	0.0067	0.38
2,4'-DDE	21.38	<0.016	0.016	M,U	0.015	0.38
4,4'-DDE	22.31	0.631	0.024			0.38
2,4'-DDD	22.56	0.128	0.035	J		0.38
4,4'-DDD	23.53	0.353	0.027	J		0.38
2,4'-DDT	NotFnd	<0.037	0.037	U		0.38
4,4'-DDT	24.60	<0.20	0.034	M,J,R	0.20	0.38
Endrin Aldehyde	NotFnd	<0.011	0.011	U		0.38
Endrin Ketone	NotFnd	<0.038	0.038	U		0.38
Methoxychlor	NotFnd	<0.012	0.012	U		0.38
Mirex	27.07	<0.0067	0.0024	M,J,R	0.0067	0.38

Extraction Standards	**ng**			
Hexachlorobenzene, 13C6-	100	15.14	49	5-120
alpha-BHC, 13C6-	200	14.91	69	16-129
beta-BHC, 13C6-	200	15.77	66	11-120
gamma-BHC, 13C6-	200	15.97	69	11-120
delta-BHC, 13C6-	200	16.74	66	11-120
Heptachlor, 13C10-	200	18.21	73	5-120
Oxychlordane, 13C10-	200	20.51	75	23-135
trans-Nonachlor, 13C10-	200	21.79	74	14-136
Dieldrin, 13C12-	100	22.32	73	40-151
Endrin, 13C12-	200	22.95	73	35-155
Endosulfan II, 13C9-	200	23.23	61	5-122
2,4'-DDE, 13C12-	100	21.37	87	5-150
4,4'-DDE, 13C12-	100	22.31	77	21-125
4,4'-DDD, 13C12-	100	23.52	55	5-150
4,4'-DDT, 13C12-	100	24.58	48	5-120
Methoxychlor, 13C12-	100	26.22	33	5-120
Mirex, 13C10-	100	27.06	36	5-120

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**Duplicate of RM16.1E-SED1**	Sampling Date	n/a		
ALS Sample ID	WG3209717-4	Extraction Date	12-Nov-19		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	11.12	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Moisture	44.6%		--e-signature--
Sample Matrix	QC	Split Ratio	2		28-Nov-2019

Run Information	**Run 1**
Filename	9-191122B13
Run Date	23-Nov-19 07:42
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	ng/g
Instrument - Column	HRMS-9 HP5ms UST709916H

Target Analytes	**Ret. Time**	**Conc. ng/g**	**EDL ng/g**	**Flags**	**EMPC ng/g**	**LQL**
Hexachlorobenzene	15.14	0.0702	0.00085	J		0.37
alpha-BHC	NotFnd	<0.036	0.036	U		0.37
beta-BHC	NotFnd	<0.050	0.050	U		0.37
gamma-BHC	NotFnd	<0.047	0.047	U		0.37
delta-BHC	NotFnd	<0.053	0.053	U		0.37
Heptachlor	18.22	<0.0021	0.0021	M,U	0.0016	0.37
Aldrin	19.27	0.0158	0.0050	M,J		0.37
Chlorpyrifos	19.54	0.723	0.014	J,B		1.8
Isodrin	NotFnd	<0.0094	0.0094	U		0.37
Octachlorostyrene	20.37	<0.0043	0.0043	M,U	0.0024	0.37
Heptachlor Epoxide B	NotFnd	<0.0040	0.0040	U		0.37
Heptachlor Epoxide A	NotFnd	<0.030	0.030	U		0.37
Oxychlordane	NotFnd	<0.014	0.014	U		0.37
trans-Chlordane	21.20	0.0775	0.026	M,J		0.37
cis-Chlordane	21.65	0.0537	0.023	M,J		0.37
trans-Nonachlor	NotFnd	<0.024	0.024	U		0.37
Dieldrin	22.34	0.0555	0.020	M,J		0.37
Endrin	NotFnd	<0.022	0.022	U		0.37
cis-Nonachlor	23.62	0.0340	0.019	M,J		0.37
Endosulfan I	NotFnd	<0.029	0.029	U		0.37
Endosulfan II	NotFnd	<0.072	0.072	U		0.37
Endosulfan Sulfate	24.46	<0.012	0.012	M,U	0.0066	0.37
2,4'-DDE	NotFnd	<0.012	0.012	U		0.37
4,4'-DDE	22.31	0.372	0.025			0.37
2,4'-DDD	22.56	0.0740	0.035	M,J		0.37
4,4'-DDD	23.52	0.226	0.023	J		0.37
2,4'-DDT	NotFnd	<0.033	0.033	U		0.37
4,4'-DDT	24.60	0.180	0.026	J		0.37
Endrin Aldehyde	NotFnd	<0.011	0.011	U		0.37
Endrin Ketone	NotFnd	<0.038	0.038	U		0.37
Methoxychlor	NotFnd	<0.014	0.014	U		0.37
Mirex	27.06	<0.0067	0.0021	M,J,R	0.0067	0.37

Extraction Standards	**ng**			
Hexachlorobenzene, 13C6-	100	15.14	42	5-120
alpha-BHC, 13C6-	200	14.91	70	16-129
beta-BHC, 13C6-	200	15.77	65	11-120
gamma-BHC, 13C6-	200	15.97	66	11-120
delta-BHC, 13C6-	200	16.73	65	11-120
Heptachlor, 13C10-	200	18.20	73	5-120
Oxychlordane, 13C10-	200	20.51	74	23-135
trans-Nonachlor, 13C10-	200	21.79	71	14-136
Dieldrin, 13C12-	100	22.32	75	40-151
Endrin, 13C12-	200	22.95	71	35-155
Endosulfan II, 13C9-	200	23.22	60	5-122
2,4'-DDE, 13C12-	100	21.37	86	5-150
4,4'-DDE, 13C12-	100	22.30	73	21-125
4,4'-DDD, 13C12-	100	23.51	53	5-150
4,4'-DDT, 13C12-	100	24.58	48	5-120
Methoxychlor, 13C12-	100	26.22	30	5-120
Mirex, 13C10-	100	27.04	34	5-120

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**RM16.1E-SED1-DUP**	Sampling Date	28-Oct-19		
ALS Sample ID	L2375251-2	Extraction Date	12-Nov-19		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	11.01	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Moisture	45.6%		--e-signature--
Sample Matrix	Sediment	Split Ratio	2		28-Nov-2019

Run Information	**Run 1**
Filename	9-191122B19
Run Date	23-Nov-19 11:31
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	ng/g
Instrument - Column	HRMS-9 HP5ms UST709916H

Target Analytes	**Ret. Time**	**Conc. ng/g**	**EDL ng/g**	**Flags**	**EMPC ng/g**	**LQL**
Hexachlorobenzene	15.15	0.0801	0.00057	M,J		0.37
alpha-BHC	NotFnd	<0.025	0.025	U		0.37
beta-BHC	NotFnd	<0.033	0.033	U		0.37
gamma-BHC	NotFnd	<0.030	0.030	U		0.37
delta-BHC	NotFnd	<0.033	0.033	U		0.37
Heptachlor	18.21	<0.0017	0.0014	M,J,R	0.0017	0.37
Aldrin	19.28	<0.016	0.0043	M,J,R	0.016	0.37
Chlorpyrifos	19.54	0.392	0.017	J,B		1.9
Isodrin	NotFnd	<0.0048	0.0048	U		0.37
Octachlorostyrene	NotFnd	<0.0041	0.0041	U		0.37
Heptachlor Epoxide B	NotFnd	<0.0041	0.0041	U		0.37
Heptachlor Epoxide A	NotFnd	<0.031	0.031	U		0.37
Oxychlordane	NotFnd	<0.0073	0.0073	U		0.37
trans-Chlordane	21.21	0.0673	0.021	M,J		0.37
cis-Chlordane	21.67	0.0429	0.019	M,J		0.37
trans-Nonachlor	21.82	<0.043	0.019	M,J,R	0.043	0.37
Dieldrin	22.34	0.0400	0.015	M,J		0.37
Endrin	NotFnd	<0.017	0.017	U		0.37
cis-Nonachlor	23.63	<0.028	0.028	M,U		0.37
Endosulfan I	21.58	0.0351	0.033	M,J,B		0.37
Endosulfan II	NotFnd	<0.037	0.037	U		0.37
Endosulfan Sulfate	NotFnd	<0.0077	0.0077	U		0.37
2,4'-DDE	NotFnd	<0.016	0.016	U		0.37
4,4'-DDE	22.32	0.420	0.021			0.37
2,4'-DDD	22.56	0.124	0.027	J		0.37
4,4'-DDD	23.53	0.505	0.023			0.37
2,4'-DDT	NotFnd	<0.033	0.033	U		0.37
4,4'-DDT	24.60	0.135	0.023	M,J		0.37
Endrin Aldehyde	NotFnd	<0.012	0.012	U		0.37
Endrin Ketone	NotFnd	<0.034	0.034	U		0.37
Methoxychlor	NotFnd	<0.0095	0.0095	U		0.37
Mirex	27.08	<0.0039	0.0014	M,J,R	0.0039	0.37

Extraction Standards	**ng**			
Hexachlorobenzene, 13C6-	100	15.15	51	5-120
alpha-BHC, 13C6-	200	14.91	72	16-129
beta-BHC, 13C6-	200	15.78	69	11-120
gamma-BHC, 13C6-	200	15.97	70	11-120
delta-BHC, 13C6-	200	16.74	71	11-120
Heptachlor, 13C10-	200	18.21	78	5-120
Oxychlordane, 13C10-	200	20.52	77	23-135
trans-Nonachlor, 13C10-	200	21.79	74	14-136
Dieldrin, 13C12-	100	22.32	77	40-151
Endrin, 13C12-	200	22.96	77	35-155
Endosulfan II, 13C9-	200	23.23	69	5-122
2,4'-DDE, 13C12-	100	21.38	86	5-150
4,4'-DDE, 13C12-	100	22.31	78	21-125
4,4'-DDD, 13C12-	100	23.52	58	5-150
4,4'-DDT, 13C12-	100	24.60	53	5-120
Methoxychlor, 13C12-	100	26.22	39	5-120
Mirex, 13C10-	100	27.06	43	5-120

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**RM16.3E-SED2**	Sampling Date	29-Oct-19		
ALS Sample ID	L2375251-3	Extraction Date	12-Nov-19		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	10.53	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Moisture	48.3%		--e-signature--
Sample Matrix	Sediment	Split Ratio	2		28-Nov-2019

Run Information	**Run 1**
Filename	9-191122B20
Run Date	23-Nov-19 12:08
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	ng/g
Instrument - Column	HRMS-9 HP5ms UST709916H

Target Analytes	**Ret. Time**	**Conc. ng/g**	**EDL ng/g**	**Flags**	**EMPC ng/g**	**LQL**
Hexachlorobenzene	15.15	0.0458	0.00079	J		0.39
alpha-BHC	NotFnd	<0.028	0.028	U		0.39
beta-BHC	NotFnd	<0.041	0.041	U		0.39
gamma-BHC	NotFnd	<0.037	0.037	U		0.39
delta-BHC	NotFnd	<0.042	0.042	U		0.39
Heptachlor	18.23	<0.0031	0.0031	M,U	0.0027	0.39
Aldrin	19.27	0.0230	0.0052	M,J		0.39
Chlorpyrifos	19.54	0.742	0.014	J,B		1.9
Isodrin	NotFnd	<0.0089	0.0089	U		0.39
Octachlorostyrene	20.41	<0.0059	0.0042	M,J,R	0.0059	0.39
Heptachlor Epoxide B	NotFnd	<0.0055	0.0055	U		0.39
Heptachlor Epoxide A	NotFnd	<0.042	0.042	U		0.39
Oxychlordane	NotFnd	<0.0063	0.0063	U		0.39
trans-Chlordane	21.21	0.0463	0.034	M,J		0.39
cis-Chlordane	NotFnd	<0.031	0.031	U		0.39
trans-Nonachlor	NotFnd	<0.032	0.032	U		0.39
Dieldrin	22.34	<0.045	0.012	M,J,R	0.045	0.39
Endrin	NotFnd	<0.013	0.013	U		0.39
cis-Nonachlor	NotFnd	<0.028	0.028	U		0.39
Endosulfan I	NotFnd	<0.043	0.043	U		0.39
Endosulfan II	NotFnd	<0.088	0.088	U		0.39
Endosulfan Sulfate	NotFnd	<0.016	0.016	U		0.39
2,4'-DDE	21.38	0.0607	0.017	J		0.39
4,4'-DDE	22.32	0.983	0.026			0.39
2,4'-DDD	22.56	0.265	0.028	J		0.39
4,4'-DDD	23.53	0.958	0.025			0.39
2,4'-DDT	NotFnd	<0.034	0.034	U		0.39
4,4'-DDT	24.60	0.219	0.032	J		0.39
Endrin Aldehyde	NotFnd	<0.0079	0.0079	U		0.39
Endrin Ketone	NotFnd	<0.032	0.032	U		0.39
Methoxychlor	NotFnd	<0.0095	0.0095	U		0.39
Mirex	27.06	<0.0045	0.0016	M,J,R	0.0045	0.39

Extraction Standards	**ng**			
Hexachlorobenzene, 13C6-	100	15.15	57	5-120
alpha-BHC, 13C6-	200	14.91	74	16-129
beta-BHC, 13C6-	200	15.78	66	11-120
gamma-BHC, 13C6-	200	15.97	70	11-120
delta-BHC, 13C6-	200	16.74	68	11-120
Heptachlor, 13C10-	200	18.21	77	5-120
Oxychlordane, 13C10-	200	20.52	74	23-135
trans-Nonachlor, 13C10-	200	21.80	76	14-136
Dieldrin, 13C12-	100	22.32	75	40-151
Endrin, 13C12-	200	22.96	78	35-155
Endosulfan II, 13C9-	200	23.23	63	5-122
2,4'-DDE, 13C12-	100	21.38	91	5-150
4,4'-DDE, 13C12-	100	22.31	78	21-125
4,4'-DDD, 13C12-	100	23.52	58	5-150
4,4'-DDT, 13C12-	100	24.60	54	5-120
Methoxychlor, 13C12-	100	26.22	37	5-120
Mirex, 13C10-	100	27.06	37	5-120

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**RM16.3E-SED3**	Sampling Date	29-Oct-19		
ALS Sample ID	L2375251-4	Extraction Date	12-Nov-19		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	13.42	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Moisture	33.6%		--e-signature--
Sample Matrix	Sediment	Split Ratio	2		28-Nov-2019

Run Information	**Run 1**
Filename	9-191122B21
Run Date	23-Nov-19 12:44
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	ng/g
Instrument - Column	HRMS-9 HP5ms UST709916H

Target Analytes	**Ret. Time**	**Conc. ng/g**	**EDL ng/g**	**Flags**	**EMPC ng/g**	**LQL**
Hexachlorobenzene	15.15	0.0393	0.0011	J		0.30
alpha-BHC	NotFnd	<0.023	0.023	U		0.30
beta-BHC	NotFnd	<0.029	0.029	U		0.30
gamma-BHC	NotFnd	<0.028	0.028	U		0.30
delta-BHC	NotFnd	<0.029	0.029	U		0.30
Heptachlor	18.22	<0.0017	0.0017	M,U	0.0013	0.30
Aldrin	19.28	0.0346	0.0031	M,J		0.30
Chlorpyrifos	19.54	0.563	0.015	J,B		1.5
Isodrin	NotFnd	<0.0065	0.0065	U		0.30
Octachlorostyrene	20.39	<0.0052	0.0052	M,U	0.0044	0.30
Heptachlor Epoxide B	NotFnd	<0.0031	0.0031	U		0.30
Heptachlor Epoxide A	NotFnd	<0.024	0.024	U		0.30
Oxychlordane	NotFnd	<0.0034	0.0034	U		0.30
trans-Chlordane	NotFnd	<0.033	0.033	U		0.30
cis-Chlordane	21.67	<0.030	0.030	M,U		0.30
trans-Nonachlor	NotFnd	<0.030	0.030	U		0.30
Dieldrin	22.34	0.0900	0.016	M,J		0.30
Endrin	NotFnd	<0.017	0.017	U		0.30
cis-Nonachlor	NotFnd	<0.025	0.025	U		0.30
Endosulfan I	NotFnd	<0.043	0.043	U		0.30
Endosulfan II	NotFnd	<0.022	0.022	U		0.30
Endosulfan Sulfate	NotFnd	<0.011	0.011	U		0.30
2,4'-DDE	21.38	0.0524	0.0083	J		0.30
4,4'-DDE	22.32	0.839	0.014			0.30
2,4'-DDD	22.57	0.319	0.017			0.30
4,4'-DDD	23.53	1.43	0.016			0.30
2,4'-DDT	NotFnd	<0.023	0.023	U		0.30
4,4'-DDT	NotFnd	<0.026	0.026	U		0.30
Endrin Aldehyde	NotFnd	<0.0077	0.0077	U		0.30
Endrin Ketone	NotFnd	<0.030	0.030	U		0.30
Methoxychlor	NotFnd	<0.0079	0.0079	U		0.30
Mirex	27.07	<0.0036	0.0011	M,J,R	0.0036	0.30

Extraction Standards	**ng**			
Hexachlorobenzene, 13C6-	100	15.15	43	5-120
alpha-BHC, 13C6-	200	14.91	67	16-129
beta-BHC, 13C6-	200	15.78	66	11-120
gamma-BHC, 13C6-	200	15.97	67	11-120
delta-BHC, 13C6-	200	16.74	68	11-120
Heptachlor, 13C10-	200	18.21	75	5-120
Oxychlordane, 13C10-	200	20.51	74	23-135
trans-Nonachlor, 13C10-	200	21.79	76	14-136
Dieldrin, 13C12-	100	22.32	74	40-151
Endrin, 13C12-	200	22.96	81	35-155
Endosulfan II, 13C9-	200	23.23	66	5-122
2,4'-DDE, 13C12-	100	21.37	89	5-150
4,4'-DDE, 13C12-	100	22.31	79	21-125
4,4'-DDD, 13C12-	100	23.52	60	5-150
4,4'-DDT, 13C12-	100	24.60	54	5-120
Methoxychlor, 13C12-	100	26.22	40	5-120
Mirex, 13C10-	100	27.06	36	5-120

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**RM16.3E-SED4**	Sampling Date	29-Oct-19		
ALS Sample ID	L2375251-5	Extraction Date	12-Nov-19		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	14.46	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Moisture	28.1%		--e-signature--
Sample Matrix	Sediment	Split Ratio	2		28-Nov-2019

Run Information	**Run 1**
Filename	9-191122B22
Run Date	23-Nov-19 13:21
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	ng/g
Instrument - Column	HRMS-9 HP5ms UST709916H

Target Analytes	**Ret. Time**	**Conc. ng/g**	**EDL ng/g**	**Flags**	**EMPC ng/g**	**LQL**
Hexachlorobenzene	15.14	0.0320	0.0018	M,J		0.28
alpha-BHC	NotFnd	<0.026	0.026	U		0.28
beta-BHC	NotFnd	<0.036	0.036	U		0.28
gamma-BHC	NotFnd	<0.033	0.033	U		0.28
delta-BHC	NotFnd	<0.032	0.032	U		0.28
Heptachlor	18.24	<0.0021	0.0021	M,U	0.0015	0.28
Aldrin	19.29	0.00999	0.0037	M,J		0.28
Chlorpyrifos	19.54	0.551	0.012	J,B		1.4
Isodrin	NotFnd	<0.0070	0.0070	U		0.28
Octachlorostyrene	NotFnd	<0.0032	0.0032	U		0.28
Heptachlor Epoxide B	NotFnd	<0.0033	0.0033	U		0.28
Heptachlor Epoxide A	NotFnd	<0.025	0.025	U		0.28
Oxychlordane	NotFnd	<0.0049	0.0049	U		0.28
trans-Chlordane	NotFnd	<0.020	0.020	U		0.28
cis-Chlordane	NotFnd	<0.018	0.018	U		0.28
trans-Nonachlor	NotFnd	<0.018	0.018	U		0.28
Dieldrin	22.33	0.0271	0.010	M,J		0.28
Endrin	NotFnd	<0.011	0.011	U		0.28
cis-Nonachlor	NotFnd	<0.013	0.013	U		0.28
Endosulfan I	NotFnd	<0.019	0.019	U		0.28
Endosulfan II	NotFnd	<0.048	0.048	U		0.28
Endosulfan Sulfate	NotFnd	<0.0059	0.0059	U		0.28
2,4'-DDE	NotFnd	<0.012	0.012	U		0.28
4,4'-DDE	22.31	0.0597	0.016	M,J		0.28
2,4'-DDD	NotFnd	<0.022	0.022	U		0.28
4,4'-DDD	23.53	<0.030	0.015	M,J,R	0.030	0.28
2,4'-DDT	NotFnd	<0.021	0.021	U		0.28
4,4'-DDT	NotFnd	<0.021	0.021	U		0.28
Endrin Aldehyde	NotFnd	<0.011	0.011	U		0.28
Endrin Ketone	NotFnd	<0.025	0.025	U		0.28
Methoxychlor	NotFnd	<0.0072	0.0072	U		0.28
Mirex	27.06	<0.0034	0.00097	M,J,R	0.0034	0.28

Extraction Standards	**ng**			
Hexachlorobenzene, 13C6-	100	15.14	45	5-120
alpha-BHC, 13C6-	200	14.91	66	16-129
beta-BHC, 13C6-	200	15.77	62	11-120
gamma-BHC, 13C6-	200	15.97	64	11-120
delta-BHC, 13C6-	200	16.74	64	11-120
Heptachlor, 13C10-	200	18.21	71	5-120
Oxychlordane, 13C10-	200	20.51	72	23-135
trans-Nonachlor, 13C10-	200	21.79	71	14-136
Dieldrin, 13C12-	100	22.32	72	40-151
Endrin, 13C12-	200	22.95	75	35-155
Endosulfan II, 13C9-	200	23.23	64	5-122
2,4'-DDE, 13C12-	100	21.37	82	5-150
4,4'-DDE, 13C12-	100	22.31	73	21-125
4,4'-DDD, 13C12-	100	23.52	55	5-150
4,4'-DDT, 13C12-	100	24.58	48	5-120
Methoxychlor, 13C12-	100	26.22	35	5-120
Mirex, 13C10-	100	27.06	40	5-120

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**RM16.4E-SED5**	Sampling Date	29-Oct-19		
ALS Sample ID	L2375251-6	Extraction Date	12-Nov-19		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	16.55	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Moisture	18.4%		--e-signature--
Sample Matrix	Sediment	Split Ratio	2		28-Nov-2019

Run Information	**Run 1**
Filename	9-191122B23
Run Date	23-Nov-19 13:57
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	ng/g
Instrument - Column	HRMS-9 HP5ms UST709916H

Target Analytes	**Ret. Time**	**Conc. ng/g**	**EDL ng/g**	**Flags**	**EMPC ng/g**	**LQL**
Hexachlorobenzene	15.15	0.0253	0.0010	J		0.25
alpha-BHC	NotFnd	<0.024	0.024	U		0.25
beta-BHC	NotFnd	<0.035	0.035	U		0.25
gamma-BHC	NotFnd	<0.033	0.033	U		0.25
delta-BHC	NotFnd	<0.034	0.034	U		0.25
Heptachlor	18.24	<0.0026	0.0013	M,J,R	0.0026	0.25
Aldrin	NotFnd	<0.0030	0.0030	U		0.25
Chlorpyrifos	19.55	0.719	0.011	J,B		1.2
Isodrin	NotFnd	<0.0039	0.0039	U		0.25
Octachlorostyrene	NotFnd	<0.0042	0.0042	U		0.25
Heptachlor Epoxide B	NotFnd	<0.0042	0.0042	U		0.25
Heptachlor Epoxide A	NotFnd	<0.032	0.032	U		0.25
Oxychlordane	NotFnd	<0.0022	0.0022	U		0.25
trans-Chlordane	NotFnd	<0.015	0.015	U		0.25
cis-Chlordane	NotFnd	<0.014	0.014	U		0.25
trans-Nonachlor	NotFnd	<0.014	0.014	U		0.25
Dieldrin	22.34	0.0639	0.029	M,J		0.25
Endrin	22.95	<0.032	0.032	M,U	0.0092	0.25
cis-Nonachlor	NotFnd	<0.011	0.011	U		0.25
Endosulfan I	NotFnd	<0.023	0.023	U		0.25
Endosulfan II	NotFnd	<0.031	0.031	U		0.25
Endosulfan Sulfate	NotFnd	<0.0093	0.0093	U		0.25
2,4'-DDE	NotFnd	<0.0076	0.0076	U		0.25
4,4'-DDE	NotFnd	<0.014	0.014	U		0.25
2,4'-DDD	NotFnd	<0.019	0.019	U		0.25
4,4'-DDD	NotFnd	<0.013	0.013	U		0.25
2,4'-DDT	NotFnd	<0.018	0.018	U		0.25
4,4'-DDT	NotFnd	<0.022	0.022	U		0.25
Endrin Aldehyde	NotFnd	<0.011	0.011	U		0.25
Endrin Ketone	NotFnd	<0.023	0.023	U		0.25
Methoxychlor	NotFnd	<0.0080	0.0080	U		0.25
Mirex	27.07	<0.0026	0.00074	M,J,R	0.0026	0.25

Extraction Standards	**ng**			
Hexachlorobenzene, 13C6-	100	15.15	55	5-120
alpha-BHC, 13C6-	200	14.92	68	16-129
beta-BHC, 13C6-	200	15.78	63	11-120
gamma-BHC, 13C6-	200	15.97	64	11-120
delta-BHC, 13C6-	200	16.74	64	11-120
Heptachlor, 13C10-	200	18.21	71	5-120
Oxychlordane, 13C10-	200	20.52	71	23-135
trans-Nonachlor, 13C10-	200	21.80	72	14-136
Dieldrin, 13C12-	100	22.32	73	40-151
Endrin, 13C12-	200	22.96	69	35-155
Endosulfan II, 13C9-	200	23.23	57	5-122
2,4'-DDE, 13C12-	100	21.38	78	5-150
4,4'-DDE, 13C12-	100	22.31	70	21-125
4,4'-DDD, 13C12-	100	23.52	50	5-150
4,4'-DDT, 13C12-	100	24.60	45	5-120
Methoxychlor, 13C12-	100	26.23	33	5-120
Mirex, 13C10-	100	27.06	37	5-120

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**RM19.4W-SED6**	Sampling Date	28-Oct-19		
ALS Sample ID	L2375251-7	Extraction Date	12-Nov-19		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	12.39	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Moisture	38.9%		--e-signature--
Sample Matrix	Sediment	Split Ratio	2		28-Nov-2019

Run Information	**Run 1**
Filename	9-191122B24
Run Date	23-Nov-19 14:34
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	ng/g
Instrument - Column	HRMS-9 HP5ms UST709916H

Target Analytes	**Ret. Time**	**Conc. ng/g**	**EDL ng/g**	**Flags**	**EMPC ng/g**	**LQL**
Hexachlorobenzene	15.15	0.0376	0.0016	M,J		0.33
alpha-BHC	NotFnd	<0.028	0.028	U		0.33
beta-BHC	NotFnd	<0.038	0.038	U		0.33
gamma-BHC	NotFnd	<0.037	0.037	U		0.33
delta-BHC	NotFnd	<0.037	0.037	U		0.33
Heptachlor	NotFnd	<0.0042	0.0042	U		0.33
Aldrin	NotFnd	<0.0037	0.0037	U		0.33
Chlorpyrifos	19.54	0.501	0.015	J,B		1.6
Isodrin	NotFnd	<0.0062	0.0062	U		0.33
Octachlorostyrene	NotFnd	<0.0032	0.0032	U		0.33
Heptachlor Epoxide B	NotFnd	<0.0021	0.0021	U		0.33
Heptachlor Epoxide A	NotFnd	<0.016	0.016	U		0.33
Oxychlordane	NotFnd	<0.0044	0.0044	U		0.33
trans-Chlordane	NotFnd	<0.031	0.031	U		0.33
cis-Chlordane	NotFnd	<0.028	0.028	U		0.33
trans-Nonachlor	NotFnd	<0.029	0.029	U		0.33
Dieldrin	NotFnd	<0.017	0.017	U		0.33
Endrin	NotFnd	<0.019	0.019	U		0.33
cis-Nonachlor	NotFnd	<0.027	0.027	U		0.33
Endosulfan I	NotFnd	<0.021	0.021	U		0.33
Endosulfan II	NotFnd	<0.070	0.070	U		0.33
Endosulfan Sulfate	NotFnd	<0.011	0.011	U		0.33
2,4'-DDE	NotFnd	<0.019	0.019	U		0.33
4,4'-DDE	22.31	0.112	0.020	J		0.33
2,4'-DDD	NotFnd	<0.026	0.026	U		0.33
4,4'-DDD	NotFnd	<0.027	0.027	U		0.33
2,4'-DDT	NotFnd	<0.038	0.038	U		0.33
4,4'-DDT	NotFnd	<0.035	0.035	U		0.33
Endrin Aldehyde	NotFnd	<0.014	0.014	U		0.33
Endrin Ketone	NotFnd	<0.028	0.028	U		0.33
Methoxychlor	NotFnd	<0.0081	0.0081	U		0.33
Mirex	27.07	<0.0028	0.0016	M,J,R	0.0028	0.33

Extraction Standards	**ng**			
Hexachlorobenzene, 13C6-	100	15.14	32	5-120
alpha-BHC, 13C6-	200	14.91	64	16-129
beta-BHC, 13C6-	200	15.77	65	11-120
gamma-BHC, 13C6-	200	15.97	63	11-120
delta-BHC, 13C6-	200	16.73	65	11-120
Heptachlor, 13C10-	200	18.21	69	5-120
Oxychlordane, 13C10-	200	20.51	71	23-135
trans-Nonachlor, 13C10-	200	21.79	71	14-136
Dieldrin, 13C12-	100	22.32	73	40-151
Endrin, 13C12-	200	22.95	70	35-155
Endosulfan II, 13C9-	200	23.23	60	5-122
2,4'-DDE, 13C12-	100	21.37	80	5-150
4,4'-DDE, 13C12-	100	22.30	69	21-125
4,4'-DDD, 13C12-	100	23.52	49	5-150
4,4'-DDT, 13C12-	100	24.58	44	5-120
Methoxychlor, 13C12-	100	26.22	32	5-120
Mirex, 13C10-	100	27.06	37	5-120

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**RM19.5W-SED7**	Sampling Date	28-Oct-19		
ALS Sample ID	L2375251-8	Extraction Date	12-Nov-19		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	11.96	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Moisture	40.9%		--e-signature--
Sample Matrix	Sediment	Split Ratio	2		28-Nov-2019

Run Information	**Run 1**
Filename	9-191122B25
Run Date	23-Nov-19 15:10
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	ng/g
Instrument - Column	HRMS-9 HP5ms UST709916H

Target Analytes	**Ret. Time**	**Conc. ng/g**	**EDL ng/g**	**Flags**	**EMPC ng/g**	**LQL**
Hexachlorobenzene	15.15	0.0473	0.0014	J		0.34
alpha-BHC	NotFnd	<0.030	0.030	U		0.34
beta-BHC	NotFnd	<0.038	0.038	U		0.34
gamma-BHC	NotFnd	<0.037	0.037	U		0.34
delta-BHC	NotFnd	<0.037	0.037	U		0.34
Heptachlor	NotFnd	<0.0017	0.0017	U		0.34
Aldrin	NotFnd	<0.0046	0.0046	U		0.34
Chlorpyrifos	19.54	0.236	0.016	J,B		1.7
Isodrin	NotFnd	<0.0063	0.0063	U		0.34
Octachlorostyrene	NotFnd	<0.0032	0.0032	U		0.34
Heptachlor Epoxide B	NotFnd	<0.0060	0.0060	U		0.34
Heptachlor Epoxide A	NotFnd	<0.045	0.045	U		0.34
Oxychlordane	NotFnd	<0.0070	0.0070	U		0.34
trans-Chlordane	NotFnd	<0.029	0.029	U		0.34
cis-Chlordane	NotFnd	<0.026	0.026	U		0.34
trans-Nonachlor	NotFnd	<0.027	0.027	U		0.34
Dieldrin	NotFnd	<0.017	0.017	U		0.34
Endrin	NotFnd	<0.018	0.018	U		0.34
cis-Nonachlor	NotFnd	<0.011	0.011	U		0.34
Endosulfan I	NotFnd	<0.026	0.026	U		0.34
Endosulfan II	NotFnd	<0.037	0.037	U		0.34
Endosulfan Sulfate	NotFnd	<0.0087	0.0087	U		0.34
2,4'-DDE	NotFnd	<0.015	0.015	U		0.34
4,4'-DDE	22.31	0.163	0.021	M,J		0.34
2,4'-DDD	22.56	<0.024	0.023	M,J,R	0.024	0.34
4,4'-DDD	23.52	0.0761	0.024	M,J		0.34
2,4'-DDT	NotFnd	<0.033	0.033	U		0.34
4,4'-DDT	NotFnd	<0.023	0.023	U		0.34
Endrin Aldehyde	NotFnd	<0.0080	0.0080	U		0.34
Endrin Ketone	NotFnd	<0.035	0.035	U		0.34
Methoxychlor	NotFnd	<0.0063	0.0063	U		0.34
Mirex	27.06	<0.0019	0.0019	M,U	0.0015	0.34

Extraction Standards	**ng**			
Hexachlorobenzene, 13C6-	100	15.14	45	5-120
alpha-BHC, 13C6-	200	14.91	61	16-129
beta-BHC, 13C6-	200	15.77	63	11-120
gamma-BHC, 13C6-	200	15.97	61	11-120
delta-BHC, 13C6-	200	16.73	63	11-120
Heptachlor, 13C10-	200	18.20	68	5-120
Oxychlordane, 13C10-	200	20.51	70	23-135
trans-Nonachlor, 13C10-	200	21.79	70	14-136
Dieldrin, 13C12-	100	22.32	72	40-151
Endrin, 13C12-	200	22.95	73	35-155
Endosulfan II, 13C9-	200	23.22	62	5-122
2,4'-DDE, 13C12-	100	21.37	78	5-150
4,4'-DDE, 13C12-	100	22.30	71	21-125
4,4'-DDD, 13C12-	100	23.51	55	5-150
4,4'-DDT, 13C12-	100	24.58	53	5-120
Methoxychlor, 13C12-	100	26.22	39	5-120
Mirex, 13C10-	100	27.04	43	5-120

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**RM19.6W-SED8**	Sampling Date	28-Oct-19		
ALS Sample ID	L2375251-9	Extraction Date	12-Nov-19		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	10.76	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Moisture	46.7%		--e-signature--
Sample Matrix	Sediment	Split Ratio	2		28-Nov-2019

Run Information	**Run 1**
Filename	9-191122B26
Run Date	23-Nov-19 15:47
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	ng/g
Instrument - Column	HRMS-9 HP5ms UST709916H

Target Analytes	**Ret. Time**	**Conc. ng/g**	**EDL ng/g**	**Flags**	**EMPC ng/g**	**LQL**
Hexachlorobenzene	NotFnd	<0.0020	0.0020	U		0.38
alpha-BHC	NotFnd	<0.030	0.030	U		0.38
beta-BHC	NotFnd	<0.042	0.042	U		0.38
gamma-BHC	NotFnd	<0.036	0.036	U		0.38
delta-BHC	NotFnd	<0.040	0.040	U		0.38
Heptachlor	NotFnd	<0.0011	0.0011	U		0.38
Aldrin	19.28	<0.0087	0.0066	M,J,R	0.0087	0.38
Chlorpyrifos	19.55	0.947	0.014	J,B		1.9
Isodrin	NotFnd	<0.0042	0.0042	U		0.38
Octachlorostyrene	NotFnd	<0.0039	0.0039	U		0.38
Heptachlor Epoxide B	NotFnd	<0.0040	0.0040	U		0.38
Heptachlor Epoxide A	NotFnd	<0.030	0.030	U		0.38
Oxychlordane	NotFnd	<0.0060	0.0060	U		0.38
trans-Chlordane	NotFnd	<0.053	0.053	U		0.38
cis-Chlordane	NotFnd	<0.048	0.048	U		0.38
trans-Nonachlor	NotFnd	<0.049	0.049	U		0.38
Dieldrin	NotFnd	<0.020	0.020	U		0.38
Endrin	NotFnd	<0.020	0.020	U		0.38
cis-Nonachlor	NotFnd	<0.017	0.017	U		0.38
Endosulfan I	NotFnd	<0.046	0.046	U		0.38
Endosulfan II	NotFnd	<0.074	0.074	U		0.38
Endosulfan Sulfate	NotFnd	<0.0081	0.0081	U		0.38
2,4'-DDE	NotFnd	<0.015	0.015	U		0.38
4,4'-DDE	22.32	0.303	0.022	J		0.38
2,4'-DDD	NotFnd	<0.024	0.024	U		0.38
4,4'-DDD	23.53	0.123	0.020	M,J		0.38
2,4'-DDT	NotFnd	<0.028	0.028	U		0.38
4,4'-DDT	NotFnd	<0.041	0.041	U		0.38
Endrin Aldehyde	NotFnd	<0.014	0.014	U		0.38
Endrin Ketone	NotFnd	<0.033	0.033	U		0.38
Methoxychlor	NotFnd	<0.0099	0.0099	U		0.38
Mirex	27.08	<0.0019	0.0017	M,J,R	0.0019	0.38

Extraction Standards	**ng**			
Hexachlorobenzene, 13C6-	100	15.15	40	5-120
alpha-BHC, 13C6-	200	14.92	66	16-129
beta-BHC, 13C6-	200	15.78	61	11-120
gamma-BHC, 13C6-	200	15.97	65	11-120
delta-BHC, 13C6-	200	16.74	63	11-120
Heptachlor, 13C10-	200	18.22	69	5-120
Oxychlordane, 13C10-	200	20.52	68	23-135
trans-Nonachlor, 13C10-	200	21.80	67	14-136
Dieldrin, 13C12-	100	22.33	64	40-151
Endrin, 13C12-	200	22.96	69	35-155
Endosulfan II, 13C9-	200	23.24	56	5-122
2,4'-DDE, 13C12-	100	21.38	74	5-150
4,4'-DDE, 13C12-	100	22.31	65	21-125
4,4'-DDD, 13C12-	100	23.53	49	5-150
4,4'-DDT, 13C12-	100	24.60	46	5-120
Methoxychlor, 13C12-	100	26.23	34	5-120
Mirex, 13C10-	100	27.06	37	5-120

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a		
ALS Sample ID	WG3209717-1	Extraction Date	12-Nov-19		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	10.00	g	*Ella Gdyczynski*
Analysis Type	Blank	Percent Moisture	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	2		28-Nov-2019

Run Information	**Run 1**
Filename	9-191122B07
Run Date	23-Nov-19 04:04
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	ng/g
Instrument - Column	HRMS-9 HP5ms UST709916H

Target Analytes	**Ret. Time**	**Conc. ng/g**	**EDL ng/g**	**Flags**	**EMPC ng/g**	**LQL**
Hexachlorobenzene	15.14	<0.065	0.015	M,J,R	0.065	0.41
alpha-BHC	NotFnd	<0.13	0.13	U		0.41
beta-BHC	NotFnd	<0.084	0.084	U		0.41
gamma-BHC	NotFnd	<0.13	0.13	U		0.41
delta-BHC	16.79	0.768	0.078			0.41
Heptachlor	18.23	<0.0069	0.0032	M,J,R	0.0069	0.41
Aldrin	NotFnd	<0.013	0.013	U		0.41
Chlorpyrifos	19.54	1.10	0.048	J		2.0
Isodrin	NotFnd	<0.012	0.012	U		0.41
Octachlorostyrene	NotFnd	<0.0091	0.0091	U		0.41
Heptachlor Epoxide B	NotFnd	<0.012	0.012	U		0.41
Heptachlor Epoxide A	NotFnd	<0.088	0.088	U		0.41
Oxychlordane	NotFnd	<0.0092	0.0092	U		0.41
trans-Chlordane	NotFnd	<0.037	0.037	U		0.41
cis-Chlordane	NotFnd	<0.034	0.034	U		0.41
trans-Nonachlor	NotFnd	<0.035	0.035	U		0.41
Dieldrin	NotFnd	<0.021	0.021	U		0.41
Endrin	NotFnd	<0.024	0.024	U		0.41
cis-Nonachlor	NotFnd	<0.035	0.035	U		0.41
Endosulfan I	21.56	0.128	0.028	M,J		0.41
Endosulfan II	NotFnd	<0.049	0.049	U		0.41
Endosulfan Sulfate	NotFnd	<0.0091	0.0091	U		0.41
2,4'-DDE	NotFnd	<0.018	0.018	U		0.41
4,4'-DDE	NotFnd	<0.027	0.027	U		0.41
2,4'-DDD	NotFnd	<0.032	0.032	U		0.41
4,4'-DDD	NotFnd	<0.028	0.028	U		0.41
2,4'-DDT	NotFnd	<0.040	0.040	U		0.41
4,4'-DDT	NotFnd	<0.054	0.054	U		0.41
Endrin Aldehyde	NotFnd	<0.030	0.030	U		0.41
Endrin Ketone	NotFnd	<0.063	0.063	U		0.41
Methoxychlor	NotFnd	<0.0089	0.0089	U		0.41
Mirex	27.04	<0.0063	0.0015	M,J,R	0.0063	0.41

Extraction Standards	**ng**		
Hexachlorobenzene, 13C6-	100	15.13	14 5-120
alpha-BHC, 13C6-	200	14.90	42 16-129
beta-BHC, 13C6-	200	15.76	83 11-120
gamma-BHC, 13C6-	200	15.97	51 11-120
delta-BHC, 13C6-	200	16.73	90 11-120
Heptachlor, 13C10-	200	18.20	58 5-120
Oxychlordane, 13C10-	200	20.50	88 23-135
trans-Nonachlor, 13C10-	200	21.79	106 14-136
Dieldrin, 13C12-	100	22.31	111 40-151
Endrin, 13C12-	200	22.94	109 35-155
Endosulfan II, 13C9-	200	23.22	118 5-122
2,4'-DDE, 13C12-	100	21.37	118 5-150
4,4'-DDE, 13C12-	100	22.30	118 21-125
4,4'-DDD, 13C12-	100	23.51	109 5-150
4,4'-DDT, 13C12-	100	24.58	90 5-120
Methoxychlor, 13C12-	100	26.21	64 5-120
Mirex, 13C10-	100	27.04	71 5-120

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a		
ALS Sample ID	WG3209717-2	Extraction Date	12-Nov-19		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a	*Ella Gdyczynski*
Analysis Type	LCS	Percent Moisture	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	2		28-Nov-2019

Run Information	**Run 1**
Filename	9-191122B16
Run Date	23-Nov-19 09:42
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-9 HP5ms UST709916H

Target Analytes	**ng**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
Hexachlorobenzene	50	15.15	100	10-150	
alpha-BHC	50	14.92	88	50-120	
beta-BHC	50	15.79	84	50-120	
gamma-BHC	50	15.98	90	50-120	
delta-BHC	50	16.74	88	50-120	
Heptachlor	50	18.22	95	50-120	
Aldrin	50	19.28	64	50-120	
Chlorpyrifos	250	19.54	103	19-163	
Isodrin	50	20.16	76	50-120	
Octachlorostyrene	50	20.39	40	50-175	
Heptachlor Epoxide B	50	20.50	108	20-200	
Heptachlor Epoxide A	50	20.63	97	50-120	
Oxychlordane	50	20.53	94	50-120	
trans-Chlordane	50	21.21	93	50-120	
cis-Chlordane	50	21.66	102	50-120	
trans-Nonachlor	50	21.81	92	50-120	
Dieldrin	50	22.34	95	50-120	
Endrin	50	22.97	89	50-120	
cis-Nonachlor	50	23.62	97	50-120	
Endosulfan I	50	21.57	102	50-120	
Endosulfan II	50	23.24	93	5-200	
Endosulfan Sulfate	50	24.47	77	50-200	
2,4'-DDE	50	21.38	97	24-123	
4,4'-DDE	50	22.32	92	50-120	
2,4'-DDD	50	22.56	126	50-120	
4,4'-DDD	50	23.53	96	42-120	
2,4'-DDT	50	23.62	114	50-120	
4,4'-DDT	50	24.60	93	50-120	
Endrin Aldehyde	50	23.79	73	20-200	
Endrin Ketone	50	25.80	69	50-134	
Methoxychlor	50	26.23	88	50-120	
Mirex	50	27.07	91	50-120	
Extraction Standards	**ng**				
Hexachlorobenzene, 13C6-	100	15.15	15	5-120	
alpha-BHC, 13C6-	200	14.91	30	13-138	
beta-BHC, 13C6-	200	15.78	47	5-124	
gamma-BHC, 13C6-	200	15.97	34	5-124	
delta-BHC, 13C6-	200	16.74	49	5-124	
Heptachlor, 13C10-	200	18.21	38	5-128	
Oxychlordane, 13C10-	200	20.51	50	5-144	
trans-Nonachlor, 13C10-	200	21.79	57	17-154	
Dieldrin, 13C12-	100	22.32	65	19-161	
Endrin, 13C12-	200	22.95	63	20-157	
Endosulfan II, 13C9-	200	23.23	62	5-144	
2,4'-DDE, 13C12-	100	21.37	62	13-200	
4,4'-DDE, 13C12-	100	22.31	56	26-169	
4,4'-DDD, 13C12-	100	23.52	50	13-200	
4,4'-DDT, 13C12-	100	24.58	46	13-200	
Methoxychlor, 13C12-	100	26.22	34	8-200	
Mirex, 13C10-	100	27.06	25	5-138	

M Indicates that a peak has been manually integrated.

1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6

SVOC DATA PACKAGE

PROJECT NARRATIVE

ALSE Project Information

Project ID: BUR100

Contact: Claire Kocharakkal
Submission ID(s): L2375251

Client Project Information

Project ID: 150-002-017/TASK 4
Project Description: UPRIVER REACH SEDIMENT INVESTIGATION
Contact: Kevin Woodhouse

Analytical Method: Chlorinated Pesticides by EPA 1699 (modified)

ALS Sample ID	Client Sample Descriptions	Matrix	Date Sampled	Date Received	Date Extracted	Date Analyzed
L2375251-10	RINSATE BLANK	Water	29-Oct-19	31-Oct-19	05-Nov-19	25-Nov-19
WG3208379-1	Method Blank	QC	n/a	n/a	05-Nov-19	25-Nov-19
WG3208379-2	Laboratory Control Sample	QC	n/a	n/a	05-Nov-19	25-Nov-19

Comments and Notes:
a) Sample Integrity:

The sample was received at ALS-Burlington in good condition at 1.6 degrees C.

b) Instrumental Analysis:

For the pre- and post-run continuing calibration verifications (CCVs), The recoveries of three and four of the labelled standards (surrogates) are below the method control limit. As a result, the reported recoveries of these standards may be biased low. However, the native target quantification is not biased,and the labelled standard recoveries are within control for the samples.

I certify that this data package is in compliance with the terms and condition of the contract , both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package (hardcopy and/or electronic version) has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Steve Kennedy, Technical Supervisor

3-Dec-19
Date

1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Claire Kocharakkal	**Client Name:**	Hart Crowser
ALS Project ID:	BUR100	**Client Address:**	6420 SW Macadam Avenue, Suite 100
ALS WO#:	L2375251		Portland,OR 97239
Date of Report	2-Dec-19		USA
Date of Sample Receipt	31-Oct-19	**Client Contact:**	Kevin Woodhouse
		Client Project ID:	150-002-017/TASK 4 UPRIVER REACH SEDIMENT INVESTIGATION

COMMENTS: **Chlorinated Pesticides by EPA 1699 (modified)**

Certified by:

Steve Kennedy
Technical Supervisor

Results in this certificate relate only to the samples as submitted to the laboratory.
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Sample Analysis Summary Report

Sample Name	**RINSATE BLANK**
ALS Sample ID	L2375251-10
Sample Size	0.95
Sample size units	L
Percent Moisture	n/a
Sample Matrix	Water
Sampling Date	29-Oct-19
Extraction Date	5-Nov-19

Target Analytes	**ng/L**
Hexachlorobenzene	<0.077
alpha-BHC	<0.72
beta-BHC	<1.0
gamma-BHC	<0.94
delta-BHC	<1.1
Heptachlor	<0.056
Aldrin	<0.076
Chlorpyrifos	<0.69
Isodrin	<0.12
Octachlorostyrene	<0.15
Heptachlor Epoxide B	<0.14
Heptachlor Epoxide A	<1.0
Oxychlordane	<0.12
trans-Chlordane	<0.54
cis-Chlordane	<0.51
trans-Nonachlor	<0.53
Dieldrin	<0.20
Endrin	<0.22
cis-Nonachlor	<0.42
Endosulfan I	<0.59
Endosulfan II	<0.94
Endosulfan Sulfate	<0.21
2,4'-DDE	<0.27
4,4'-DDE	<0.35
2,4'-DDD	<0.38
4,4'-DDD	<0.25
2,4'-DDT	<0.38
4,4'-DDT	<0.73
Endrin Aldehyde	<0.20
Endrin Ketone	<1.2
Methoxychlor	<0.11
Mirex	<0.12
Upper Bound Sums	**ng/g**
Total DDE	0.620
Total DDD	0.630
Total DDT	1.11
Total DDE, DDD, DDT	2.36
Total c & t-Chlordane & nonachlor, oxychlordane	2.12
Extraction Standards	**% Rec**
Hexachlorobenzene, 13C6-	41
alpha-BHC, 13C6-	70
beta-BHC, 13C6-	64
gamma-BHC, 13C6-	66
delta-BHC, 13C6-	60
Heptachlor, 13C10-	66
Oxychlordane, 13C10-	67
trans-Nonachlor, 13C10-	74
Dieldrin, 13C12-	76
Endrin, 13C12-	69
Endosulfan II, 13C9-	73
2,4'-DDE, 13C12-	76
4,4'-DDE, 13C12-	76
4,4'-DDD, 13C12-	66
4,4'-DDT, 13C12-	63
Methoxychlor, 13C12-	56
Mirex, 13C10-	70

ALS Life Sciences

Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG3208379-1	WG3208379-2
Sample Size	1.00	1
Sample size units	L	n/a
Percent Moisture	n/a	n/a
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	5-Nov-19	5-Nov-19
Target Analytes	**ng/L**	**% Rec**
Hexachlorobenzene	<0.044	96
alpha-BHC	<0.56	95
beta-BHC	<0.83	91
gamma-BHC	<0.74	90
delta-BHC	<0.78	92
Heptachlor	<0.052	95
Aldrin	<0.092	86
Chlorpyrifos	<0.63	88
Isodrin	<0.13	75
Octachlorostyrene	<0.11	92
Heptachlor Epoxide B	<0.078	94
Heptachlor Epoxide A	<0.58	86
Oxychlordane	<0.099	90
trans-Chlordane	<0.49	90
cis-Chlordane	<0.46	90
trans-Nonachlor	<0.48	87
Dieldrin	<0.24	88
Endrin	<0.29	85
cis-Nonachlor	<0.35	89
Endosulfan I	<0.55	101
Endosulfan II	<0.91	96
Endosulfan Sulfate	<0.20	85
2,4'-DDE	<0.21	93
4,4'-DDE	<0.47	94
2,4'-DDD	<0.42	102
4,4'-DDD	<0.38	93
2,4'-DDT	<0.58	100
4,4'-DDT	<0.48	94
Endrin Aldehyde	<0.23	72
Endrin Ketone	<1.2	96
Methoxychlor	<0.37	92
Mirex	<0.060	93
Upper Bound Sums	**ng/g**	
Total DDE	0.680	
Total DDD	0.800	
Total DDT	1.06	
Total DDE, DDD, DDT	2.54	
Total c & t-Chlordane & nonachlor, oxychlordane	1.88	
Extraction Standards	**% Rec**	**% Rec**
Hexachlorobenzene, 13C6-	44	39
alpha-BHC, 13C6-	77	64
beta-BHC, 13C6-	72	62
gamma-BHC, 13C6-	75	62
delta-BHC, 13C6-	71	63
Heptachlor, 13C10-	79	62
Oxychlordane, 13C10-	77	67
trans-Nonachlor, 13C10-	87	72
Dieldrin, 13C12-	88	74
Endrin, 13C12-	78	66
Endosulfan II, 13C9-	76	69
2,4'-DDE, 13C12-	89	72
4,4'-DDE, 13C12-	84	68
4,4'-DDD, 13C12-	64	63
4,4'-DDT, 13C12-	50	62
Methoxychlor, 13C12-	15	51
Mirex, 13C10-	35	68

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Sample Analysis Report

Sample Name	**RINSATE BLANK**	Sampling Date	29-Oct-19		
ALS Sample ID	L2375251-10	Extraction Date	5-Nov-19		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	0.95	L	*Ella Gdyczynski*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Water	Split Ratio	2		29-Nov-2019

Run Information	**Run 1**
Filename	9-191124B08
Run Date	25-Nov-19 04:44
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	ng/L
Instrument - Column	HRMS-9 HP5ms UST709916H

Target Analytes	**Ret. Time**	**Conc. ng/L**	**EDL ng/L**	**Flags**	**EMPC ng/L**	**LQL**
Hexachlorobenzene	15.13	<0.077	0.053	M,J,R	0.077	4.3
alpha-BHC	NotFnd	<0.72	0.72	U		4.3
beta-BHC	NotFnd	<1.0	1.0	U		4.3
gamma-BHC	NotFnd	<0.94	0.94	U		4.3
delta-BHC	NotFnd	<1.1	1.1	U		4.3
Heptachlor	18.21	<0.056	0.056	M,U	0.036	4.3
Aldrin	NotFnd	<0.076	0.076	U		4.3
Chlorpyrifos	NotFnd	<0.69	0.69	U		21
Isodrin	NotFnd	<0.12	0.12	U		4.3
Octachlorostyrene	NotFnd	<0.15	0.15	U		4.3
Heptachlor Epoxide B	NotFnd	<0.14	0.14	U		4.3
Heptachlor Epoxide A	NotFnd	<1.0	1.0	U		4.3
Oxychlordane	NotFnd	<0.12	0.12	U		4.3
trans-Chlordane	NotFnd	<0.54	0.54	U		4.3
cis-Chlordane	NotFnd	<0.51	0.51	U		4.3
trans-Nonachlor	NotFnd	<0.53	0.53	U		4.3
Dieldrin	NotFnd	<0.20	0.20	U		4.3
Endrin	NotFnd	<0.22	0.22	U		4.3
cis-Nonachlor	NotFnd	<0.42	0.42	U		4.3
Endosulfan I	NotFnd	<0.59	0.59	U		4.3
Endosulfan II	NotFnd	<0.94	0.94	U		4.3
Endosulfan Sulfate	NotFnd	<0.21	0.21	U		4.3
2,4'-DDE	NotFnd	<0.27	0.27	U		4.3
4,4'-DDE	NotFnd	<0.35	0.35	U		4.3
2,4'-DDD	NotFnd	<0.38	0.38	U		4.3
4,4'-DDD	NotFnd	<0.25	0.25	U		4.3
2,4'-DDT	NotFnd	<0.38	0.38	U		4.3
4,4'-DDT	NotFnd	<0.73	0.73	U		4.3
Endrin Aldehyde	NotFnd	<0.20	0.20	U		4.3
Endrin Ketone	NotFnd	<1.2	1.2	U		4.3
Methoxychlor	NotFnd	<0.11	0.11	U		4.3
Dicofol	NotFnd	<3.1	3.1	U		43
Mirex	27.06	<0.12	0.030	M,J,R	0.12	4.3

Extraction Standards	**ng**			
Hexachlorobenzene, 13C6-	100	15.13	41	5-120
alpha-BHC, 13C6-	200	14.90	70	16-129
beta-BHC, 13C6-	200	15.77	64	11-120
gamma-BHC, 13C6-	200	15.97	66	11-120
delta-BHC, 13C6-	200	16.73	60	11-120
Heptachlor, 13C10-	200	18.20	66	5-120
Oxychlordane, 13C10-	200	20.51	67	23-135
trans-Nonachlor, 13C10-	200	21.79	74	14-136
Dieldrin, 13C12-	100	22.32	76	40-151
Endrin, 13C12-	200	22.95	69	35-155
Endosulfan II, 13C9-	200	23.23	73	5-122
2,4'-DDE, 13C12-	100	21.37	76	5-150
4,4'-DDE, 13C12-	100	22.30	76	21-125
4,4'-DDD, 13C12-	100	23.52	66	5-150
4,4'-DDT, 13C12-	100	24.58	63	5-120
Methoxychlor, 13C12-	100	26.22	56	5-120
Mirex, 13C10-	100	27.04	70	5-120

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a		
ALS Sample ID	WG3208379-1	Extraction Date	5-Nov-19		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	1.00	L	*Ella Gdyczynski*
Analysis Type	Blank	Percent Moisture	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	2		29-Nov-2019

Run Information	**Run 1**
Filename	9-191124B06
Run Date	25-Nov-19 03:31
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	ng/L
Instrument - Column	HRMS-9 HP5ms UST709916H

Target Analytes	**Ret. Time**	**Conc. ng/L**	**EDL ng/L**	**Flags**	**EMPC ng/L**	**LQL**
Hexachlorobenzene	NotFnd	<0.044	0.044	U		4.1
alpha-BHC	NotFnd	<0.56	0.56	U		4.1
beta-BHC	NotFnd	<0.83	0.83	U		4.1
gamma-BHC	NotFnd	<0.74	0.74	U		4.1
delta-BHC	NotFnd	<0.78	0.78	U		4.1
Heptachlor	18.22	<0.052	0.052	M,U	0.024	4.1
Aldrin	NotFnd	<0.092	0.092	U		4.1
Chlorpyrifos	NotFnd	<0.63	0.63	U		20
Isodrin	NotFnd	<0.13	0.13	U		4.1
Octachlorostyrene	NotFnd	<0.11	0.11	U		4.1
Heptachlor Epoxide B	NotFnd	<0.078	0.078	U		4.1
Heptachlor Epoxide A	NotFnd	<0.58	0.58	U		4.1
Oxychlordane	NotFnd	<0.099	0.099	U		4.1
trans-Chlordane	NotFnd	<0.49	0.49	U		4.1
cis-Chlordane	NotFnd	<0.46	0.46	U		4.1
trans-Nonachlor	NotFnd	<0.48	0.48	U		4.1
Dieldrin	NotFnd	<0.24	0.24	U		4.1
Endrin	NotFnd	<0.29	0.29	U		4.1
cis-Nonachlor	NotFnd	<0.35	0.35	U		4.1
Endosulfan I	NotFnd	<0.55	0.55	U		4.1
Endosulfan II	NotFnd	<0.91	0.91	U		4.1
Endosulfan Sulfate	NotFnd	<0.20	0.20	U		4.1
2,4'-DDE	NotFnd	<0.21	0.21	U		4.1
4,4'-DDE	NotFnd	<0.47	0.47	U		4.1
2,4'-DDD	NotFnd	<0.42	0.42	U		4.1
4,4'-DDD	NotFnd	<0.38	0.38	U		4.1
2,4'-DDT	NotFnd	<0.58	0.58	U		4.1
4,4'-DDT	NotFnd	<0.48	0.48	U		4.1
Endrin Aldehyde	NotFnd	<0.23	0.23	U		4.1
Endrin Ketone	NotFnd	<1.2	1.2	U		4.1
Methoxychlor	NotFnd	<0.37	0.37	U		4.1
Dicofol	NotFnd	<12	12	U		41
Mirex	27.06	<0.060	0.060	M,U	0.037	4.1

Extraction Standards	**ng**			
Hexachlorobenzene, 13C6-	100	15.14	44	5-120
alpha-BHC, 13C6-	200	14.91	77	16-129
beta-BHC, 13C6-	200	15.78	72	11-120
gamma-BHC, 13C6-	200	15.97	75	11-120
delta-BHC, 13C6-	200	16.74	71	11-120
Heptachlor, 13C10-	200	18.21	79	5-120
Oxychlordane, 13C10-	200	20.51	77	23-135
trans-Nonachlor, 13C10-	200	21.79	87	14-136
Dieldrin, 13C12-	100	22.32	88	40-151
Endrin, 13C12-	200	22.96	78	35-155
Endosulfan II, 13C9-	200	23.23	76	5-122
2,4'-DDE, 13C12-	100	21.37	89	5-150
4,4'-DDE, 13C12-	100	22.31	84	21-125
4,4'-DDD, 13C12-	100	23.52	64	5-150
4,4'-DDT, 13C12-	100	24.60	50	5-120
Methoxychlor, 13C12-	100	26.22	15	5-120
Mirex, 13C10-	100	27.06	35	5-120

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.

EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a		
ALS Sample ID	WG3208379-2	Extraction Date	5-Nov-19		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a	*Ella Gdyczynski*
Analysis Type	LCS	Percent Moisture	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	2		29-Nov-2019

Run Information	**Run 1**
Filename	9-191124B02
Run Date	25-Nov-19 01:05
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-9 HP5ms UST709916H

Target Analytes	**ng**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
Hexachlorobenzene	50	15.15	96	10-150	
alpha-BHC	50	14.93	95	50-120	
beta-BHC	50	15.79	91	50-120	
gamma-BHC	50	15.99	90	50-120	
delta-BHC	50	16.75	92	50-120	
Heptachlor	50	18.23	95	50-120	
Aldrin	50	19.29	86	50-120	
Chlorpyrifos	250	19.55	88	19-163	
Isodrin	50	20.16	75	50-120	
Octachlorostyrene	50	20.40	92	50-175	
Heptachlor Epoxide B	50	20.50	94	20-200	
Heptachlor Epoxide A	50	20.64	86	50-120	
Oxychlordane	50	20.54	90	50-120	
trans-Chlordane	50	21.22	90	50-120	
cis-Chlordane	50	21.67	90	50-120	
trans-Nonachlor	50	21.81	87	50-120	
Dieldrin	50	22.34	88	50-120	
Endrin	50	22.98	85	50-120	
cis-Nonachlor	50	23.63	89	50-120	
Endosulfan I	50	21.57	101	50-120	
Endosulfan II	50	23.25	96	5-200	
Endosulfan Sulfate	50	24.49	85	50-200	
2,4'-DDE	50	21.39	93	24-123	
4,4'-DDE	50	22.32	94	50-120	
2,4'-DDD	50	22.57	102	50-120	
4,4'-DDD	50	23.54	93	42-120	
2,4'-DDT	50	23.63	100	50-120	
4,4'-DDT	50	24.61	94	50-120	
Endrin Aldehyde	50	23.80	72	20-200	
Endrin Ketone	50	25.80	96	50-134	
Methoxychlor	50	26.24	92	50-120	
Dicofol	500	26.23	16	20-200	
Mirex	50	27.07	93	50-120	
Extraction Standards	**ng**				
Hexachlorobenzene, 13C6-	100	15.15	39	5-120	
alpha-BHC, 13C6-	200	14.92	64	13-138	
beta-BHC, 13C6-	200	15.78	62	5-124	
gamma-BHC, 13C6-	200	15.98	62	5-124	
delta-BHC, 13C6-	200	16.74	63	5-124	
Heptachlor, 13C10-	200	18.22	62	5-128	
Oxychlordane, 13C10-	200	20.52	67	5-144	
trans-Nonachlor, 13C10-	200	21.80	72	17-154	
Dieldrin, 13C12-	100	22.33	74	19-161	
Endrin, 13C12-	200	22.96	66	20-157	
Endosulfan II, 13C9-	200	23.24	69	5-144	
2,4'-DDE, 13C12-	100	21.38	72	13-200	
4,4'-DDE, 13C12-	100	22.32	68	26-169	
4,4'-DDD, 13C12-	100	23.53	63	13-200	
4,4'-DDT, 13C12-	100	24.60	62	13-200	
Methoxychlor, 13C12-	100	26.23	51	8-200	
Mirex, 13C10-	100	27.07	68	5-138	

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SVOC DATA PACKAGE

PROJECT NARRATIVE

ALSE Project Information

Project ID: BUR100

Contact: Claire Kocharakkal

Submission ID(s): L2375251

Client Project Information

Project ID: 150-002-017/TASK 4

Project Description: UPRIVER REACH SEDIMENT INVESTIGATION

Contact: Kevin Woodhouse

Analytical Method: PCB Congeners by EPA 1668C

ALS Sample ID	Client Sample Descriptions	Matrix	Date Sampled	Date Received	Date Extracted	Date Analyzed
L2375251-1	RM16.1E-SED1	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	20-Nov-19
WG3209717-4	Duplicate	QC	n/a	n/a	12-Nov-19	20-Nov-19
L2375251-2	RM16.1E-SED1-DUP	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	20-Nov-19
L2375251-3	RM16.3E-SED2	Sediment	29-Oct-19	31-Oct-19	12-Nov-19	20-Nov-19
L2375251-4	RM16.3E-SED3	Sediment	29-Oct-19	31-Oct-19	12-Nov-19	20-Nov-19
L2375251-5	RM16.3E-SED4	Sediment	29-Oct-19	31-Oct-19	12-Nov-19	20-Nov-19
L2375251-6	RM16.4E-SED5	Sediment	29-Oct-19	31-Oct-19	12-Nov-19	20-Nov-19
L2375251-7	RM19.4W-SED6	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	21-Nov-19
L2375251-8	RM19.5W-SED7	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	21-Nov-19
L2375251-9	RM19.6W-SED8	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	21-Nov-19
WG3209717-1	Method Blank	QC	n/a	n/a	12-Nov-19	20-Nov-19
WG3209717-2	Laboratory Control Sample	QC	n/a	n/a	12-Nov-19	20-Nov-19

Comments and Notes:
a) Sample Integrity:

The samples were received at ALS Burlington in good condition at 1.6 degrees C.

b) Instrumental Analysis:

All results have been reported on a dry weight basis.

Blank has low detected levels of select targets that were within the reference method control limits

The relative percent difference (RPD) between the sample and laboratory duplicate is above the method control limit for selected targets. All other detected targets replicate within limits. Sample contained grass and sticks and was not homogeneous.

For the sample RM16.3E-SED3, the recovery of the labelled extraction standard 13C12-PCB-209 was below the method control limit. The reported value for PCB-209 is not expected to be biased as a result.

I certify that this data package is in compliance with the terms and condition of the contract , both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package (hardcopy and/or electronic version) has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Steve Kennedy, Technical Supervisor

3-Dec-19
Date

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PROJECT NARRATIVE

ALSE Project Information

Project ID: BUR100

Contact: Claire Kocharakkal

Submission ID(s): L2375251

Client Project Information

Project ID: 150-002-017/TASK 4

Project Description: UPRIVER REACH SEDIMENT INVESTIGATION

Contact: Kevin Woodhouse

Analytical Method: PCB Congeners by EPA 1668C

ALS Sample ID	Client Sample Descriptions	Matrix	Date Sampled	Date Received	Date Extracted	Date Analyzed
L2375251-10	RINSATE BLANK	Water	29-Oct-19	31-Oct-19	05-Nov-19	18-Nov-19
WG3208379-1	Method Blank	QC	n/a	n/a	05-Nov-19	18-Nov-19
WG3208379-2	Laboratory Control Sample	QC	n/a	n/a	05-Nov-19	18-Nov-19

Comments and Notes:
a) Sample Integrity:

The samples were received at ALS Burlington in good condition at 1.6 degrees C.

b) Instrumental Analysis:

No criteria failures or exceedences.

I certify that this data package is in compliance with the terms and condition of the contract , both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package (hardcopy and/or electronic version) has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

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PROJECT NARRATIVE

ALSE Project Information

Project ID: BUR100

Contact: Claire Kocharakkal

Submission ID(s): L2375251

Client Project Information

Project ID: 150-002-017/TASK 4

Project Description: UPRIVER REACH SEDIMENT INVESTIGATION

Contact: Kevin Woodhouse

Analytical Method: Brominated Flame Retardants by EPA 1614

ALS Sample ID	Client Sample Descriptions	Matrix	Date Sampled	Date Received	Date Extracted	Date Analyzed
L2375251-1	RM16.1E-SED1	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	02-Dec-19
WG3209717-4	Duplicate	QC	n/a	n/a	12-Nov-19	02-Dec-19
L2375251-2	RM16.1E-SED1-DUP	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	02-Dec-19
L2375251-3	RM16.3E-SED2	Sediment	29-Oct-19	31-Oct-19	12-Nov-19	02-Dec-19
L2375251-4	RM16.3E-SED3	Sediment	29-Oct-19	31-Oct-19	12-Nov-19	03-Dec-19
L2375251-5	RM16.3E-SED4	Sediment	29-Oct-19	31-Oct-19	12-Nov-19	03-Dec-19
L2375251-6	RM16.4E-SED5	Sediment	29-Oct-19	31-Oct-19	12-Nov-19	03-Dec-19
L2375251-7	RM19.4W-SED6	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	03-Dec-19
L2375251-8	RM19.5W-SED7	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	03-Dec-19
L2375251-9	RM19.6W-SED8	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	03-Dec-19
WG3209717-1	Method Blank	QC	n/a	n/a	12-Nov-19	02-Dec-19
WG3209717-2	Laboratory Control Sample	QC	n/a	n/a	12-Nov-19	02-Dec-19

Comments and Notes:
a) Sample Integrity:

The samples were received at ALS Burlington in good condition at 1.6 degrees C.

b) Instrumental Analysis:

All results have been reported on a dry weight basis.

For the post-run mass resolution check, the measured resolution was marginally below 5000 for select masses.
No negative impact to data quality is expected as a result.

For four of the samples, the recovery of the labelled standard 13C12-PBDE-209 was below the method control limit. As a result, the detection limits may be elevated. Reported native target data are not expected to be biased as a result.

The relative percent difference (RPD) between the sample and laboratory duplicate is above the method control limit for select targets. All other detected targets replicate within limits. Sample contained grass and sticks and was not homogeneous.

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Steve Kennedy, Technical Supervisor

3-Dec-19
Date

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PROJECT NARRATIVE

ALSE Project Information

Project ID: BUR100

Contact: Claire Kocharakkal

Submission ID(s): L2375251

Client Project Information

Project ID: 150-002-017/TASK 4

Project Description: UPRIVER REACH SEDIMENT INVESTIGATION

Contact: Kevin Woodhouse

Analytical Method: Brominated Flame Retardants by EPA 1614

ALS Sample ID	Client Sample Descriptions	Matrix	Date Sampled	Date Received	Date Extracted	Date Analyzed
L2375251-10	RINSATE BLANK	Water	29-Oct-19	31-Oct-19	05-Nov-19	03-Dec-19
WG3208379-1	Method Blank	QC	n/a	n/a	05-Nov-19	02-Dec-19
WG3208379-2	Laboratory Control Sample	QC	n/a	n/a	05-Nov-19	02-Dec-19

Comments and Notes:
a) Sample Integrity:

The samples were received at ALS Burlington in good condition at 1.6 degrees C.

b) Instrumental Analysis:

For the post-run mass resolution check, the measured resolution was marginally below 5000 for select masses.
No negative impact to data quality is expected as a result.

For the method blank, the recovery of the labelled standard 13C12-BDE-209 was below the method control limit. As a result, the detection limit may be elevated. BDE-209 has not been detected in the blank.

For the laboratory control sample (LCS), There have been selective losses of some labelled extraction standards. This pattern of loss is not observed in the sample or blank. As a result, the recoveries of select standards are below the method control limits, particularly for 13C12-BDE-209. The recoveries of four of the native targets are below the method control limit, and the recovery of one target is above the limit. None of these targets have been detected in the sample.

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Steve Kennedy, Technical Supervisor

3-Dec-19
Date

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PROJECT NARRATIVE

ALSE Project Information

Project ID: BUR100

Contact: Claire Kocharakkal
Submission ID(s): L2375251

Client Project Information

Project ID: 150-002-017/TASK 4
Project Description: UPRIVER REACH SEDIMENT INVESTIGATION
Contact: Kevin Woodhouse

Analytical Method: PCDD/F by EPA 1613B via Isotope Dilution

ALS Sample ID	Client Sample Descriptions	Matrix	Date Sampled	Date Received	Date Extracted	Date Analyzed
L2375251-1	RM16.1E-SED1	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	23-Nov-19
WG3209717-4	Duplicate	QC	n/a	n/a	12-Nov-19	23-Nov-19
L2375251-2	RM16.1E-SED1-DUP	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	23-Nov-19
L2375251-3	RM16.3E-SED2	Sediment	29-Oct-19	31-Oct-19	12-Nov-19	23-Nov-19
L2375251-4	RM16.3E-SED3	Sediment	29-Oct-19	31-Oct-19	12-Nov-19	23-Nov-19
L2375251-5	RM16.3E-SED4	Sediment	29-Oct-19	31-Oct-19	12-Nov-19	23-Nov-19
L2375251-6	RM16.4E-SED5	Sediment	29-Oct-19	31-Oct-19	12-Nov-19	23-Nov-19
L2375251-7	RM19.4W-SED6	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	23-Nov-19
L2375251-8	RM19.5W-SED7	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	23-Nov-19
L2375251-9	RM19.6W-SED8	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	23-Nov-19
WG3209717-1	Method Blank	QC	n/a	n/a	12-Nov-19	23-Nov-19
WG3209717-2	Laboratory Control Sample	QC	n/a	n/a	12-Nov-19	23-Nov-19

Comments and Notes:
a) Sample Integrity:

The samples were received at ALS Burlington in good condition at 1.6 degrees C.

b) Instrumental Analysis:

All results have been reported on a dry weight basis.

The relative percent difference (RPD) between the sample and laboratory duplicate is above the method control limit for three of the 2,3,7,8-targets. All other detected targets replicate within limits. Sample contained grass and sticks and was not homogeneous.

For the sample RM19.5W-SED7, there was a chlorinated diphenylether coeluting with 2,3,4,6,7,8-HxCDF. The reported result for this target is an estimated maximum possible concentration.

I certify that this data package is in compliance with the terms and condition of the contract , both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package (hardcopy and/or electronic version) has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Steve Kennedy, Technical Supervisor

3-Dec-19
Date

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SECTION 1: PROJECT NARRATIVE

ALSE Project Information

Project ID: BUR100

Contact: Claire Kocharakkal

Submission ID(s): L2375251

Client Project Information

Project ID: 150-002-017/TASK 4

Project Description: UPRIVER REACH SEDIMENT INVESTIGATION

Contact: Kevin Woodhouse

Analytical Method: PCDD/F by EPA 1613B via Isotope Dilution

ALS Sample ID	Client Sample Descriptions	Matrix	Date Sampled	Date Received	Date Extracted	Date Analyzed
L2375251-10	RINSATE BLANK	Water	29-Oct-19	31-Oct-19	05-Nov-19	20-Nov-19
WG3208379-1	Method Blank	QC	n/a	n/a	05-Nov-19	20-Nov-19
WG3208379-2	Laboratory Control Sample	QC	n/a	n/a	05-Nov-19	20-Nov-19

Comments and Notes:
a) Sample Integrity:

The samples were received at ALS Burlington in good condition at 1.6 degrees C.

b) Instrumental Analysis:

For the method blank, an extra aliquot of labelled injection standard was inadvertently added. This has been taken into account for data calculation.

No criteria failures or exceedences.

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Steve Kennedy, Technical Supervisor

3-Dec-19
Date

Cash Clients (USD) - Burlington
ATTN: Kevin Woodhouse
Hart Crowser
6420 SW Macadam Avenue, Suite 100
Portland OR 97239

Date Received: 31-OCT-19
Report Date: 05-DEC-19 14:59 (MT)
Version: FINAL

Client Phone: 971-808-5178

Certificate of Analysis

Lab Work Order #: L2375251

Project P.O. #: K1910166 (150-002-017/4)
Job Reference: 150-002-017/TASK 4 UPRIVER REACH SEDIMENT INVESTIGATION
C of C Numbers:
Legal Site Desc:

Claire Kocharakkal, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-1 RM16.1E-SED1							
Sampled By: Client on 28-OCT-19 @ 17:05							
Matrix: Sediment							
Miscellaneous Parameters							
% Moisture	46.8		0.10	%	12-NOV-19	13-NOV-19	R4919908
All PCB congeners by GC/HRMS							
PCB 1	2.30	M,J,R	0.62	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 2	4.39	M,J	0.65	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 3	3.80	M,J,R	0.75	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 4	8.6	[J]	3.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 10	<1.7	[U]	1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 9	<1.7	[U]	1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 7	<1.7	[U]	1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 6	3.7	[J]	1.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 5	<1.9	[U]	1.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 8	17.0	[J]	1.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 14	<2.5	[U]	2.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 11	112	M,B	2.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 13/12	<2.6	[U]	2.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 15	5.7	M,J,R	3.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 19	6.9	[J]	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 30/18	48.8		1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 17	26.0	M,R	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 27	3.2	M,J,R	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 24	<1.1	[U]	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 16	19.5	M	1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 32	16.0	M,J,R	0.97	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 34	<2.7	[U]	2.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 23	<2.5	[U]	2.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 29/26	25.3		2.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 25	15.1	[J]	2.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 31	97.8		2.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 28/20	123		2.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 21/33	68.0	M	2.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 22	34.4		2.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 36	3.1	M,J,R	2.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 39	<2.5	[U]	2.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 38	<2.6	[U]	2.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 35	3.9	M,J	2.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 37	25.0	M,R	2.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 54	<0.72	[U]	0.72	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 50/53	20.0	M,R	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 45/51	25.9		1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 46	10.4	[J]	1.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 52	339	M	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 73	1.2	M,J,R	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 43	9.1	M,J	1.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 69/49	169		1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 48	30.7		1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 44/47/65	218		1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 59/62/75	15.4	[J]	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 42	59.2		1.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 41/71/40	92.0		1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 64	92.2		1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 72	3.3	M,J,R	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-1 RM16.1E-SED1							
Sampled By: Client on 28-OCT-19 @ 17:05							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 68	2.4	M,J,R	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 57	<1.4	[U]	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 58	<1.4	M,U	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 67	3.5	M,J,R	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 63	7.7	[J]	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 61/70/74/76	373		1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 66	189		1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 55	<1.4	[U]	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 56	78.8	M	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 60	27.1	M	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 80	<1.2	[U]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 79	4.6	M,J	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 78	<1.4	[U]	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 81	<1.5	[U]	1.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 77	9.2	M,J	1.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 104	<0.34	[U]	0.34	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 96	3.19	[J]	0.38	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 103	5.6	M,J,R	1.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 94	<1.8	M,U	1.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 95	295	M	1.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 100/93/102/98	21.0	M	1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 88/91	66.2		1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 84	108		1.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 89	4.3	M,J,R	1.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 121	<1.2	[U]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 92	91.2	M	1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 113/90/101	472		1.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 83/99	259		1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 112	<1.2	[U]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 109/119/86/97/125/87	294	M	1.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 117/116/85/110/115	623	M	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 82	55.2		1.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 111	<1.3	M,U	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 120	2.0	M,J,R	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 108/124	14.6	[J]	0.99	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 107	31.4	M	0.96	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 123	4.4	M,J,R	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 106	<0.98	[U]	0.98	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 118	431		1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 122	6.0	M,J,R	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 114	9.0	J,R	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 105	168		1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 127	<0.97	[U]	0.97	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 126	4.3	M,J,R	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 155	<0.24	[U]	0.24	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 152	<0.32	[U]	0.32	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 150	0.97	M,J	0.32	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 136	37.3		0.33	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 145	<0.34	[U]	0.34	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 148	1.26	M,J	0.45	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 151/135	119		0.46	pg/g	12-NOV-19	20-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-1 RM16.1E-SED1							
Sampled By: Client on 28-OCT-19 @ 17:05							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 154	7.18	M,J	0.38	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 144	16.0	[J]	0.44	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 147/149	293		1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 134/143	22.9		1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 139/140	8.1	M,J	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 131	5.8	M,J	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 142	<1.3	[U]	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 132	155		1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 133	8.4	[J]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 165	<0.96	M,U	0.96	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 146	68.3	M	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 161	<0.84	[U]	0.84	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 168/153	355		0.93	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 141	63.0		1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 130	32.1		1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 137/164	47.7	M	0.98	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 138/163/129	461		1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 160	<0.93	[U]	0.93	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 158	36.9		0.78	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 128/166	78.0		1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 159	1.70	[J]	0.82	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 162	1.43	[J]	0.88	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 167	17.0	[J]	0.91	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 156/157	55.2		1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 169	<1.1	[U]	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 188	<0.30	[U]	0.30	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 179	26.1		0.36	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 184	<0.36	[U]	0.36	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 176	8.69	M,J	0.36	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 186	<0.37	[U]	0.37	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 178	16.5	[J]	0.48	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 175	2.70	M,J,R	0.46	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 187	85.2		0.44	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 182	0.95	[J]	0.45	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 183	38.8		0.43	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 185	4.74	M,J	0.47	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 174	58.8	M	0.47	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 177	38.8		0.48	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 181	0.83	M,J,R	0.47	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 171/173	18.0	M,J,R	0.48	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 172	11.5	[J]	0.48	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 192	<0.39	[U]	0.39	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 180/193	137	M	0.40	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 191	2.35	M,J	0.36	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 170	66.5		0.49	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 190	8.20	M,J,R	0.33	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 189	2.20	M,J,R	0.75	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 202	6.10	M,J,R	0.21	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 201	3.80	M,J,R	0.23	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 204	<0.23	[U]	0.23	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 197	0.76	J,R	0.24	pg/g	12-NOV-19	20-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-1 RM16.1E-SED1							
Sampled By: Client on 28-OCT-19 @ 17:05							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 200	3.36	[J]	0.22	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 198/199	30.5		0.30	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 196	12.4	[J]	0.30	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 203	20.3		0.29	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 195	9.11	[J]	0.37	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 194	20.0	M,R	0.35	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 205	1.20	M,J,R	0.39	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 208	4.30	M,J,R	0.55	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 207	1.70	M,J,R	0.60	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 206	14.0	[J]	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 209	17.2	[J]	0.25	pg/g	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 1	37.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 3	40.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 4	32.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 15	46.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 19	29.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 37	51.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 54	36.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 81	55.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 77	57.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 104	56.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 123	56.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 118	54.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 114	52.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 105	56.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 126	54.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 155	68.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 167	62.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 156/157	60.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 169	59.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 188	73.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 189	47.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 202	68.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 205	57.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 208	63.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 206	58.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 209	64.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 28	50.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 111	55.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 178	60.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Total MonoCB	10.5	[J]	0.62	pg/g	12-NOV-19	20-NOV-19	R4923853
Total DiCB	147	[J]	1.5	pg/g	12-NOV-19	20-NOV-19	R4923853
Total TriCB	516	[J]	0.97	pg/g	12-NOV-19	20-NOV-19	R4923853
Total TetraCB	1780	[J]	0.72	pg/g	12-NOV-19	20-NOV-19	R4923853
Total PentaCB	2970	[J]	0.34	pg/g	12-NOV-19	20-NOV-19	R4923853
Total HexaCB	1890	[J]	0.24	pg/g	12-NOV-19	20-NOV-19	R4923853
Total HeptaCB	528	[J]	0.30	pg/g	12-NOV-19	20-NOV-19	R4923853
Total OctaCB	108	[J]	0.21	pg/g	12-NOV-19	20-NOV-19	R4923853
Total NonaCB	20.0	[J]	0.55	pg/g	12-NOV-19	20-NOV-19	R4923853
DecaCB	17.2	[J]	0.25	pg/g	12-NOV-19	20-NOV-19	R4923853
Total PCB	7990	[J]	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-1 RM16.1E-SED1							
Sampled By: Client on 28-OCT-19 @ 17:05							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
Lower Bound PCB TEQ (WHO 2005)	0.0211			pg/g	12-NOV-19	20-NOV-19	R4923853
Mid Point PCB TEQ (WHO 2005)	0.468			pg/g	12-NOV-19	20-NOV-19	R4923853
Upper Bound PCB TEQ (WHO 2005)	0.485			pg/g	12-NOV-19	20-NOV-19	R4923853
PBDEs by EPA 1614							
BDE 10	<0.077	[U]	0.077	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 7	3.51	[J]	0.071	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 8/11	3.10	[J]	0.050	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 12/13	1.30	M,J,R	0.043	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 15	1.98	[J]	0.037	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 30	<0.13	[U]	0.13	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 32	0.340	M,J,R	0.090	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 17/25	22.3		0.11	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 28/33	9.00	[J]	0.11	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 35	1.70	M,J,R	0.073	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 37	0.390	J,B	0.074	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 75	0.430	[J]	0.077	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 51	5.37	[J]	0.067	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 49	32.8		0.097	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 71	1.65	M,J	0.10	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 47	229		0.067	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 79	5.35	[J]	0.062	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 66	5.72	[J]	0.10	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 77	0.315	[J]	0.067	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 100	54.7		0.12	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 119/120	2.23	M,J,B	0.15	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 99	177		0.093	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 116	<0.23	[U]	0.23	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 118	1.18	M,J	0.16	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 85	9.08	[J]	0.14	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 126	0.220	M,J,R	0.065	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 105	<0.16	[U]	0.16	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 155	1.50	M,J,R	0.099	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 154	20.0		0.14	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 153	20.3		0.27	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 140	1.13	[J]	0.29	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 138/166	3.90	M,J,R	0.49	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 156	<0.56	[U]	0.56	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 128	<0.50	[U]	0.50	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 184	0.530	M,J,R	0.071	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 183	4.34	[J]	0.10	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 191	<0.14	[U]	0.14	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 181	<0.14	[U]	0.14	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 190	<0.20	[U]	0.20	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 197	2.55	[J]	0.14	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 203	3.05	M,J	0.17	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 196	2.90	[J]	0.17	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 208	8.32	M,J	0.53	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 207	14.2	[J]	0.52	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 206	20.9	[J]	0.58	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 209	314		1.8	pg/g	12-NOV-19	02-DEC-19	R4923853
PBEB	0.170	M,J	0.057	pg/g	12-NOV-19	02-DEC-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-1 RM16.1E-SED1							
Sampled By: Client on 28-OCT-19 @ 17:05							
Matrix: Sediment							
PBDEs by EPA 1614							
HBB	3.33	J,B	0.070	pg/g	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 15	49.0		20-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 28	64.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 47	77.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 77	83.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 100	28.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 99	62.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 126	63.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 154	46.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 153	60.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 183	67.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 197	45.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 207	65.0		20-200	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 209	22.0		20-200	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C6 HBB	57.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 138 Cleanup	32.0		30-135	%	12-NOV-19	02-DEC-19	R4923853
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.11	[U]	0.11	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8-PeCDD	0.150	M,J	0.039	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8-HxCDD	0.180	M,J,R	0.065	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,6,7,8-HxCDD	1.19	[J]	0.062	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8,9-HxCDD	0.522	M,J	0.062	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,6,7,8-HpCDD	17.5		0.073	pg/g	12-NOV-19	23-NOV-19	R4923853
OCDD	155		0.11	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,7,8-TCDF	0.415	M,J	0.059	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8-PeCDF	0.166	M,J	0.043	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,4,7,8-PeCDF	0.420	M,J,R	0.032	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8-HxCDF	0.270	[J]	0.048	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,6,7,8-HxCDF	0.213	[J]	0.045	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,4,6,7,8-HxCDF	0.457	M,J	0.044	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8,9-HxCDF	0.203	M,J,B	0.056	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,6,7,8-HpCDF	3.50	[J]	0.034	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8,9-HpCDF	0.206	[J]	0.038	pg/g	12-NOV-19	23-NOV-19	R4923853
OCDF	10.6		0.043	pg/g	12-NOV-19	23-NOV-19	R4923853
Total-TCDD	<0.11	[U]	0.11	pg/g	12-NOV-19	23-NOV-19	R4923853
Total TCDD # Homologues	0				12-NOV-19	23-NOV-19	R4923853
Total-PeCDD	0.639		0.039	pg/g	12-NOV-19	23-NOV-19	R4923853
Total PeCDD # Homologues	3				12-NOV-19	23-NOV-19	R4923853
Total-HxCDD	7.18		0.065	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HxCDD # Homologues	5				12-NOV-19	23-NOV-19	R4923853
Total-HpCDD	32.9		0.073	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HpCDD # Homologues	2				12-NOV-19	23-NOV-19	R4923853
Total-TCDF	2.09		0.059	pg/g	12-NOV-19	23-NOV-19	R4923853
Total TCDF # Homologues	8				12-NOV-19	23-NOV-19	R4923853
Total-PeCDF	3.45		0.043	pg/g	12-NOV-19	23-NOV-19	R4923853
Total PeCDF # Homologues	5				12-NOV-19	23-NOV-19	R4923853
Total-HxCDF	6.11		0.056	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HxCDF # Homologues	7				12-NOV-19	23-NOV-19	R4923853
Total-HpCDF	10.6		0.038	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HpCDF # Homologues	3				12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,7,8-TCDD	90.0		25-164	%	12-NOV-19	23-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-1 RM16.1E-SED1							
Sampled By: Client on 28-OCT-19 @ 17:05							
Matrix: Sediment							
Dioxins and Furans HR 1613B							
Surrogate: 13C12-1,2,3,7,8-PeCDD	96.0		25-181	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	80.0		32-141	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	77.0		28-130	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	84.0		23-140	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-OCDD	85.0		17-157	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,7,8-TCDF	78.0		24-169	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8-PeCDF	79.0		24-185	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,4,7,8-PeCDF	86.0		21-178	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	76.0		26-152	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	76.0		26-123	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	83.0		29-147	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	78.0		28-136	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	81.0		28-143	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	92.0		26-138	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	80.0		31-197	%	12-NOV-19	23-NOV-19	R4923853
Lower Bound PCDD/F TEQ (WHO 2005)	0.744			pg/g	12-NOV-19	23-NOV-19	R4923853
Mid Point PCDD/F TEQ (WHO 2005)	0.943			pg/g	12-NOV-19	23-NOV-19	R4923853
Upper Bound PCDD/F TEQ (WHO 2005)	0.998			pg/g	12-NOV-19	23-NOV-19	R4923853
L2375251-2 RM16.1E-SED1-DUP							
Sampled By: Client on 28-OCT-19 @ 17:05							
Matrix: Sediment							
Miscellaneous Parameters							
% Moisture	45.6		0.10	%	12-NOV-19	13-NOV-19	R4919908
All PCB congeners by GC/HRMS							
PCB 1	1.69	M,J	0.39	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 2	1.90	M,J,R	0.41	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 3	1.97	M,J	0.47	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 4	<2.2	[U]	2.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 10	<1.2	[U]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 9	<1.2	[U]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 7	<1.2	[U]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 6	2.1	M,J,R	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 5	<1.3	[U]	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 8	7.0	M,J,R	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 14	<2.0	[U]	2.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 11	90.7	M,B	2.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 13/12	<2.1	[U]	2.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 15	7.7	M,J	2.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 19	2.40	M,J	0.87	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 30/18	18.1	[J]	0.60	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 17	10.5	M,J	0.71	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 27	0.91	M,J,R	0.53	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 24	<0.55	[U]	0.55	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 16	6.50	J,R	0.83	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 32	6.71	[J]	0.49	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 34	<1.3	M,U	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 23	<1.3	[U]	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 29/26	7.2	[J]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 25	5.9	[J]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 31	32.0	M	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 28/20	48.0	M	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-2 RM16.1E-SED1-DUP							
Sampled By: Client on 28-OCT-19 @ 17:05							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 21/33	18.0	M,R	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 22	11.9	M,J	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 36	<1.2	M,U	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 39	<1.2	[U]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 38	<1.3	[U]	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 35	<1.3	[U]	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 37	10.0	M,J,R	1.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 54	<0.49	[U]	0.49	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 50/53	10.3	[J]	0.86	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 45/51	13.3	[J]	0.90	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 46	4.8	[J]	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 52	111	M	0.85	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 73	1.10	M,J,R	0.71	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 43	2.30	M,J,R	0.98	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 69/49	76.3		0.80	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 48	12.1	[J]	0.89	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 44/47/65	89.9	M	0.82	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 59/62/75	5.85	M,J	0.67	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 42	25.5		1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 41/71/40	38.9		0.88	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 64	38.5		0.70	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 72	2.9	[J]	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 68	1.7	M,J,R	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 57	<1.2	[U]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 58	<1.2	M,U	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 67	1.7	M,J	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 63	3.1	[J]	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 61/70/74/76	126		1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 66	77.9		1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 55	1.6	[J]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 56	32.6		1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 60	10.1	[J]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 80	<1.0	[U]	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 79	1.3	M,J,R	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 78	<1.2	[U]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 81	<1.4	[U]	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 77	4.5	M,J,R	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 104	<0.36	[U]	0.36	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 96	1.30	M,J,R	0.39	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 103	3.2	M,J,R	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 94	<1.3	M,U	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 95	98.2	M	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 100/93/102/98	9.0	M,J	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 88/91	27.7		1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 84	37.5		1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 89	2.2	M,J,R	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 121	<0.88	[U]	0.88	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 92	31.5		1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 113/90/101	150		1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 83/99	102	M	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 112	<0.87	[U]	0.87	pg/g	12-NOV-19	20-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-2 RM16.1E-SED1-DUP							
Sampled By: Client on 28-OCT-19 @ 17:05							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 109/119/86/97/125/87	88.5	M	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 117/116/85/110/115	213	M	0.98	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 82	17.6	M,J	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 111	<0.89	[U]	0.89	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 120	1.52	M,J	0.86	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 108/124	3.54	[J]	0.64	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 107	12.4	M,J	0.62	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 123	2.20	M,J,R	0.75	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 106	<0.64	[U]	0.64	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 118	135		0.72	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 122	2.59	[J]	0.69	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 114	2.41	[J]	0.78	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 105	48.1		0.80	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 127	<0.63	[U]	0.63	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 126	1.40	M,J,R	0.88	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 155	<0.23	[U]	0.23	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 152	<0.29	[U]	0.29	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 150	<0.29	M,U	0.29	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 136	16.6	M,J	0.30	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 145	<0.31	M,U	0.31	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 148	0.48	J,R	0.41	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 151/135	51.1		0.42	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 154	4.91	[J]	0.35	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 144	5.10	M,J,R	0.40	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 147/149	120		1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 134/143	8.0	[J]	1.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 139/140	3.4	[J]	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 131	<1.8	[U]	1.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 142	<1.6	[U]	1.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 132	56.7		1.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 133	3.5	[J]	1.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 165	<1.2	[U]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 146	31.2		1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 161	<1.0	[U]	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 168/153	154		1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 141	23.1		1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 130	11.5	[J]	1.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 137/164	16.6	[J]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 138/163/129	174		1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 160	<1.1	[U]	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 158	12.7	[J]	0.96	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 128/166	27.9		1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 159	<1.0	M,U	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 162	<1.1	M,U	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 167	6.9	M,J	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 156/157	16.0	J,R	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 169	<1.3	[U]	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 188	<0.31	[U]	0.31	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 179	15.9	[J]	0.40	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 184	<0.39	[U]	0.39	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 176	4.46	[J]	0.39	pg/g	12-NOV-19	20-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-2 RM16.1E-SED1-DUP							
Sampled By: Client on 28-OCT-19 @ 17:05							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 186	<0.41	[U]	0.41	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 178	9.50	M,J	0.53	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 175	1.11	M,J	0.51	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 187	46.7	M	0.48	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 182	<0.50	M,U	0.50	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 183	20.3	M	0.48	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 185	3.00	M,J,R	0.52	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 174	31.2	M	0.52	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 177	18.9		0.53	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 181	<0.52	[U]	0.52	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 171/173	9.19	[J]	0.53	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 172	5.87	[J]	0.52	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 192	<0.43	[U]	0.43	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 180/193	72.5		0.44	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 191	0.94	M,J,R	0.39	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 170	33.8		0.54	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 190	5.53	M,J	0.36	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 189	1.50	M,J,R	0.47	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 202	4.24	[J]	0.16	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 201	1.98	[J]	0.17	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 204	<0.17	[U]	0.17	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 197	0.37	M,J,R	0.17	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 200	1.88	M,J	0.16	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 198/199	19.2		0.23	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 196	7.23	[J]	0.22	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 203	10.5	[J]	0.21	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 195	5.27	[J]	0.28	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 194	12.5	[J]	0.26	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 205	<0.27	[U]	0.27	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 208	2.09	M,J	0.48	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 207	1.10	M,J,R	0.52	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 206	8.48	[J]	0.84	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 209	9.31	[J]	0.15	pg/g	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 1	44.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 3	47.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 4	40.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 15	53.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 19	39.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 37	63.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 54	43.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 81	60.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 77	66.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 104	61.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 123	63.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 118	63.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 114	59.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 105	62.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 126	60.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 155	69.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 167	64.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 156/157	67.0		10-145	%	12-NOV-19	20-NOV-19	R4923853

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-2 RM16.1E-SED1-DUP							
Sampled By: Client on 28-OCT-19 @ 17:05							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
Surrogate: 13C12 PCB 169	66.0	R	10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 188	76.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 189	46.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 202	73.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 205	63.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 208	71.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 206	65.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 209	67.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 28	60.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 111	64.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 178	71.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Total MonoCB	5.56	[J]	0.39	pg/g	12-NOV-19	20-NOV-19	R4923853
Total DiCB	108	[J]	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
Total TriCB	178	[J]	0.49	pg/g	12-NOV-19	20-NOV-19	R4923853
Total TetraCB	693	[J]	0.49	pg/g	12-NOV-19	20-NOV-19	R4923853
Total PentaCB	991	[J]	0.36	pg/g	12-NOV-19	20-NOV-19	R4923853
Total HexaCB	744	[J]	0.23	pg/g	12-NOV-19	20-NOV-19	R4923853
Total HeptaCB	280	[J]	0.31	pg/g	12-NOV-19	20-NOV-19	R4923853
Total OctaCB	63.2	[J]	0.16	pg/g	12-NOV-19	20-NOV-19	R4923853
Total NonaCB	11.7	[J]	0.48	pg/g	12-NOV-19	20-NOV-19	R4923853
DecaCB	9.31	[J]	0.15	pg/g	12-NOV-19	20-NOV-19	R4923853
Total PCB	3080	[J]	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
Lower Bound PCB TEQ (WHO 2005)	0.00577			pg/g	12-NOV-19	20-NOV-19	R4923853
Mid Point PCB TEQ (WHO 2005)	0.167			pg/g	12-NOV-19	20-NOV-19	R4923853
Upper Bound PCB TEQ (WHO 2005)	0.186			pg/g	12-NOV-19	20-NOV-19	R4923853
PBDEs by EPA 1614							
BDE 10	<0.13	[U]	0.13	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 7	2.11	[J]	0.12	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 8/11	1.65	[J]	0.083	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 12/13	<0.071	[U]	0.071	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 15	1.24	[J]	0.062	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 30	<0.20	[U]	0.20	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 32	0.30	M,J,R	0.14	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 17/25	14.4	[J]	0.18	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 28/33	5.44	[J]	0.18	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 35	1.10	M,J,R	0.12	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 37	0.30	M,J,R	0.12	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 75	<0.13	[U]	0.13	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 51	3.39	[J]	0.11	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 49	22.4		0.16	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 71	<0.17	[U]	0.17	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 47	145	M	0.11	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 79	2.18	M,J	0.10	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 66	3.01	M,J	0.17	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 77	<0.11	[U]	0.11	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 100	35.1		0.26	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 119/120	1.62	M,J,B	0.30	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 99	104		0.18	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 116	<0.46	[U]	0.46	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 118	1.20	M,J,R	0.32	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 85	4.72	[J]	0.28	pg/g	12-NOV-19	02-DEC-19	R4923853

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-2 RM16.1E-SED1-DUP							
Sampled By: Client on 28-OCT-19 @ 17:05							
Matrix: Sediment							
PBDEs by EPA 1614							
BDE 126	0.31	M,J,R	0.13	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 105	<0.32	[U]	0.32	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 155	1.33	[J]	0.19	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 154	12.2	[J]	0.25	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 153	11.7	[J]	0.43	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 140	<0.43	[U]	0.43	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 138/166	<0.73	[U]	0.73	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 156	<0.83	[U]	0.83	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 128	<0.74	[U]	0.74	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 184	<0.11	[U]	0.11	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 183	2.75	[J]	0.15	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 191	<0.21	[U]	0.21	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 181	<0.21	[U]	0.21	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 190	<0.29	[U]	0.29	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 197	2.00	M,J	0.28	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 203	1.90	M,J,R	0.35	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 196	1.40	M,J,R	0.35	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 208	6.5	M,J	1.0	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 207	12.3	[J]	0.99	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 206	30.3	[J]	1.1	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 209	701		2.1	pg/g	12-NOV-19	02-DEC-19	R4923853
PBEB	<0.12	[U]	0.12	pg/g	12-NOV-19	02-DEC-19	R4923853
HBB	1.76	J,B	0.21	pg/g	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 15	52.0		20-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 28	66.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 47	81.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 77	88.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 100	30.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 99	64.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 126	65.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 154	51.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 153	62.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 183	68.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 197	48.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 207	67.0		20-200	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 209	32.0		20-200	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C6 HBB	62.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 138 Cleanup	33.0		30-135	%	12-NOV-19	02-DEC-19	R4923853
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.070	[U]	0.070	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8-PeCDD	0.098	M,J	0.027	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8-HxCDD	0.126	M,J	0.039	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,6,7,8-HxCDD	0.609	[J]	0.040	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8,9-HxCDD	0.333	[J]	0.039	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,6,7,8-HpCDD	9.70		0.048	pg/g	12-NOV-19	23-NOV-19	R4923853
OCDD	88.6		0.082	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,7,8-TCDF	0.261	M,J	0.052	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8-PeCDF	0.090	J,R	0.045	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,4,7,8-PeCDF	0.100	M,J,R	0.037	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8-HxCDF	0.147	M,J	0.036	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,6,7,8-HxCDF	0.133	M,J	0.036	pg/g	12-NOV-19	23-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-2 RM16.1E-SED1-DUP							
Sampled By: Client on 28-OCT-19 @ 17:05							
Matrix: Sediment							
Dioxins and Furans HR 1613B							
2,3,4,6,7,8-HxCDF	0.148	M,J	0.032	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8,9-HxCDF	0.110	M,J,R	0.042	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,6,7,8-HpCDF	1.48	[J]	0.031	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8,9-HpCDF	0.123	[J]	0.036	pg/g	12-NOV-19	23-NOV-19	R4923853
OCDF	2.98	[J]	0.032	pg/g	12-NOV-19	23-NOV-19	R4923853
Total-TCDD	<0.070	[U]	0.070	pg/g	12-NOV-19	23-NOV-19	R4923853
Total TCDD # Homologues	0				12-NOV-19	23-NOV-19	R4923853
Total-PeCDD	0.709		0.027	pg/g	12-NOV-19	23-NOV-19	R4923853
Total PeCDD # Homologues	5				12-NOV-19	23-NOV-19	R4923853
Total-HxCDD	4.72		0.040	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HxCDD # Homologues	5				12-NOV-19	23-NOV-19	R4923853
Total-HpCDD	20.1		0.048	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HpCDD # Homologues	2				12-NOV-19	23-NOV-19	R4923853
Total-TCDF	1.11		0.052	pg/g	12-NOV-19	23-NOV-19	R4923853
Total TCDF # Homologues	7				12-NOV-19	23-NOV-19	R4923853
Total-PeCDF	1.16		0.045	pg/g	12-NOV-19	23-NOV-19	R4923853
Total PeCDF # Homologues	4				12-NOV-19	23-NOV-19	R4923853
Total-HxCDF	1.60		0.042	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HxCDF # Homologues	5				12-NOV-19	23-NOV-19	R4923853
Total-HpCDF	4.27		0.036	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HpCDF # Homologues	3				12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,7,8-TCDD	89.0		25-164	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8-PeCDD	97.0		25-181	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	82.0		32-141	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	77.0		28-130	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	86.0		23-140	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-OCDD	78.0		17-157	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,7,8-TCDF	79.0		24-169	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8-PeCDF	81.0		24-185	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,4,7,8-PeCDF	86.0		21-178	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	74.0		26-152	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	75.0		26-123	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	83.0		29-147	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	77.0		28-136	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	81.0		28-143	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	90.0		26-138	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	80.0		31-197	%	12-NOV-19	23-NOV-19	R4923853
Lower Bound PCDD/F TEQ (WHO 2005)	0.414			pg/g	12-NOV-19	23-NOV-19	R4923853
Mid Point PCDD/F TEQ (WHO 2005)	0.493			pg/g	12-NOV-19	23-NOV-19	R4923853
Upper Bound PCDD/F TEQ (WHO 2005)	0.528			pg/g	12-NOV-19	23-NOV-19	R4923853
L2375251-3 RM16.3E-SED2							
Sampled By: Client on 29-OCT-19 @ 10:00							
Matrix: Sediment							
Miscellaneous Parameters							
% Moisture	48.3		0.10	%	12-NOV-19	13-NOV-19	R4919908
All PCB congeners by GC/HRMS							
PCB 1	21.0		1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 2	3.1	M,J,R	1.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 3	9.6	M,J,R	1.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 4	15.0	M,J,R	8.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 10	<5.8	[U]	5.8	pg/g	12-NOV-19	20-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-3 RM16.3E-SED2							
Sampled By: Client on 29-OCT-19 @ 10:00							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 9	<5.9	M,U	5.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 7	<5.8	M,U	5.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 6	8.0	M,J,R	5.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 5	<6.6	[U]	6.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 8	36.0	M,R	5.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 14	<7.2	[U]	7.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 11	90.8	M,B	7.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 13/12	<7.6	[U]	7.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 15	15	M,J	10	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 19	6.1	M,J,R	2.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 30/18	52.7	M	2.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 17	34.0	M	3.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 27	3.5	J,R	2.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 24	<2.7	[U]	2.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 16	23.5		4.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 32	19.2	M	2.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 34	<3.4	[U]	3.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 23	<3.3	[U]	3.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 29/26	11.5	M,J	3.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 25	6.3	M,J,R	3.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 31	73.4	M	3.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 28/20	101	M	3.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 21/33	57.3	M	3.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 22	30.1		3.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 36	<3.1	M,J,R	3.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 39	<3.2	[U]	3.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 38	<3.4	[U]	3.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 35	<3.5	[U]	3.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 37	18.0	M,J,R	4.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 54	<1.2	[U]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 50/53	16.0	M,J,R	3.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 45/51	22.2	M	3.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 46	5.0	M,J	3.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 52	386	M	3.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 73	5.8	M,J	2.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 43	8.7	[J]	3.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 69/49	211		3.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 48	23.5	M	3.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 44/47/65	226		3.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 59/62/75	13.7	[J]	2.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 42	55.9		3.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 41/71/40	70.3	M	3.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 64	63.1	M	2.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 72	10.2	M,J	4.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 68	9.9	M,J	4.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 57	<4.6	[U]	4.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 58	<4.6	[U]	4.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 67	<4.0	[U]	4.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 63	6.7	M,J	4.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 61/70/74/76	312		4.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 66	154	M	4.4	pg/g	12-NOV-19	20-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-3 RM16.3E-SED2							
Sampled By: Client on 29-OCT-19 @ 10:00							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 55	<4.8	M,U	4.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 56	50.8	M	4.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 60	12.1	M,J	4.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 80	<4.0	[U]	4.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 79	8.2	M,J	4.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 78	<4.6	[U]	4.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 81	<5.4	[U]	5.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 77	<6.5	M,U	6.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 104	2.5	J,R	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 96	4.9	[J]	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 103	32.8		4.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 94	<5.7	[U]	5.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 95	491		5.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 100/93/102/98	46.5	M	5.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 88/91	111		5.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 84	110		5.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 89	<5.6	[U]	5.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 121	<3.9	[U]	3.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 92	184		5.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 113/90/101	718		4.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 83/99	435	M	5.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 112	<3.9	[U]	3.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 109/119/86/97/125/87	326	M	4.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 117/116/85/110/115	733	M	4.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 82	54.5	M	6.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 111	<4.0	M,U	4.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 120	13.3	[J]	3.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 108/124	11.8	M,J	2.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 107	46.8	M	2.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 123	6.7	M,J	3.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 106	<2.7	[U]	2.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 118	460	M	3.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 122	6.7	[J]	3.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 114	11.1	[J]	3.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 105	153		3.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 127	<2.7	[U]	2.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 126	5.7	[J]	3.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 155	1.20	M,J,R	0.72	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 152	<0.90	[U]	0.90	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 150	13.4	M,J	0.89	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 136	122		0.91	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 145	<0.96	[U]	0.96	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 148	17.9	[J]	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 151/135	439		1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 154	73.6		1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 144	30.5		1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 147/149	913	M	2.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 134/143	55.6	M	3.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 139/140	18.0	M,J,R	2.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 131	8.8	M,J	3.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 142	<3.4	[U]	3.4	pg/g	12-NOV-19	20-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-3 RM16.3E-SED2							
Sampled By: Client on 29-OCT-19 @ 10:00							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 132	277		3.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 133	54.0	R	3.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 165	3.7	M,J	2.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 146	380		2.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 161	<2.2	[U]	2.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 168/153	1010		2.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 141	124		3.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 130	56.0		3.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 137/164	80.3	M	2.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 138/163/129	838		2.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 160	<2.5	[U]	2.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 158	59.7		2.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 128/166	94.0	R	2.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 159	6.8	J,R	2.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 162	2.7	[J]	2.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 167	24.5		2.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 156/157	65.9		3.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 169	<2.9	[U]	2.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 188	2.3	[J]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 179	123		1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 184	<1.2	[U]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 176	26.3		1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 186	<1.3	[U]	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 178	74.2		1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 175	5.0	J,R	1.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 187	344		1.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 182	<1.6	[U]	1.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 183	109		1.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 185	14.5	M,J	1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 174	175	M	1.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 177	139		1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 181	<1.7	[U]	1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 171/173	46.0	M,R	1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 172	26.0		1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 192	<1.4	[U]	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 180/193	371		1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 191	6.2	[J]	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 170	147		1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 190	22.4	M	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 189	6.4	M,J,R	1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 202	22.0		2.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 201	19.2		2.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 204	<2.1	[U]	2.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 197	3.6	J,R	2.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 200	12.5	[J]	2.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 198/199	109		2.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 196	53.2		2.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 203	65.1		2.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 195	29.4		1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 194	79.1		0.96	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 205	5.5	[J]	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-3 RM16.3E-SED2							
Sampled By: Client on 29-OCT-19 @ 10:00							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 208	14.0	M,J,R	2.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 207	6.0	M,J	2.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 206	51.4		4.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 209	55.5		0.69	pg/g	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 1	14.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 3	13.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 4	14.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 15	13.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 19	15.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 37	14.0	R	5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 54	15.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 81	17.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 77	16.0	R	10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 104	19.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 123	18.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 118	17.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 114	17.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 105	17.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 126	18.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 155	20.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 167	17.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 156/157	18.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 169	18.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 188	20.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 189	19.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 202	19.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 205	17.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 208	19.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 206	18.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 209	19.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 28	20.0	R	5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 111	18.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 178	19.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Total MonoCB	33.7	[J]	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
Total DiCB	165	[J]	5.2	pg/g	12-NOV-19	20-NOV-19	R4923853
Total TriCB	437	[J]	2.4	pg/g	12-NOV-19	20-NOV-19	R4923853
Total TetraCB	1670	[J]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
Total PentaCB	3960	[J]	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
Total HexaCB	4770	[J]	0.72	pg/g	12-NOV-19	20-NOV-19	R4923853
Total HeptaCB	1640	[J]	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
Total OctaCB	399	[J]	0.96	pg/g	12-NOV-19	20-NOV-19	R4923853
Total NonaCB	71.4	[J]	2.6	pg/g	12-NOV-19	20-NOV-19	R4923853
DecaCB	55.5	[J]	0.69	pg/g	12-NOV-19	20-NOV-19	R4923853
Total PCB	13200	[J]	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
Lower Bound PCB TEQ (WHO 2005)	0.590			pg/g	12-NOV-19	20-NOV-19	R4923853
Mid Point PCB TEQ (WHO 2005)	0.634			pg/g	12-NOV-19	20-NOV-19	R4923853
Upper Bound PCB TEQ (WHO 2005)	0.679			pg/g	12-NOV-19	20-NOV-19	R4923853
PBDEs by EPA 1614							
BDE 10	<0.28	[U]	0.28	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 7	<0.26	[U]	0.26	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 8/11	2.90	M,J,R	0.18	pg/g	12-NOV-19	02-DEC-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-3 RM16.3E-SED2							
Sampled By: Client on 29-OCT-19 @ 10:00							
Matrix: Sediment							
PBDEs by EPA 1614							
BDE 12/13	<0.16	[U]	0.16	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 15	<0.14	[U]	0.14	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 30	<0.38	[U]	0.38	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 32	<0.27	[U]	0.27	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 17/25	<0.34	[U]	0.34	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 28/33	0.57	M,J,R	0.34	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 35	0.56	M,J,R	0.22	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 37	0.26	M,J,R	0.22	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 75	<0.22	[U]	0.22	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 51	<0.19	[U]	0.19	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 49	<0.28	[U]	0.28	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 71	<0.30	[U]	0.30	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 47	6.10	J,B	0.19	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 79	<0.18	[U]	0.18	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 66	<0.30	[U]	0.30	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 77	<0.20	[U]	0.20	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 100	2.07	J,B	0.17	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 119/120	0.68	M,J,R	0.37	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 99	6.17	J,B	0.26	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 116	<0.58	[U]	0.58	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 118	<0.40	[U]	0.40	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 85	0.98	M,J,R	0.35	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 126	<0.25	[U]	0.25	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 105	<0.41	[U]	0.41	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 155	<0.51	[U]	0.51	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 154	<0.68	[U]	0.68	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 153	<0.90	[U]	0.90	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 140	<0.93	[U]	0.93	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 138/166	<1.6	[U]	1.6	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 156	<1.8	[U]	1.8	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 128	<1.6	[U]	1.6	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 184	<0.27	[U]	0.27	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 183	<0.39	[U]	0.39	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 191	<0.55	[U]	0.55	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 181	<0.53	[U]	0.53	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 190	<0.76	[U]	0.76	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 197	<0.50	[U]	0.50	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 203	<0.62	[U]	0.62	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 196	<0.63	[U]	0.63	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 208	<1.0	[U]	1.0	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 207	<1.0	[U]	1.0	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 206	<1.1	[U]	1.1	pg/g	12-NOV-19	02-DEC-19	R4923853
BDE 209	<5.3	[U]	5.3	pg/g	12-NOV-19	02-DEC-19	R4923853
PBEB	<0.22	[U]	0.22	pg/g	12-NOV-19	02-DEC-19	R4923853
HBB	2.30	M,J,R	0.44	pg/g	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 15	21.0		20-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 28	29.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 47	31.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 77	32.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 100	29.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 99	29.0		25-150	%	12-NOV-19	02-DEC-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-3 RM16.3E-SED2							
Sampled By: Client on 29-OCT-19 @ 10:00							
Matrix: Sediment							
PBDEs by EPA 1614							
Surrogate: 13C12 BDE 126	25.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 154	23.0	G	25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 153	28.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 183	28.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 197	19.0	G	25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 207	23.0		20-200	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 209	7.0	G	20-200	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C6 HBB	26.0		25-150	%	12-NOV-19	02-DEC-19	R4923853
Surrogate: 13C12 BDE 138 Cleanup	13.0	G	30-135	%	12-NOV-19	02-DEC-19	R4923853
Note: Some labelled extraction standards (BDE 209, BDE CL 138) are outside method acceptance criteria. Native results calculated by isotope dilution so no impact to data quality.							
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.27	[U]	0.27	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8-PeCDD	<0.13	[U]	0.13	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8-HxCDD	0.50	M,J	0.14	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,6,7,8-HxCDD	1.76	[J]	0.14	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8,9-HxCDD	0.70	[J]	0.14	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,6,7,8-HpCDD	72.0		0.33	pg/g	12-NOV-19	23-NOV-19	R4923853
OCDD	1520		0.48	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,7,8-TCDF	<0.24	[U]	0.24	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8-PeCDF	0.25	M,J,R	0.22	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,4,7,8-PeCDF	0.20	M,J,R	0.16	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8-HxCDF	0.65	[J]	0.11	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,6,7,8-HxCDF	0.80	[J]	0.12	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,4,6,7,8-HxCDF	1.20	J,R	0.11	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8,9-HxCDF	0.25	M,J,B	0.14	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,6,7,8-HpCDF	16.7		0.098	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8,9-HpCDF	1.00	J,R	0.11	pg/g	12-NOV-19	23-NOV-19	R4923853
OCDF	74.1		0.20	pg/g	12-NOV-19	23-NOV-19	R4923853
Total-TCDD	<0.27	[U]	0.27	pg/g	12-NOV-19	23-NOV-19	R4923853
Total TCDD # Homologues	0				12-NOV-19	23-NOV-19	R4923853
Total-PeCDD	<0.13	[U]	0.13	pg/g	12-NOV-19	23-NOV-19	R4923853
Total PeCDD # Homologues	0				12-NOV-19	23-NOV-19	R4923853
Total-HxCDD	15.4		0.14	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HxCDD # Homologues	5				12-NOV-19	23-NOV-19	R4923853
Total-HpCDD	173		0.33	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HpCDD # Homologues	2				12-NOV-19	23-NOV-19	R4923853
Total-TCDF	1.83		0.24	pg/g	12-NOV-19	23-NOV-19	R4923853
Total TCDF # Homologues	4				12-NOV-19	23-NOV-19	R4923853
Total-PeCDF	4.69		0.22	pg/g	12-NOV-19	23-NOV-19	R4923853
Total PeCDF # Homologues	1				12-NOV-19	23-NOV-19	R4923853
Total-HxCDF	19.5		0.14	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HxCDF # Homologues	6				12-NOV-19	23-NOV-19	R4923853
Total-HpCDF	63.7		0.11	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HpCDF # Homologues	2				12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,7,8-TCDD	34.0		25-164	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8-PeCDD	35.0		25-181	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	30.0	G	32-141	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	30.0		28-130	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	33.0		23-140	%	12-NOV-19	23-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-3 RM16.3E-SED2							
Sampled By: Client on 29-OCT-19 @ 10:00							
Matrix: Sediment							
Dioxins and Furans HR 1613B							
Surrogate: 13C12-OCDD	29.0		17-157	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,7,8-TCDF	29.0		24-169	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8-PeCDF	31.0		24-185	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,4,7,8-PeCDF	34.0		21-178	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	29.0		26-152	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	28.0		26-123	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	30.0		29-147	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	28.0		28-136	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	32.0		28-143	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	35.0		26-138	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	29.0	G	31-197	%	12-NOV-19	23-NOV-19	R4923853
Lower Bound PCDD/F TEQ (WHO 2005)	1.83			pg/g	12-NOV-19	23-NOV-19	R4923853
Mid Point PCDD/F TEQ (WHO 2005)	2.24			pg/g	12-NOV-19	23-NOV-19	R4923853
Upper Bound PCDD/F TEQ (WHO 2005)	2.45			pg/g	12-NOV-19	23-NOV-19	R4923853
Note: Sample is outside method recovery criteria for select labelled targets. Results quantified using isotope dilution, therefore no impact to data quality is expected.							
L2375251-4 RM16.3E-SED3							
Sampled By: Client on 29-OCT-19 @ 13:00							
Matrix: Sediment							
Miscellaneous Parameters							
% Moisture	33.6		0.10	%	12-NOV-19	13-NOV-19	R4919908
All PCB congeners by GC/HRMS							
PCB 1	4.00	M,J,R	0.76	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 2	<0.89	[U]	0.89	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 3	4.6	M,J,R	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 4	<4.4	[U]	4.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 10	<2.9	[U]	2.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 9	<3.0	[U]	3.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 7	<2.9	[U]	2.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 6	<2.8	[U]	2.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 5	<3.3	[U]	3.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 8	13.0	J,R	2.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 14	<3.3	[U]	3.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 11	81.2	M,B	3.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 13/12	<3.5	[U]	3.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 15	6.8	M,J,R	4.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 19	<1.9	[U]	1.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 30/18	22.3		1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 17	12.6	[J]	1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 27	<1.2	[U]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 24	<1.3	[U]	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 16	8.2	M,J,R	2.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 32	6.6	M,J,R	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 34	<3.2	[U]	3.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 23	<3.1	[U]	3.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 29/26	7.0	J,R	3.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 25	6.3	[J]	3.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 31	45.7		2.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 28/20	63.3		3.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 21/33	38.0		3.1	pg/g	12-NOV-19	20-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-4 RM16.3E-SED3							
Sampled By: Client on 29-OCT-19 @ 13:00							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 22	20.2		3.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 36	<2.9	M,U	2.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 39	<3.0	[U]	3.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 38	<3.2	[U]	3.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 35	<3.2	M,U	3.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 37	13.7	M,J,B	4.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 54	<0.71	[U]	0.71	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 50/53	11.8	[J]	2.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 45/51	13.6	[J]	2.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 46	5.2	[J]	2.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 52	185	M	2.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 73	<1.8	[U]	1.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 43	<2.6	[U]	2.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 69/49	126		2.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 48	19.0		2.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 44/47/65	122	M	2.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 59/62/75	6.1	J,R	1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 42	30.7		2.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 41/71/40	43.6		2.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 64	39.9		1.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 72	11.7	M,J	3.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 68	5.6	M,J,R	3.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 57	<3.2	[U]	3.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 58	<3.2	M,U	3.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 67	3.7	M,J	2.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 63	4.3	M,J	3.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 61/70/74/76	184		3.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 66	99.2	M	3.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 55	<3.3	[U]	3.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 56	42.4		3.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 60	12.3	[J]	3.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 80	<2.8	[U]	2.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 79	<2.9	M,U	2.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 78	<3.2	[U]	3.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 81	<4.2	[U]	4.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 77	<4.3	M,U	4.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 104	<0.63	[U]	0.63	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 96	1.90	M,J	0.80	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 103	25.4		2.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 94	<3.0	[U]	3.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 95	359		2.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 100/93/102/98	24.1	M	2.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 88/91	71.9		2.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 84	51.9		3.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 89	<3.0	[U]	3.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 121	<2.1	[U]	2.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 92	187	M	2.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 113/90/101	597		2.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 83/99	296	M	2.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 112	<2.1	[U]	2.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 109/119/86/97/125/87	154	M	2.5	pg/g	12-NOV-19	20-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-4 RM16.3E-SED3							
Sampled By: Client on 29-OCT-19 @ 13:00							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 117/116/85/110/115	427	M	2.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 82	21.0	M	3.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 111	3.6	[J]	2.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 120	9.9	[J]	2.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 108/124	4.7	J,R	1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 107	42.4	M	1.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 123	<2.2	M,U	2.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 106	<1.7	[U]	1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 118	219	M	2.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 122	2.2	M,J,R	1.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 114	2.6	M,J,R	2.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 105	63.8		2.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 127	<1.7	[U]	1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 126	7.7	M,J,R	2.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 155	<0.81	[U]	0.81	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 152	<0.67	[U]	0.67	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 150	8.24	[J]	0.66	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 136	176		0.68	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 145	<0.71	[U]	0.71	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 148	7.87	[J]	0.93	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 151/135	581		0.95	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 154	55.0		0.79	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 144	46.4		0.92	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 147/149	1400		2.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 134/143	57.6		2.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 139/140	19.9		2.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 131	8.9	[J]	3.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 142	<2.8	[U]	2.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 132	358		2.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 133	44.4		2.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 165	6.3	[J]	2.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 146	417		2.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 161	<1.8	[U]	1.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 168/153	1600		2.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 141	202		2.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 130	112		2.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 137/164	106		2.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 138/163/129	1250		2.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 160	<2.0	[U]	2.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 158	61.4		1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 128/166	107		2.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 159	15.1		1.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 162	<1.9	M,U	1.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 167	20.9		1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 156/157	55.0		2.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 169	4.9	J,R	2.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 188	<1.3	M,U	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 179	202	M	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 184	<1.0	[U]	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 176	64.9	M	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 186	<1.1	[U]	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-4 RM16.3E-SED3							
Sampled By: Client on 29-OCT-19 @ 13:00							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 178	101		1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 175	23.4		1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 187	618		1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 182	4.8	M,J,R	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 183	280	M	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 185	26.8	M	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 174	425	M	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 177	249		1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 181	<1.4	[U]	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 171/173	138		1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 172	70.9		1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 192	<1.1	[U]	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 180/193	958		1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 191	14.4	[J]	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 170	380		1.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 190	55.4	M	0.96	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 189	11.0	M,J,R	0.66	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 202	35.2		0.51	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 201	21.1		0.48	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 204	<0.48	[U]	0.48	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 197	6.04	[J]	0.50	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 200	22.3		0.46	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 198/199	202		0.65	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 196	115		0.63	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 203	135		0.60	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 195	71.4		0.82	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 194	189		0.76	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 205	10.2	[J]	0.74	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 208	16.0	M	2.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 207	4.8	M,J,R	1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 206	55.4		2.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 209	42.3		2.0	pg/g	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 1	17.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 3	15.0	R	5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 4	15.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 15	15.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 19	14.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 37	19.0	R	5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 54	15.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 81	17.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 77	18.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 104	22.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 123	19.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 118	19.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 114	19.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 105	19.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 126	18.0	R	10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 155	12.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 167	20.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 156/157	19.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 169	20.0		10-145	%	12-NOV-19	20-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-4 RM16.3E-SED3							
Sampled By: Client on 29-OCT-19 @ 13:00							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
Surrogate: 13C12 PCB 188	16.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 189	23.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 202	19.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 205	20.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 208	13.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 206	19.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 209	5.0	G	10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 28	19.0	R	5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 111	18.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 178	21.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Total MonoCB	8.60	[J]	0.76	pg/g	12-NOV-19	20-NOV-19	R4923853
Total DiCB	101	[J]	2.6	pg/g	12-NOV-19	20-NOV-19	R4923853
Total TriCB	244	[J]	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
Total TetraCB	966	[J]	0.71	pg/g	12-NOV-19	20-NOV-19	R4923853
Total PentaCB	2570	[J]	0.63	pg/g	12-NOV-19	20-NOV-19	R4923853
Total HexaCB	6720	[J]	0.66	pg/g	12-NOV-19	20-NOV-19	R4923853
Total HeptaCB	3620	[J]	0.66	pg/g	12-NOV-19	20-NOV-19	R4923853
Total OctaCB	807	[J]	0.46	pg/g	12-NOV-19	20-NOV-19	R4923853
Total NonaCB	76.2	[J]	1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
DecaCB	42.3	[J]	2.0	pg/g	12-NOV-19	20-NOV-19	R4923853
Total PCB	15200	[J]	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
Lower Bound PCB TEQ (WHO 2005)	0.0108			pg/g	12-NOV-19	20-NOV-19	R4923853
Mid Point PCB TEQ (WHO 2005)	0.929			pg/g	12-NOV-19	20-NOV-19	R4923853
Upper Bound PCB TEQ (WHO 2005)	0.930			pg/g	12-NOV-19	20-NOV-19	R4923853
Note: Surrogate PCB-209 was below method criteria. Reported PCB-209 result is not expected to be biased							
PBDEs by EPA 1614							
BDE 10	<0.15	[U]	0.15	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 7	<0.13	[U]	0.13	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 8/11	<0.096	[U]	0.096	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 12/13	<0.082	[U]	0.082	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 15	<0.071	[U]	0.071	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 30	<0.18	[U]	0.18	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 32	<0.13	[U]	0.13	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 17/25	<0.16	[U]	0.16	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 28/33	0.68	[J]	0.16	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 35	0.47	M,J,R	0.10	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 37	<0.11	M,U	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 75	<0.090	[U]	0.090	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 51	<0.078	[U]	0.078	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 49	<0.11	[U]	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 71	<0.12	[U]	0.12	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 47	2.75	J,B	0.077	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 79	<0.073	[U]	0.073	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 66	<0.12	[U]	0.12	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 77	<0.080	[U]	0.080	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 100	0.624	J,B	0.066	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 119/120	0.35	M,J,R	0.13	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 99	2.41	M,J,B	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 116	<0.21	[U]	0.21	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 118	<0.14	[U]	0.14	pg/g	12-NOV-19	03-DEC-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-4 RM16.3E-SED3							
Sampled By: Client on 29-OCT-19 @ 13:00							
Matrix: Sediment							
PBDEs by EPA 1614							
BDE 85	0.41	M,J	0.13	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 126	0.258	M,J	0.075	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 105	<0.15	[U]	0.15	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 155	<0.17	[U]	0.17	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 154	<0.22	[U]	0.22	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 153	<0.32	[U]	0.32	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 140	<0.31	[U]	0.31	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 138/166	<0.52	[U]	0.52	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 156	<0.59	[U]	0.59	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 128	<0.53	[U]	0.53	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 184	<0.078	[U]	0.078	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 183	<0.11	[U]	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 191	<0.16	[U]	0.16	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 181	<0.15	[U]	0.15	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 190	<0.22	[U]	0.22	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 197	<0.20	[U]	0.20	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 203	<0.24	[U]	0.24	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 196	<0.25	[U]	0.25	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 208	<0.28	[U]	0.28	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 207	<0.28	[U]	0.28	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 206	<0.31	[U]	0.31	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 209	<1.2	[U]	1.2	pg/g	12-NOV-19	03-DEC-19	R4923853
PBEB	<0.11	[U]	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
HBB	1.97	J,B	0.13	pg/g	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 15	32.0		20-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 28	50.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 47	57.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 77	64.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 100	44.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 99	41.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 126	50.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 154	36.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 153	43.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 183	47.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 197	33.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 207	43.0		20-200	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 209	16.0	G	20-200	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C6 HBB	49.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 138 Cleanup	25.0	G	30-135	%	12-NOV-19	03-DEC-19	R4923853
Note: Some labelled extraction standards (BDE 209, BDE CL 138) are outside method acceptance criteria. Native results calculated by isotope dilution so no impact to data quality.							
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	0.083	M,J	0.045	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8-PeCDD	0.174	M,J	0.019	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8-HxCDD	0.345	[J]	0.032	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,6,7,8-HxCDD	1.28	[J]	0.032	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8,9-HxCDD	0.717	[J]	0.031	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,6,7,8-HpCDD	39.3		0.079	pg/g	12-NOV-19	23-NOV-19	R4923853
OCDD	793		0.077	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,7,8-TCDF	0.171	M,J	0.029	pg/g	12-NOV-19	23-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-4 RM16.3E-SED3							
Sampled By: Client on 29-OCT-19 @ 13:00							
Matrix: Sediment							
Dioxins and Furans HR 1613B							
1,2,3,7,8-PeCDF	0.179	[J]	0.026	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,4,7,8-PeCDF	0.263	[J]	0.020	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8-HxCDF	0.507	[J]	0.029	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,6,7,8-HxCDF	0.864	[J]	0.028	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,4,6,7,8-HxCDF	0.912	[J]	0.026	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8,9-HxCDF	0.290	M,J,B	0.034	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,6,7,8-HpCDF	10.7		0.029	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8,9-HpCDF	0.662	[J]	0.032	pg/g	12-NOV-19	23-NOV-19	R4923853
OCDF	23.2		0.035	pg/g	12-NOV-19	23-NOV-19	R4923853
Total-TCDD	0.464		0.045	pg/g	12-NOV-19	23-NOV-19	R4923853
Total TCDD # Homologues	3				12-NOV-19	23-NOV-19	R4923853
Total-PeCDD	2.57		0.019	pg/g	12-NOV-19	23-NOV-19	R4923853
Total PeCDD # Homologues	6				12-NOV-19	23-NOV-19	R4923853
Total-HxCDD	16.6		0.032	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HxCDD # Homologues	6				12-NOV-19	23-NOV-19	R4923853
Total-HpCDD	111		0.079	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HpCDD # Homologues	2				12-NOV-19	23-NOV-19	R4923853
Total-TCDF	1.95		0.029	pg/g	12-NOV-19	23-NOV-19	R4923853
Total TCDF # Homologues	8				12-NOV-19	23-NOV-19	R4923853
Total-PeCDF	5.91		0.026	pg/g	12-NOV-19	23-NOV-19	R4923853
Total PeCDF # Homologues	5				12-NOV-19	23-NOV-19	R4923853
Total-HxCDF	16.3		0.034	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HxCDF # Homologues	7				12-NOV-19	23-NOV-19	R4923853
Total-HpCDF	32.9		0.032	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HpCDF # Homologues	3				12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,7,8-TCDD	120.0		25-164	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8-PeCDD	126.0		25-181	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	107.0		32-141	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	107.0		28-130	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	113.0		23-140	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-OCDD	100.0		17-157	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,7,8-TCDF	104.0		24-169	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8-PeCDF	110.0		24-185	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,4,7,8-PeCDF	120.0		21-178	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	100.0		26-152	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	99.0		26-123	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	106.0		29-147	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	100.0		28-136	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	107.0		28-143	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	114.0		26-138	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	106.0		31-197	%	12-NOV-19	23-NOV-19	R4923853
Lower Bound PCDD/F TEQ (WHO 2005)	1.60			pg/g	12-NOV-19	23-NOV-19	R4923853
Mid Point PCDD/F TEQ (WHO 2005)	1.60			pg/g	12-NOV-19	23-NOV-19	R4923853
Upper Bound PCDD/F TEQ (WHO 2005)	1.60			pg/g	12-NOV-19	23-NOV-19	R4923853
L2375251-5 RM16.3E-SED4							
Sampled By: Client on 29-OCT-19 @ 12:05							
Matrix: Sediment							
Miscellaneous Parameters							
% Moisture	28.1		0.10	%	12-NOV-19	13-NOV-19	R4919908
All PCB congeners by GC/HRMS							
PCB 1	<0.56	[U]	0.56	pg/g	12-NOV-19	20-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-5 RM16.3E-SED4							
Sampled By: Client on 29-OCT-19 @ 12:05							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 2	<0.58	[U]	0.58	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 3	1.59	M,J	0.68	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 4	<3.2	[U]	3.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 10	<1.7	[U]	1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 9	<1.8	[U]	1.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 7	<1.7	[U]	1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 6	<1.7	[U]	1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 5	<2.0	[U]	2.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 8	2.7	M,J,R	1.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 14	<1.9	[U]	1.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 11	38.1	M,B	2.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 13/12	<2.0	[U]	2.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 15	<2.4	M,U	2.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 19	<1.1	[U]	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 30/18	3.4	M,J,R	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 17	2.3	J,R	1.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 27	<1.1	[U]	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 24	<1.2	[U]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 16	1.9	J,R	1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 32	1.3	M,J,R	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 34	<1.0	[U]	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 23	<0.96	[U]	0.96	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 29/26	1.41	[J]	0.94	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 25	<0.93	M,U	0.93	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 31	10.8	[J]	0.89	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 28/20	15.0	M,B	0.95	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 21/33	7.56	M,J,B	0.97	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 22	3.5	M,J,R	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 36	<0.91	[U]	0.91	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 39	<0.95	[U]	0.95	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 38	<0.99	[U]	0.99	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 35	<1.0	M,U	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 37	2.9	M,J,R	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 54	<0.60	[U]	0.60	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 50/53	3.0	M,J	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 45/51	5.9	M,J	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 46	<1.2	M,U	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 52	28.8	M	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 73	0.92	M,J,R	0.85	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 43	<1.2	M,U	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 69/49	22.1	M	0.96	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 48	3.4	M,J,R	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 44/47/65	32.8	M	0.99	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 59/62/75	1.50	M,J,R	0.80	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 42	7.4	J,R	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 41/71/40	11.0	M,J,R	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 64	10.4	M,J	0.84	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 72	<1.2	[U]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 68	<1.2	M,U	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 57	<1.3	[U]	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 58	<1.3	[U]	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-5 RM16.3E-SED4							
Sampled By: Client on 29-OCT-19 @ 12:05							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 67	<1.1	[U]	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 63	<1.2	M,U	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 61/70/74/76	38.0	M	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 66	26.3		1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 55	<1.3	[U]	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 56	11.6	M,J	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 60	5.9	M,J	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 80	<1.1	[U]	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 79	<1.2	[U]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 78	<1.3	[U]	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 81	<1.4	[U]	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 77	2.1	M,J,R	1.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 104	0.40	M,J,R	0.36	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 96	0.98	M,J,R	0.43	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 103	3.1	M,J,R	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 94	<1.2	[U]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 95	25.9		1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 100/93/102/98	11.5	M,J	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 88/91	8.0	M,J,R	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 84	7.1	M,J,R	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 89	<1.2	M,U	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 121	<0.85	[U]	0.85	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 92	8.9	J,R	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 113/90/101	45.8		1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 83/99	25.5	M	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 112	<0.85	[U]	0.85	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 109/119/86/97/125/87	23.5	M	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 117/116/85/110/115	47.0	M	0.95	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 82	3.7	M,J	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 111	<0.87	[U]	0.87	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 120	<0.83	[U]	0.83	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 108/124	<0.84	[U]	0.84	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 107	2.90	M,J	0.81	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 123	<1.0	M,U	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 106	<0.83	[U]	0.83	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 118	33.0		0.99	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 122	<0.90	M,U	0.90	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 114	<1.0	M,U	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 105	13.5	[J]	0.98	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 127	<0.82	[U]	0.82	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 126	<1.3	[U]	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 155	<0.32	[U]	0.32	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 152	<0.45	[U]	0.45	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 150	0.77	M,J,R	0.44	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 136	8.12	[J]	0.45	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 145	<0.48	[U]	0.48	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 148	<0.62	M,U	0.62	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 151/135	23.3		0.63	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 154	5.60	J,R	0.52	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 144	1.95	[J]	0.61	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 147/149	62.3		1.7	pg/g	12-NOV-19	20-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-5 RM16.3E-SED4							
Sampled By: Client on 29-OCT-19 @ 12:05							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 134/143	2.5	M,J	2.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 139/140	<1.7	[U]	1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 131	<2.2	[U]	2.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 142	<1.9	[U]	1.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 132	20.0		2.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 133	<1.9	[U]	1.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 165	<1.5	[U]	1.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 146	11.9	[J]	1.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 161	<1.3	[U]	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 168/153	59.5		1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 141	9.9	[J]	1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 130	3.6	M,J,R	2.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 137/164	5.5	M,J,R	1.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 138/163/129	61.5		1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 160	<1.4	[U]	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 158	4.6	[J]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 128/166	7.2	M,J,R	1.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 159	<1.2	[U]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 162	<1.3	[U]	1.3	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 167	1.5	M,J,R	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 156/157	4.9	[J]	1.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 169	<1.8	[U]	1.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 188	<0.35	[U]	0.35	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 179	7.36	[J]	0.37	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 184	<0.37	[U]	0.37	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 176	2.00	J,R	0.37	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 186	<0.38	[U]	0.38	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 178	4.02	[J]	0.50	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 175	0.92	[J]	0.48	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 187	21.9		0.45	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 182	<0.47	[U]	0.47	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 183	11.4	M,J	0.45	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 185	1.10	M,J,R	0.49	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 174	15.4	M	0.48	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 177	6.90	M,J,R	0.50	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 181	<0.49	[U]	0.49	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 171/173	2.50	J,R	0.50	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 172	2.60	J,R	0.49	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 192	<0.40	[U]	0.40	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 180/193	32.7	M	0.42	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 191	0.60	M,J,R	0.37	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 170	12.5	[J]	0.51	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 190	2.25	M,J	0.34	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 189	0.55	J,R	0.35	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 202	1.40	J,R	0.25	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 201	1.68	M,J	0.27	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 204	<0.27	[U]	0.27	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 197	<0.28	[U]	0.28	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 200	0.68	M,J,R	0.26	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 198/199	10.0	[J]	0.36	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 196	4.51	[J]	0.35	pg/g	12-NOV-19	20-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-5 RM16.3E-SED4							
Sampled By: Client on 29-OCT-19 @ 12:05							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 203	5.75	[J]	0.33	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 195	2.60	M,J	0.46	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 194	6.20	J,R	0.43	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 205	<0.47	[U]	0.47	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 208	1.77	[J]	0.83	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 207	<0.94	[U]	0.94	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 206	4.0	M,J,R	1.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 209	5.41	[J]	0.26	pg/g	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 1	21.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 3	23.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 4	19.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 15	28.0	R	5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 19	21.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 37	32.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 54	20.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 81	30.0	R	10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 77	31.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 104	32.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 123	32.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 118	30.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 114	30.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 105	32.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 126	29.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 155	37.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 167	32.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 156/157	30.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 169	30.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 188	39.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 189	34.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 202	39.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 205	33.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 208	37.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 206	32.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 209	35.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 28	30.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 111	30.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 178	33.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Total MonoCB	1.59	[J]	0.56	pg/g	12-NOV-19	20-NOV-19	R4923853
Total DiCB	40.8	[J]	1.5	pg/g	12-NOV-19	20-NOV-19	R4923853
Total TriCB	50.1	[J]	0.89	pg/g	12-NOV-19	20-NOV-19	R4923853
Total TetraCB	211	[J]	0.60	pg/g	12-NOV-19	20-NOV-19	R4923853
Total PentaCB	261	[J]	0.36	pg/g	12-NOV-19	20-NOV-19	R4923853
Total HexaCB	295	[J]	0.32	pg/g	12-NOV-19	20-NOV-19	R4923853
Total HeptaCB	125	[J]	0.34	pg/g	12-NOV-19	20-NOV-19	R4923853
Total OctaCB	32.8	[J]	0.25	pg/g	12-NOV-19	20-NOV-19	R4923853
Total NonaCB	5.77	[J]	0.83	pg/g	12-NOV-19	20-NOV-19	R4923853
DecaCB	5.41	[J]	0.26	pg/g	12-NOV-19	20-NOV-19	R4923853
Total PCB	1030	[J]	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
Lower Bound PCB TEQ (WHO 2005)	0.00154			pg/g	12-NOV-19	20-NOV-19	R4923853
Mid Point PCB TEQ (WHO 2005)	0.0941			pg/g	12-NOV-19	20-NOV-19	R4923853
Upper Bound PCB TEQ (WHO 2005)	0.186			pg/g	12-NOV-19	20-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-5 RM16.3E-SED4							
Sampled By: Client on 29-OCT-19 @ 12:05							
Matrix: Sediment							
PBDEs by EPA 1614							
BDE 10	<0.050	[U]	0.050	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 7	0.340	M,J,R	0.046	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 8/11	0.420	M,J,R	0.033	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 12/13	<0.028	M,U	0.028	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 15	0.342	[J]	0.024	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 30	<0.11	[U]	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 32	<0.082	[U]	0.082	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 17/25	1.50	[J]	0.10	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 28/33	0.92	[J]	0.10	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 35	0.160	M,J,R	0.067	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 37	<0.067	M,U	0.067	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 75	<0.051	[U]	0.051	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 51	0.424	M,J	0.044	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 49	2.29	[J]	0.064	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 71	<0.067	[U]	0.067	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 47	13.8	M,B	0.045	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 79	0.170	M,J,R	0.041	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 66	<0.067	[U]	0.067	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 77	<0.043	[U]	0.043	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 100	3.39	J,B	0.042	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 119/120	0.270	M,J,R	0.090	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 99	10.8	[B]	0.064	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 116	<0.14	[U]	0.14	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 118	<0.097	[U]	0.097	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 85	0.280	M,J,R	0.084	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 126	<0.060	[U]	0.060	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 105	<0.098	[U]	0.098	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 155	<0.13	[U]	0.13	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 154	1.30	M,J,R	0.15	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 153	1.10	M,J,R	0.32	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 140	<0.28	[U]	0.28	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 138/166	<0.47	[U]	0.47	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 156	<0.54	[U]	0.54	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 128	<0.48	[U]	0.48	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 184	<0.059	[U]	0.059	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 183	<0.083	[U]	0.083	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 191	<0.12	[U]	0.12	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 181	<0.11	[U]	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 190	<0.16	[U]	0.16	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 197	<0.12	[U]	0.12	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 203	<0.15	[U]	0.15	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 196	<0.15	[U]	0.15	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 208	<0.41	[U]	0.41	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 207	<0.40	[U]	0.40	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 206	<0.44	[U]	0.44	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 209	<1.4	[U]	1.4	pg/g	12-NOV-19	03-DEC-19	R4923853
PBEB	<0.053	[U]	0.053	pg/g	12-NOV-19	03-DEC-19	R4923853
HBB	2.30	J,B	0.084	pg/g	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 15	71.0		20-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 28	73.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 47	81.0		25-150	%	12-NOV-19	03-DEC-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-5 RM16.3E-SED4							
Sampled By: Client on 29-OCT-19 @ 12:05							
Matrix: Sediment							
PBDEs by EPA 1614							
Surrogate: 13C12 BDE 77	85.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 100	87.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 99	83.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 126	71.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 154	51.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 153	52.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 183	72.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 197	45.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 207	70.0		20-200	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 209	19.0	G	20-200	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C6 HBB	66.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 138 Cleanup	36.0		30-135	%	12-NOV-19	03-DEC-19	R4923853
Note: Some labelled extraction standards (BDE 209, BDE CL 138) are outside method acceptance criteria. Native results calculated by isotope dilution so no impact to data quality.							
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.11	[U]	0.11	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8-PeCDD	<0.053	[U]	0.053	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8-HxCDD	<0.072	[U]	0.072	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,6,7,8-HxCDD	0.223	M,J	0.068	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8,9-HxCDD	0.110	M,J,R	0.069	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,6,7,8-HpCDD	4.04		0.057	pg/g	12-NOV-19	23-NOV-19	R4923853
OCDD	32.0		0.066	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,7,8-TCDF	0.156	M,J	0.073	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8-PeCDF	0.066	M,J,R	0.055	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,4,7,8-PeCDF	<0.042	[U]	0.042	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8-HxCDF	<0.057	[U]	0.057	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,6,7,8-HxCDF	<0.056	M,U	0.056	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,4,6,7,8-HxCDF	0.240	M,J,R	0.054	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8,9-HxCDF	0.075	M,J,B	0.066	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,6,7,8-HpCDF	1.20	J,R	0.041	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8,9-HpCDF	<0.045	[U]	0.045	pg/g	12-NOV-19	23-NOV-19	R4923853
OCDF	1.76	[J]	0.048	pg/g	12-NOV-19	23-NOV-19	R4923853
Total-TCDD	<0.11	[U]	0.11	pg/g	12-NOV-19	23-NOV-19	R4923853
Total TCDD # Homologues	0				12-NOV-19	23-NOV-19	R4923853
Total-PeCDD	<0.053	[U]	0.053	pg/g	12-NOV-19	23-NOV-19	R4923853
Total PeCDD # Homologues	0				12-NOV-19	23-NOV-19	R4923853
Total-HxCDD	1.15		0.072	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HxCDD # Homologues	3				12-NOV-19	23-NOV-19	R4923853
Total-HpCDD	7.12		0.057	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HpCDD # Homologues	2				12-NOV-19	23-NOV-19	R4923853
Total-TCDF	0.156		0.073	pg/g	12-NOV-19	23-NOV-19	R4923853
Total TCDF # Homologues	1				12-NOV-19	23-NOV-19	R4923853
Total-PeCDF	0.302		0.055	pg/g	12-NOV-19	23-NOV-19	R4923853
Total PeCDF # Homologues	1				12-NOV-19	23-NOV-19	R4923853
Total-HxCDF	0.493		0.066	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HxCDF # Homologues	2				12-NOV-19	23-NOV-19	R4923853
Total-HpCDF	1.40		0.045	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HpCDF # Homologues	1				12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,7,8-TCDD	69.0		25-164	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8-PeCDD	70.0		25-181	%	12-NOV-19	23-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-5 RM16.3E-SED4							
Sampled By: Client on 29-OCT-19 @ 12:05							
Matrix: Sediment							
Dioxins and Furans HR 1613B							
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	62.0		32-141	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	59.0		28-130	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	67.0		23-140	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-OCDD	60.0		17-157	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,7,8-TCDF	59.0		24-169	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8-PeCDF	64.0		24-185	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,4,7,8-PeCDF	69.0		21-178	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	58.0		26-152	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	57.0		26-123	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	61.0		29-147	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	60.0		28-136	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	64.0		28-143	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	71.0		26-138	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	57.0		31-197	%	12-NOV-19	23-NOV-19	R4923853
Lower Bound PCDD/F TEQ (WHO 2005)	0.0960			pg/g	12-NOV-19	23-NOV-19	R4923853
Mid Point PCDD/F TEQ (WHO 2005)	0.242			pg/g	12-NOV-19	23-NOV-19	R4923853
Upper Bound PCDD/F TEQ (WHO 2005)	0.339			pg/g	12-NOV-19	23-NOV-19	R4923853
L2375251-6 RM16.4E-SED5							
Sampled By: Client on 29-OCT-19 @ 11:35							
Matrix: Sediment							
Miscellaneous Parameters							
% Moisture	18.4		0.10	%	12-NOV-19	13-NOV-19	R4919908
All PCB congeners by GC/HRMS							
PCB 1	0.45	M,J,R	0.37	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 2	0.69	J,B	0.38	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 3	1.10	M,J,R	0.43	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 4	<2.8	[U]	2.8	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 10	<1.6	[U]	1.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 9	<1.7	[U]	1.7	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 7	<1.6	[U]	1.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 6	<1.6	[U]	1.6	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 5	<1.9	[U]	1.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 8	2.8	M,J,R	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 14	<1.9	[U]	1.9	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 11	49.3	M,B	2.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 13/12	<2.0	[U]	2.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 15	<2.5	M,U	2.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 19	<0.91	[U]	0.91	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 30/18	1.9	M,J	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 17	1.3	M,J	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 27	<0.91	[U]	0.91	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 24	<0.96	[U]	0.96	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 16	<1.4	M,U	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 32	1.10	M,J,R	0.85	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 34	<1.2	[U]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 23	<1.1	[U]	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 29/26	<1.1	M,U	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 25	<1.1	M,U	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 31	4.5	M,J	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 28/20	8.3	M,J,B	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 21/33	3.0	M,J,R	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-6 RM16.4E-SED5							
Sampled By: Client on 29-OCT-19 @ 11:35							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 22	4.2	M,J	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 36	<1.1	[U]	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 39	<1.1	[U]	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 38	<1.2	[U]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 35	<1.2	M,U	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 37	2.6	M,J,R	1.5	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 54	<0.44	[U]	0.44	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 50/53	<0.91	[U]	0.91	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 45/51	<0.96	[U]	0.96	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 46	<1.1	[U]	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 52	1.80	J,R	0.90	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 73	<0.75	[U]	0.75	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 43	<1.0	[U]	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 69/49	1.00	M,J,R	0.84	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 48	<0.94	[U]	0.94	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 44/47/65	3.60	M,J,B	0.87	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 59/62/75	<0.70	[U]	0.70	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 42	<1.1	[U]	1.1	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 41/71/40	1.40	M,J,R	0.94	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 64	0.98	J,R	0.74	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 72	<0.95	[U]	0.95	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 68	<0.91	[U]	0.91	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 57	<0.99	[U]	0.99	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 58	<1.0	[U]	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 67	<0.87	[U]	0.87	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 63	<0.94	[U]	0.94	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 61/70/74/76	4.50	M,J,R	0.99	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 66	2.80	M,J,R	0.94	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 55	<1.0	[U]	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 56	1.4	M,J,B	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 60	1.0	M,J	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 80	<0.87	[U]	0.87	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 79	<0.91	[U]	0.91	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 78	<1.0	[U]	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 81	<1.2	[U]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 77	<1.2	[U]	1.2	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 104	<0.44	[U]	0.44	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 96	<0.49	[U]	0.49	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 103	<0.77	[U]	0.77	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 94	<0.92	[U]	0.92	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 95	2.30	J,R	0.81	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 100/93/102/98	<0.86	[U]	0.86	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 88/91	<0.85	[U]	0.85	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 84	<0.93	[U]	0.93	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 89	<0.90	[U]	0.90	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 121	<0.63	[U]	0.63	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 92	<0.87	M,U	0.87	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 113/90/101	1.70	M,J,R	0.74	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 83/99	2.30	M,J,R	0.87	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 112	<0.63	[U]	0.63	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 109/119/86/97/125/87	1.70	M,J,R	0.75	pg/g	12-NOV-19	20-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-6 RM16.4E-SED5							
Sampled By: Client on 29-OCT-19 @ 11:35							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 117/116/85/110/115	6.63	M,J	0.71	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 82	<0.99	[U]	0.99	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 111	<0.64	[U]	0.64	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 120	<0.62	[U]	0.62	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 108/124	<0.62	[U]	0.62	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 107	<0.60	[U]	0.60	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 123	<0.77	[U]	0.77	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 106	<0.62	[U]	0.62	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 118	3.36	J,B	0.70	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 122	<0.67	[U]	0.67	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 114	<0.77	[U]	0.77	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 105	<0.71	[U]	0.71	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 127	<0.61	[U]	0.61	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 126	<0.90	[U]	0.90	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 155	<0.24	[U]	0.24	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 152	<0.31	[U]	0.31	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 150	<0.31	[U]	0.31	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 136	0.69	[J]	0.32	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 145	<0.33	[U]	0.33	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 148	<0.44	[U]	0.44	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 151/135	3.00	M,J,R	0.45	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 154	<0.37	M,U	0.37	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 144	<0.43	[U]	0.43	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 147/149	7.51	[J]	0.58	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 134/143	<0.69	[U]	0.69	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 139/140	<0.58	[U]	0.58	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 131	<0.75	[U]	0.75	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 142	<0.66	[U]	0.66	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 132	2.30	J,R	0.67	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 133	<0.64	[U]	0.64	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 165	<0.50	[U]	0.50	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 146	1.40	M,J,R	0.57	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 161	<0.44	[U]	0.44	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 168/153	8.58	[J]	0.49	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 141	<0.59	[U]	0.59	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 130	<0.68	[U]	0.68	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 137/164	<0.51	[U]	0.51	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 138/163/129	11.0	M,J,R	0.57	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 160	<0.48	[U]	0.48	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 158	0.86	[J]	0.41	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 128/166	2.41	M,J	0.53	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 159	<0.43	[U]	0.43	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 162	<0.46	[U]	0.46	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 167	<0.45	[U]	0.45	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 156/157	<0.67	[U]	0.67	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 169	<0.59	[U]	0.59	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 188	<0.33	[U]	0.33	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 179	1.34	[J]	0.36	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 184	<0.36	[U]	0.36	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 176	<0.36	[U]	0.36	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 186	<0.38	[U]	0.38	pg/g	12-NOV-19	20-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-6 RM16.4E-SED5							
Sampled By: Client on 29-OCT-19 @ 11:35							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 178	<0.49	[U]	0.49	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 175	<0.47	[U]	0.47	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 187	3.30	J,R	0.44	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 182	<0.45	[U]	0.45	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 183	1.50	M,J,R	0.44	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 185	<0.48	[U]	0.48	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 174	2.36	[J]	0.47	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 177	1.64	M,J	0.49	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 181	<0.48	[U]	0.48	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 171/173	1.30	[J]	0.49	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 172	0.60	M,J,R	0.48	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 192	<0.39	[U]	0.39	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 180/193	6.00	M,J,R	0.41	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 191	<0.36	[U]	0.36	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 170	2.70	[J]	0.50	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 190	0.73	[J]	0.33	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 189	<0.43	[U]	0.43	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 202	<0.19	[U]	0.19	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 201	<0.21	[U]	0.21	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 204	<0.21	[U]	0.21	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 197	<0.22	[U]	0.22	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 200	<0.20	[U]	0.20	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 198/199	1.70	M,J,R	0.28	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 196	0.46	M,J,R	0.27	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 203	0.72	M,J,R	0.26	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 195	0.82	[J]	0.33	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 194	1.89	[J]	0.30	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 205	<0.34	[U]	0.34	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 208	<0.70	[U]	0.70	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 207	<0.79	[U]	0.79	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 206	1.8	M,J	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
PCB 209	0.76	M,J	0.26	pg/g	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 1	24.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 3	29.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 4	21.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 15	25.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 19	19.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 37	25.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 54	18.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 81	26.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 77	28.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 104	27.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 123	28.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 118	29.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 114	26.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 105	28.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 126	26.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 155	33.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 167	29.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 156/157	27.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 169	26.0		10-145	%	12-NOV-19	20-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-6 RM16.4E-SED5							
Sampled By: Client on 29-OCT-19 @ 11:35							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
Surrogate: 13C12 PCB 188	34.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 189	28.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 202	33.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 205	27.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 208	32.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 206	27.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 209	30.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 28	27.0		5-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 111	27.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Surrogate: 13C12 PCB 178	29.0		10-145	%	12-NOV-19	20-NOV-19	R4923853
Total MonoCB	2.24	[J]	0.37	pg/g	12-NOV-19	20-NOV-19	R4923853
Total DiCB	52.1	[J]	1.4	pg/g	12-NOV-19	20-NOV-19	R4923853
Total TriCB	26.9	[J]	0.85	pg/g	12-NOV-19	20-NOV-19	R4923853
Total TetraCB	18.5	[J]	0.44	pg/g	12-NOV-19	20-NOV-19	R4923853
Total PentaCB	18.0	[J]	0.44	pg/g	12-NOV-19	20-NOV-19	R4923853
Total HexaCB	37.7	[J]	0.24	pg/g	12-NOV-19	20-NOV-19	R4923853
Total HeptaCB	21.5	[J]	0.33	pg/g	12-NOV-19	20-NOV-19	R4923853
Total OctaCB	5.59	[J]	0.19	pg/g	12-NOV-19	20-NOV-19	R4923853
Total NonaCB	1.84	[J]	0.70	pg/g	12-NOV-19	20-NOV-19	R4923853
DecaCB	0.76	[J]	0.26	pg/g	12-NOV-19	20-NOV-19	R4923853
Total PCB	185	[J]	1.0	pg/g	12-NOV-19	20-NOV-19	R4923853
Lower Bound PCB TEQ (WHO 2005)	0.000101			pg/g	12-NOV-19	20-NOV-19	R4923853
Mid Point PCB TEQ (WHO 2005)	0.0542			pg/g	12-NOV-19	20-NOV-19	R4923853
Upper Bound PCB TEQ (WHO 2005)	0.108			pg/g	12-NOV-19	20-NOV-19	R4923853
PBDEs by EPA 1614							
BDE 10	<0.093	[U]	0.093	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 7	<0.085	[U]	0.085	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 8/11	<0.061	[U]	0.061	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 12/13	0.210	M,J,R	0.052	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 15	0.241	[J]	0.045	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 30	<0.14	[U]	0.14	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 32	<0.096	[U]	0.096	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 17/25	<0.12	[U]	0.12	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 28/33	0.39	[J]	0.12	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 35	0.208	M,J	0.078	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 37	<0.079	M,U	0.079	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 75	<0.085	[U]	0.085	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 51	<0.074	[U]	0.074	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 49	<0.11	[U]	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 71	<0.11	[U]	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 47	4.63	J,B	0.075	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 79	<0.069	[U]	0.069	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 66	<0.11	[U]	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 77	<0.073	[U]	0.073	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 100	1.39	M,J,B	0.053	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 119/120	0.15	M,J,R	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 99	5.49	J,B	0.084	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 116	<0.16	[U]	0.16	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 118	<0.11	[U]	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 85	0.400	M,J,R	0.098	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 126	<0.057	[U]	0.057	pg/g	12-NOV-19	03-DEC-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-6 RM16.4E-SED5							
Sampled By: Client on 29-OCT-19 @ 11:35							
Matrix: Sediment							
PBDEs by EPA 1614							
BDE 105	<0.11	[U]	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 155	<0.099	[U]	0.099	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 154	0.88	M,J,R	0.13	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 153	0.86	M,J,R	0.28	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 140	<0.28	[U]	0.28	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 138/166	<0.47	[U]	0.47	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 156	<0.54	[U]	0.54	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 128	<0.48	[U]	0.48	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 184	<0.058	[U]	0.058	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 183	<0.082	[U]	0.082	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 191	<0.12	[U]	0.12	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 181	<0.11	[U]	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 190	<0.16	[U]	0.16	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 197	<0.087	[U]	0.087	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 203	<0.11	[U]	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 196	<0.11	[U]	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 208	<0.20	[U]	0.20	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 207	<0.20	[U]	0.20	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 206	<0.22	[U]	0.22	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 209	<0.58	[U]	0.58	pg/g	12-NOV-19	03-DEC-19	R4923853
PBEB	<0.072	[U]	0.072	pg/g	12-NOV-19	03-DEC-19	R4923853
HBB	1.81	J,B	0.13	pg/g	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 15	45.0		20-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 28	59.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 47	70.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 77	79.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 100	55.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 99	54.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 126	68.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 154	43.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 153	55.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 183	56.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 197	44.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 207	58.0		20-200	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 209	26.0		20-200	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C6 HBB	57.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 138 Cleanup	34.0		30-135	%	12-NOV-19	03-DEC-19	R4923853
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.034	[U]	0.034	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8-PeCDD	0.022	M,J	0.014	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8-HxCDD	0.022	M,J	0.020	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,6,7,8-HxCDD	0.061	M,J,R	0.020	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8,9-HxCDD	0.034	M,J,R	0.020	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,6,7,8-HpCDD	0.804	J,B	0.016	pg/g	12-NOV-19	23-NOV-19	R4923853
OCDD	6.13		0.017	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,7,8-TCDF	0.124	M,J	0.031	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8-PeCDF	0.046	M,J	0.019	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,4,7,8-PeCDF	<0.014	[U]	0.014	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8-HxCDF	<0.017	[U]	0.017	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,6,7,8-HxCDF	<0.016	[U]	0.016	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,4,6,7,8-HxCDF	0.023	M,J,R	0.015	pg/g	12-NOV-19	23-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-6 RM16.4E-SED5							
Sampled By: Client on 29-OCT-19 @ 11:35							
Matrix: Sediment							
Dioxins and Furans HR 1613B							
1,2,3,7,8,9-HxCDF	0.074	M,J,B	0.019	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,6,7,8-HpCDF	0.100	M,J	0.014	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8,9-HpCDF	0.019	M,J,R	0.015	pg/g	12-NOV-19	23-NOV-19	R4923853
OCDF	0.190	M,J,R	0.016	pg/g	12-NOV-19	23-NOV-19	R4923853
Total-TCDD	<0.034	[U]	0.034	pg/g	12-NOV-19	23-NOV-19	R4923853
Total TCDD # Homologues	0				12-NOV-19	23-NOV-19	R4923853
Total-PeCDD	0.022		0.014	pg/g	12-NOV-19	23-NOV-19	R4923853
Total PeCDD # Homologues	1				12-NOV-19	23-NOV-19	R4923853
Total-HxCDD	0.259		0.020	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HxCDD # Homologues	2				12-NOV-19	23-NOV-19	R4923853
Total-HpCDD	1.59		0.016	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HpCDD # Homologues	2				12-NOV-19	23-NOV-19	R4923853
Total-TCDF	0.213		0.031	pg/g	12-NOV-19	23-NOV-19	R4923853
Total TCDF # Homologues	2				12-NOV-19	23-NOV-19	R4923853
Total-PeCDF	0.046		0.019	pg/g	12-NOV-19	23-NOV-19	R4923853
Total PeCDF # Homologues	1				12-NOV-19	23-NOV-19	R4923853
Total-HxCDF	0.117		0.019	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HxCDF # Homologues	2				12-NOV-19	23-NOV-19	R4923853
Total-HpCDF	0.220		0.015	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HpCDF # Homologues	2				12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,7,8-TCDD	108.0		25-164	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8-PeCDD	112.0		25-181	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	100.0		32-141	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	90.0		28-130	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	100.0		23-140	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-OCDD	94.0		17-157	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,7,8-TCDF	94.0		24-169	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8-PeCDF	100.0		24-185	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,4,7,8-PeCDF	109.0		21-178	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	90.0		26-152	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	89.0		26-123	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	95.0		29-147	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	90.0		28-136	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	94.0		28-143	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	108.0		26-138	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	94.0		31-197	%	12-NOV-19	23-NOV-19	R4923853
Lower Bound PCDD/F TEQ (WHO 2005)	0.0561			pg/g	12-NOV-19	23-NOV-19	R4923853
Mid Point PCDD/F TEQ (WHO 2005)	0.0889			pg/g	12-NOV-19	23-NOV-19	R4923853
Upper Bound PCDD/F TEQ (WHO 2005)	0.110			pg/g	12-NOV-19	23-NOV-19	R4923853
L2375251-7 RM19.4W-SED6							
Sampled By: Client on 28-OCT-19 @ 12:00							
Matrix: Sediment							
Miscellaneous Parameters							
% Moisture	38.9		0.10	%	12-NOV-19	13-NOV-19	R4919908
All PCB congeners by GC/HRMS							
PCB 1	0.84	M,J,R	0.43	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 2	1.50	M,J,R	0.41	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 3	1.50	M,J,R	0.43	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 4	<2.9	[U]	2.9	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 10	<1.4	[U]	1.4	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 9	<1.4	[U]	1.4	pg/g	12-NOV-19	21-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-7 RM19.4W-SED6							
Sampled By: Client on 28-OCT-19 @ 12:00							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 7	<1.4	[U]	1.4	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 6	<1.3	[U]	1.3	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 5	<1.6	[U]	1.6	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 8	3.4	J,R	1.2	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 14	<1.3	[U]	1.3	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 11	89.5	M,B	1.4	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 13/12	<1.3	[U]	1.3	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 15	3.8	M,J,R	1.4	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 19	<0.70	[U]	0.70	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 30/18	2.78	[J]	0.56	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 17	1.77	[J]	0.66	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 27	<0.49	[U]	0.49	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 24	<0.51	[U]	0.51	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 16	1.80	[J]	0.77	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 32	1.30	M,J,R	0.45	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 34	<0.64	[U]	0.64	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 23	<0.60	[U]	0.60	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 29/26	1.10	[J]	0.59	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 25	0.59	M,J,R	0.58	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 31	8.84	M,J	0.56	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 28/20	13.8	J,B	0.59	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 21/33	7.61	J,B	0.61	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 22	4.50	[J]	0.62	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 36	<0.57	[U]	0.57	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 39	<0.60	[U]	0.60	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 38	<0.62	[U]	0.62	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 35	1.20	M,J,R	0.64	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 37	5.30	M,J,B	0.71	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 54	<0.31	[U]	0.31	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 50/53	0.68	M,J,R	0.56	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 45/51	1.57	M,J	0.59	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 46	<0.65	M,U	0.65	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 52	8.59	J,B	0.56	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 73	<0.46	[U]	0.46	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 43	<0.64	[U]	0.64	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 69/49	4.90	[J]	0.52	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 48	1.20	M,J	0.58	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 44/47/65	8.76	J,B	0.54	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 59/62/75	0.63	J,R	0.43	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 42	2.00	J,R	0.65	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 41/71/40	4.55	M,J	0.58	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 64	4.68	[J]	0.45	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 72	<0.54	M,U	0.54	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 68	<0.52	M,U	0.52	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 57	<0.56	[U]	0.56	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 58	<0.57	[U]	0.57	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 67	<0.49	[U]	0.49	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 63	<0.53	M,U	0.53	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 61/70/74/76	13.1	M,J	0.56	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 66	9.80	M,J,R	0.53	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 55	<0.58	[U]	0.58	pg/g	12-NOV-19	21-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-7 RM19.4W-SED6							
Sampled By: Client on 28-OCT-19 @ 12:00							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 56	4.24	J,B	0.58	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 60	3.07	[J]	0.57	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 80	<0.49	[U]	0.49	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 79	<0.51	[U]	0.51	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 78	<0.56	[U]	0.56	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 81	<0.63	[U]	0.63	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 77	1.99	[J]	0.59	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 104	<0.29	[U]	0.29	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 96	<0.28	[U]	0.28	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 103	<0.43	[U]	0.43	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 94	<0.51	[U]	0.51	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 95	7.52	M,J	0.45	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 100/93/102/98	<0.48	[U]	0.48	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 88/91	1.80	M,J,R	0.47	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 84	3.11	M,J	0.51	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 89	<0.50	[U]	0.50	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 121	<0.35	[U]	0.35	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 92	2.15	[J]	0.48	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 113/90/101	12.9	[J]	0.41	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 83/99	9.01	[J]	0.48	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 112	<0.35	[U]	0.35	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 109/119/86/97/125/87	10.9	M,J	0.42	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 117/116/85/110/115	19.9	M	0.39	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 82	2.00	M,J,R	0.55	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 111	<0.36	[U]	0.36	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 120	<0.34	M,U	0.34	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 108/124	0.67	J,R	0.37	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 107	0.47	M,J,R	0.35	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 123	<0.43	M,J,R	0.43	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 106	<0.36	[U]	0.36	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 118	13.2	[J]	0.39	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 122	<0.40	[U]	0.40	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 114	0.44	[J]	0.43	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 105	5.92	[J]	0.41	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 127	<0.36	[U]	0.36	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 126	<0.47	M,U	0.47	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 155	<0.19	[U]	0.19	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 152	<0.24	[U]	0.24	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 150	<0.24	[U]	0.24	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 136	1.02	M,J	0.24	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 145	<0.26	[U]	0.26	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 148	<0.34	[U]	0.34	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 151/135	3.77	M,J	0.34	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 154	<0.28	[U]	0.28	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 144	0.40	[J]	0.33	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 147/149	11.3	M,J	0.34	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 134/143	0.75	M,J,R	0.40	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 139/140	<0.34	[U]	0.34	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 131	<0.43	[U]	0.43	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 142	<0.39	[U]	0.39	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 132	4.39	[J]	0.39	pg/g	12-NOV-19	21-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-7 RM19.4W-SED6							
Sampled By: Client on 28-OCT-19 @ 12:00							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 133	<0.37	[U]	0.37	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 165	<0.29	[U]	0.29	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 146	2.60	[J]	0.33	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 161	<0.26	[U]	0.26	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 168/153	14.6	[J]	0.28	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 141	2.10	M,J,R	0.35	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 130	1.08	[J]	0.39	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 137/164	1.50	M,J,R	0.30	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 138/163/129	17.7		0.33	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 160	<0.28	[U]	0.28	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 158	1.20	M,J,R	0.24	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 128/166	2.50	[J]	0.31	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 159	<0.25	[U]	0.25	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 162	<0.27	[U]	0.27	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 167	0.86	M,J,R	0.28	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 156/157	1.90	M,J,R	0.37	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 169	<0.33	[U]	0.33	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 188	<0.12	[U]	0.12	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 179	1.04	M,J	0.12	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 184	<0.12	M,U	0.12	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 176	0.51	[J]	0.12	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 186	<0.13	[U]	0.13	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 178	0.55	J,R	0.16	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 175	<0.16	[U]	0.16	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 187	5.45	M,J	0.15	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 182	<0.15	[U]	0.15	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 183	1.60	M,J,R	0.15	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 185	0.22	M,J	0.16	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 174	3.22	M,J	0.16	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 177	2.05	[J]	0.16	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 181	<0.16	[U]	0.16	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 171/173	0.91	[J]	0.16	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 172	0.73	M,J	0.16	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 192	<0.13	[U]	0.13	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 180/193	7.83	[J]	0.14	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 191	<0.12	[U]	0.12	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 170	2.90	M,J,R	0.17	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 190	0.29	M,J,R	0.11	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 189	<0.17	[U]	0.17	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 202	0.52	M,J,R	0.15	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 201	0.28	M,J,R	0.16	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 204	<0.16	[U]	0.16	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 197	0.19	M,J,R	0.17	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 200	0.31	M,J	0.16	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 198/199	3.10	J,R	0.22	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 196	0.75	M,J	0.21	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 203	1.60	J,R	0.20	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 195	0.67	[J]	0.24	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 194	1.95	[J]	0.22	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 205	<0.25	[U]	0.25	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 208	0.86	M,J	0.38	pg/g	12-NOV-19	21-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-7 RM19.4W-SED6							
Sampled By: Client on 28-OCT-19 @ 12:00							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 207	<0.42	[U]	0.42	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 206	1.60	[J]	0.69	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 209	3.30	M,J,R	0.14	pg/g	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 1	45.0		5-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 3	55.0		5-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 4	42.0		5-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 15	67.0		5-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 19	45.0		5-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 37	89.0		5-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 54	51.0		5-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 81	89.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 77	99.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 104	80.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 123	89.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 118	90.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 114	90.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 105	95.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 126	87.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 155	107.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 167	94.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 156/157	93.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 169	94.0	R	10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 188	113.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 189	97.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 202	109.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 205	90.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 208	101.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 206	92.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 209	105.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 28	86.0		5-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 111	93.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 178	99.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Total MonoCB	3.84	[J]	0.41	pg/g	12-NOV-19	21-NOV-19	R4923853
Total DiCB	96.7	[J]	1.2	pg/g	12-NOV-19	21-NOV-19	R4923853
Total TriCB	50.6	[J]	0.45	pg/g	12-NOV-19	21-NOV-19	R4923853
Total TetraCB	69.8	[J]	0.31	pg/g	12-NOV-19	21-NOV-19	R4923853
Total PentaCB	90.0	[J]	0.28	pg/g	12-NOV-19	21-NOV-19	R4923853
Total HexaCB	67.7	[J]	0.19	pg/g	12-NOV-19	21-NOV-19	R4923853
Total HeptaCB	27.3	[J]	0.11	pg/g	12-NOV-19	21-NOV-19	R4923853
Total OctaCB	9.37	[J]	0.15	pg/g	12-NOV-19	21-NOV-19	R4923853
Total NonaCB	2.46	[J]	0.38	pg/g	12-NOV-19	21-NOV-19	R4923853
DecaCB	3.30	[J]	0.14	pg/g	12-NOV-19	21-NOV-19	R4923853
Total PCB	421	[J]	1.0	pg/g	12-NOV-19	21-NOV-19	R4923853
Lower Bound PCB TEQ (WHO 2005)	0.000786			pg/g	12-NOV-19	21-NOV-19	R4923853
Mid Point PCB TEQ (WHO 2005)	0.0294			pg/g	12-NOV-19	21-NOV-19	R4923853
Upper Bound PCB TEQ (WHO 2005)	0.0580			pg/g	12-NOV-19	21-NOV-19	R4923853
PBDEs by EPA 1614							
BDE 10	<0.074	[U]	0.074	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 7	0.440	M,J,R	0.068	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 8/11	0.471	M,J	0.049	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 12/13	0.220	M,J,R	0.042	pg/g	12-NOV-19	03-DEC-19	R4923853

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-7 RM19.4W-SED6							
Sampled By: Client on 28-OCT-19 @ 12:00							
Matrix: Sediment							
PBDEs by EPA 1614							
BDE 15	0.490	J,R	0.036	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 30	<0.13	[U]	0.13	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 32	<0.092	[U]	0.092	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 17/25	4.13	[J]	0.12	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 28/33	2.60	M,J,R	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 35	0.190	M,J,R	0.075	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 37	<0.076	M,U	0.076	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 75	<0.058	[U]	0.058	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 51	0.801	[J]	0.051	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 49	6.19	[J]	0.073	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 71	0.380	J,R	0.077	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 47	69.1		0.052	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 79	<0.047	[U]	0.047	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 66	1.35	[J]	0.077	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 77	<0.050	[U]	0.050	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 100	17.2		0.064	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 119/120	0.27	M,J,R	0.12	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 99	56.3		0.093	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 116	<0.19	[U]	0.19	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 118	<0.13	[U]	0.13	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 85	2.11	M,J	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 126	<0.065	[U]	0.065	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 105	<0.13	[U]	0.13	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 155	0.57	M,J,R	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 154	5.62	[J]	0.15	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 153	6.09	[J]	0.32	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 140	<0.33	[U]	0.33	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 138/166	<0.55	[U]	0.55	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 156	<0.63	[U]	0.63	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 128	<0.56	[U]	0.56	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 184	0.230	M,J	0.065	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 183	1.64	[J]	0.091	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 191	<0.13	[U]	0.13	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 181	<0.13	[U]	0.13	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 190	<0.18	[U]	0.18	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 197	1.20	M,J,R	0.15	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 203	2.05	M,J	0.18	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 196	1.90	M,J	0.18	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 208	2.80	M,J,R	0.34	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 207	7.75	[J]	0.34	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 206	11.4	[J]	0.38	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 209	107		0.82	pg/g	12-NOV-19	03-DEC-19	R4923853
PBEB	0.149	M,J	0.070	pg/g	12-NOV-19	03-DEC-19	R4923853
HBB	2.46	J,B	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 15	53.0		20-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 28	63.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 47	78.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 77	83.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 100	57.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 99	62.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 126	71.0		25-150	%	12-NOV-19	03-DEC-19	R4923853

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-7 RM19.4W-SED6							
Sampled By: Client on 28-OCT-19 @ 12:00							
Matrix: Sediment							
PBDEs by EPA 1614							
Surrogate: 13C12 BDE 154	48.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 153	61.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 183	71.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 197	50.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 207	64.0		20-200	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 209	30.0		20-200	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C6 HBB	60.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 138 Cleanup	35.0		30-135	%	12-NOV-19	03-DEC-19	R4923853
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.068	[U]	0.068	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8-PeCDD	0.056	M,J,R	0.029	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8-HxCDD	0.058	M,J	0.044	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,6,7,8-HxCDD	0.380	M,J	0.043	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8,9-HxCDD	0.087	M,J,R	0.043	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,6,7,8-HpCDD	6.26		0.032	pg/g	12-NOV-19	23-NOV-19	R4923853
OCDD	45.8		0.051	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,7,8-TCDF	0.145	M,J	0.047	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8-PeCDF	0.087	M,J	0.033	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,4,7,8-PeCDF	0.054	M,J,R	0.026	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8-HxCDF	0.092	[J]	0.025	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,6,7,8-HxCDF	0.052	M,J,R	0.025	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,4,6,7,8-HxCDF	0.082	M,J,R	0.022	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8,9-HxCDF	0.119	M,J,B	0.029	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,6,7,8-HpCDF	0.884	[J]	0.023	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8,9-HpCDF	0.044	M,J,R	0.026	pg/g	12-NOV-19	23-NOV-19	R4923853
OCDF	1.56	[J]	0.031	pg/g	12-NOV-19	23-NOV-19	R4923853
Total-TCDD	<0.068	[U]	0.068	pg/g	12-NOV-19	23-NOV-19	R4923853
Total TCDD # Homologues	0				12-NOV-19	23-NOV-19	R4923853
Total-PeCDD	0.067		0.029	pg/g	12-NOV-19	23-NOV-19	R4923853
Total PeCDD # Homologues	1				12-NOV-19	23-NOV-19	R4923853
Total-HxCDD	1.28		0.044	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HxCDD # Homologues	4				12-NOV-19	23-NOV-19	R4923853
Total-HpCDD	12.7		0.032	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HpCDD # Homologues	2				12-NOV-19	23-NOV-19	R4923853
Total-TCDF	0.355		0.047	pg/g	12-NOV-19	23-NOV-19	R4923853
Total TCDF # Homologues	3				12-NOV-19	23-NOV-19	R4923853
Total-PeCDF	0.403		0.033	pg/g	12-NOV-19	23-NOV-19	R4923853
Total PeCDF # Homologues	2				12-NOV-19	23-NOV-19	R4923853
Total-HxCDF	1.31		0.029	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HxCDF # Homologues	4				12-NOV-19	23-NOV-19	R4923853
Total-HpCDF	2.51		0.026	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HpCDF # Homologues	2				12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,7,8-TCDD	80.0		25-164	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8-PeCDD	89.0		25-181	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	76.0		32-141	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	72.0		28-130	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	79.0		23-140	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-OCDD	73.0		17-157	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,7,8-TCDF	71.0		24-169	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8-PeCDF	74.0		24-185	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,4,7,8-PeCDF	81.0		21-178	%	12-NOV-19	23-NOV-19	R4923853

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-7 RM19.4W-SED6							
Sampled By: Client on 28-OCT-19 @ 12:00							
Matrix: Sediment							
Dioxins and Furans HR 1613B							
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	69.0		26-152	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	70.0		26-123	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	77.0		29-147	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	72.0		28-136	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	73.0		28-143	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	83.0		26-138	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	75.0		31-197	%	12-NOV-19	23-NOV-19	R4923853
Lower Bound PCDD/F TEQ (WHO 2005)	0.168			pg/g	12-NOV-19	23-NOV-19	R4923853
Mid Point PCDD/F TEQ (WHO 2005)	0.296			pg/g	12-NOV-19	23-NOV-19	R4923853
Upper Bound PCDD/F TEQ (WHO 2005)	0.330			pg/g	12-NOV-19	23-NOV-19	R4923853
L2375251-8 RM19.5W-SED7							
Sampled By: Client on 28-OCT-19 @ 14:30							
Matrix: Sediment							
Miscellaneous Parameters							
% Moisture	40.9		0.10	%	12-NOV-19	13-NOV-19	R4919908
All PCB congeners by GC/HRMS							
PCB 1	1.10	M,J,R	0.40	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 2	1.47	M,J,B	0.41	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 3	2.30	M,J,R	0.47	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 4	<2.8	M,U	2.8	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 10	<1.4	[U]	1.4	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 9	<1.4	[U]	1.4	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 7	<1.4	[U]	1.4	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 6	<1.3	M,U	1.3	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 5	<1.6	[U]	1.6	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 8	6.4	M,J,R	1.2	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 14	<1.7	[U]	1.7	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 11	108	M,B	1.9	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 13/12	<1.8	[U]	1.8	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 15	7.6	[J]	2.0	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 19	1.60	M,J,R	0.86	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 30/18	10.4	M,J	0.75	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 17	7.44	[J]	0.88	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 27	0.97	M,J	0.66	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 24	<0.69	[U]	0.69	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 16	6.2	M,J	1.0	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 32	4.50	M,J,R	0.61	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 34	<1.1	[U]	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 23	<1.1	[U]	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 29/26	4.6	[J]	1.0	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 25	2.7	M,J	1.0	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 31	32.0		0.99	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 28/20	55.2		1.0	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 21/33	20.0	M	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 22	12.3	M,J	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 36	<1.0	M,U	1.0	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 39	<1.1	[U]	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 38	<1.1	[U]	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 35	2.5	M,J	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 37	14.6	J,B	1.3	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 54	<0.60	[U]	0.60	pg/g	12-NOV-19	21-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-8 RM19.5W-SED7							
Sampled By: Client on 28-OCT-19 @ 14:30							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 50/53	5.41	[J]	0.64	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 45/51	6.29	[J]	0.67	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 46	2.21	[J]	0.74	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 52	89.2	M	0.63	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 73	1.50	M,J,R	0.52	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 43	2.70	M,J,R	0.72	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 69/49	61.1	M	0.59	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 48	11.2	M,J	0.66	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 44/47/65	68.8	M	0.61	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 59/62/75	6.95	M,J	0.49	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 42	21.7	M	0.74	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 41/71/40	32.9		0.65	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 64	31.8		0.52	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 72	3.30	M,J,R	0.93	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 68	2.60	M,J	0.89	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 57	<0.97	[U]	0.97	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 58	1.04	M,J	0.98	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 67	2.50	M,J,R	0.85	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 63	4.32	[J]	0.92	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 61/70/74/76	154		0.97	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 66	101	M	0.92	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 55	<1.0	[U]	1.0	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 56	36.0		1.0	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 60	10.0	[J]	0.98	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 80	<0.85	[U]	0.85	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 79	2.25	M,J	0.89	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 78	<0.98	[U]	0.98	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 81	<1.1	[U]	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 77	7.1	M,J	1.0	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 104	<0.29	[U]	0.29	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 96	0.44	M,J,R	0.31	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 103	2.73	[J]	0.73	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 94	<0.87	[U]	0.87	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 95	83.1	M	0.77	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 100/93/102/98	7.78	M,J	0.82	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 88/91	19.3		0.81	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 84	31.5		0.88	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 89	1.00	M,J,R	0.86	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 121	<0.60	[U]	0.60	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 92	35.7		0.83	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 113/90/101	169		0.70	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 83/99	104		0.83	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 112	<0.59	[U]	0.59	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 109/119/86/97/125/87	98.3	M	0.71	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 117/116/85/110/115	222	M	0.67	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 82	19.5		0.94	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 111	<0.61	[U]	0.61	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 120	1.75	[J]	0.58	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 108/124	3.00	J,R	0.65	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 107	15.1	M,J	0.63	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 123	<0.79	[U]	0.79	pg/g	12-NOV-19	21-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-8 RM19.5W-SED7							
Sampled By: Client on 28-OCT-19 @ 14:30							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 106	<0.65	[U]	0.65	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 118	160		0.72	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 122	2.30	J,R	0.70	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 114	2.20	M,J,R	0.77	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 105	44.6	M	0.75	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 127	<0.64	[U]	0.64	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 126	<0.85	[U]	0.85	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 155	<0.19	[U]	0.19	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 152	<0.24	[U]	0.24	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 150	<0.24	[U]	0.24	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 136	14.3	[J]	0.24	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 145	<0.25	[U]	0.25	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 148	<0.33	[U]	0.33	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 151/135	46.5		0.34	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 154	3.20	J,R	0.28	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 144	6.40	M,J	0.33	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 147/149	123		0.59	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 134/143	9.56	[J]	0.70	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 139/140	2.70	M,J,R	0.59	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 131	2.30	J,R	0.76	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 142	<0.68	[U]	0.68	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 132	66.1		0.69	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 133	3.58	M,J	0.65	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 165	<0.51	[U]	0.51	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 146	33.1		0.57	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 161	<0.45	[U]	0.45	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 168/153	153		0.49	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 141	24.7		0.60	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 130	13.0	J,R	0.69	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 137/164	18.7		0.52	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 138/163/129	188		0.58	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 160	<0.49	[U]	0.49	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 158	13.0	[J]	0.42	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 128/166	32.1		0.53	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 159	1.16	[J]	0.43	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 162	0.79	M,J	0.47	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 167	6.36	[J]	0.51	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 156/157	21.8	[J]	0.65	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 169	<0.53	[U]	0.53	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 188	<0.33	[U]	0.33	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 179	11.3	[J]	0.33	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 184	<0.32	[U]	0.32	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 176	3.52	[J]	0.32	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 186	<0.34	[U]	0.34	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 178	4.90	M,J,R	0.44	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 175	1.30	J,R	0.42	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 187	34.6		0.40	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 182	0.45	J,R	0.41	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 183	16.4	M,J	0.39	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 185	1.78	M,J	0.43	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 174	25.6	M	0.43	pg/g	12-NOV-19	21-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-8 RM19.5W-SED7							
Sampled By: Client on 28-OCT-19 @ 14:30							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 177	14.4	[J]	0.44	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 181	<0.43	[U]	0.43	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 171/173	7.95	[J]	0.44	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 172	4.99	[J]	0.43	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 192	<0.35	[U]	0.35	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 180/193	59.1		0.37	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 191	1.17	[J]	0.33	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 170	24.5		0.45	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 190	3.57	M,J	0.30	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 189	1.58	[J]	0.32	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 202	4.10	[J]	0.16	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 201	2.40	J,R	0.15	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 204	<0.15	[U]	0.15	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 197	0.85	M,J,R	0.16	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 200	1.80	M,J,R	0.15	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 198/199	19.8	M	0.21	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 196	8.00	M,J,R	0.20	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 203	11.7	M,J	0.19	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 195	5.00	[J]	0.23	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 194	13.8	[J]	0.21	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 205	1.40	[J]	0.21	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 208	3.13	[J]	0.52	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 207	1.37	[J]	0.56	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 206	8.61	[J]	0.91	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 209	15.5	[J]	0.13	pg/g	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 1	52.0		5-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 3	55.0		5-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 4	46.0		5-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 15	72.0		5-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 19	48.0		5-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 37	91.0		5-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 54	51.0		5-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 81	86.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 77	97.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 104	88.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 123	86.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 118	89.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 114	85.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 105	92.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 126	88.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 155	104.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 167	94.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 156/157	93.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 169	100.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 188	108.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 189	112.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 202	99.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 205	94.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 208	102.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 206	93.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 209	105.0		10-145	%	12-NOV-19	21-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-8 RM19.5W-SED7							
Sampled By: Client on 28-OCT-19 @ 14:30							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
Surrogate: 13C12 PCB 28	77.0		5-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 111	88.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 178	94.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Total MonoCB	4.87	[J]	0.40	pg/g	12-NOV-19	21-NOV-19	R4923853
Total DiCB	122	[J]	1.2	pg/g	12-NOV-19	21-NOV-19	R4923853
Total TriCB	175	[J]	0.61	pg/g	12-NOV-19	21-NOV-19	R4923853
Total TetraCB	666	[J]	0.49	pg/g	12-NOV-19	21-NOV-19	R4923853
Total PentaCB	1020	[J]	0.29	pg/g	12-NOV-19	21-NOV-19	R4923853
Total HexaCB	783	[J]	0.19	pg/g	12-NOV-19	21-NOV-19	R4923853
Total HeptaCB	217	[J]	0.30	pg/g	12-NOV-19	21-NOV-19	R4923853
Total OctaCB	68.9	[J]	0.15	pg/g	12-NOV-19	21-NOV-19	R4923853
Total NonaCB	13.1	[J]	0.52	pg/g	12-NOV-19	21-NOV-19	R4923853
DecaCB	15.5	[J]	0.13	pg/g	12-NOV-19	21-NOV-19	R4923853
Total PCB	3090	[J]	1.0	pg/g	12-NOV-19	21-NOV-19	R4923853
Lower Bound PCB TEQ (WHO 2005)	0.00774			pg/g	12-NOV-19	21-NOV-19	R4923853
Mid Point PCB TEQ (WHO 2005)	0.0584			pg/g	12-NOV-19	21-NOV-19	R4923853
Upper Bound PCB TEQ (WHO 2005)	0.109			pg/g	12-NOV-19	21-NOV-19	R4923853
PBDEs by EPA 1614							
BDE 10	<0.016	[U]	0.016	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 7	0.131	M,J	0.015	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 8/11	0.150	M,J,R	0.010	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 12/13	<0.0089	[U]	0.0089	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 15	0.355	[J]	0.0077	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 30	<0.048	[U]	0.048	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 32	<0.034	[U]	0.034	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 17/25	1.40	M,J,R	0.043	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 28/33	1.12	[J]	0.042	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 35	0.230	M,J,R	0.028	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 37	1.33	J,B	0.028	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 75	0.072	J,R	0.020	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 51	0.503	[J]	0.018	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 49	2.83	[J]	0.026	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 71	0.130	J,R	0.027	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 47	39.8		0.019	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 79	<0.016	[U]	0.016	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 66	<0.027	[U]	0.027	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 77	<0.017	[U]	0.017	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 100	8.95	[J]	0.029	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 119/120	0.217	J,B	0.056	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 99	34.7		0.042	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 116	<0.087	[U]	0.087	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 118	<0.060	[U]	0.060	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 85	1.46	[J]	0.052	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 126	<0.031	[U]	0.031	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 105	<0.061	[U]	0.061	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 155	0.240	M,J,R	0.051	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 154	3.01	[J]	0.070	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 153	3.00	[J]	0.097	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 140	<0.10	[U]	0.10	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 138/166	0.80	M,J,R	0.17	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 156	<0.20	[U]	0.20	pg/g	12-NOV-19	03-DEC-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-8 RM19.5W-SED7							
Sampled By: Client on 28-OCT-19 @ 14:30							
Matrix: Sediment							
PBDEs by EPA 1614							
BDE 128	<0.18	[U]	0.18	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 184	<0.028	[U]	0.028	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 183	0.487	[J]	0.040	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 191	<0.056	[U]	0.056	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 181	<0.055	[U]	0.055	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 190	<0.077	[U]	0.077	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 197	0.210	M,J,R	0.067	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 203	0.120	M,J,R	0.082	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 196	0.217	M,J	0.084	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 208	0.81	[J]	0.13	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 207	1.85	[J]	0.13	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 206	3.77	[J]	0.14	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 209	64.5		0.30	pg/g	12-NOV-19	03-DEC-19	R4923853
PBEB	<0.023	[U]	0.023	pg/g	12-NOV-19	03-DEC-19	R4923853
HBB	1.18	J,B	0.047	pg/g	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 15	73.0		20-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 28	83.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 47	92.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 77	99.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 100	69.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 99	74.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 126	81.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 154	55.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 153	74.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 183	75.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 197	56.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 207	72.0		20-200	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 209	39.0		20-200	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C6 HBB	75.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 138 Cleanup	40.0		30-135	%	12-NOV-19	03-DEC-19	R4923853
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.17	[U]	0.17	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8-PeCDD	0.099	M,J,R	0.082	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8-HxCDD	0.200	M,J,R	0.081	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,6,7,8-HxCDD	0.829	M,J	0.078	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8,9-HxCDD	0.456	M,J	0.079	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,6,7,8-HpCDD	20.8		0.11	pg/g	12-NOV-19	23-NOV-19	R4923853
OCDD	261		0.14	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,7,8-TCDF	0.29	M,J	0.11	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8-PeCDF	0.150	M,J,R	0.065	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,4,7,8-PeCDF	0.208	[J]	0.048	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8-HxCDF	0.210	M,J,R	0.059	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,6,7,8-HxCDF	0.140	M,J,R	0.061	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,4,6,7,8-HxCDF	0.290	EMPC	0.056	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8,9-HxCDF	0.144	M,J,B	0.069	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,6,7,8-HpCDF	2.71	[J]	0.052	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8,9-HpCDF	<0.055	[U]	0.055	pg/g	12-NOV-19	23-NOV-19	R4923853
OCDF	5.49	[J]	0.081	pg/g	12-NOV-19	23-NOV-19	R4923853
Total-TCDD	0.23		0.17	pg/g	12-NOV-19	23-NOV-19	R4923853
Total TCDD # Homologues	1				12-NOV-19	23-NOV-19	R4923853
Total-PeCDD	0.443		0.082	pg/g	12-NOV-19	23-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-8 RM19.5W-SED7							
Sampled By: Client on 28-OCT-19 @ 14:30							
Matrix: Sediment							
Dioxins and Furans HR 1613B							
Total PeCDD # Homologues	1				12-NOV-19	23-NOV-19	R4923853
Total-HxCDD	6.50		0.081	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HxCDD # Homologues	5				12-NOV-19	23-NOV-19	R4923853
Total-HpCDD	43.6		0.11	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HpCDD # Homologues	2				12-NOV-19	23-NOV-19	R4923853
Total-TCDF	0.42		0.11	pg/g	12-NOV-19	23-NOV-19	R4923853
Total TCDF # Homologues	2				12-NOV-19	23-NOV-19	R4923853
Total-PeCDF	1.69		0.065	pg/g	12-NOV-19	23-NOV-19	R4923853
Total PeCDF # Homologues	3				12-NOV-19	23-NOV-19	R4923853
Total-HxCDF	3.54		0.069	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HxCDF # Homologues	5				12-NOV-19	23-NOV-19	R4923853
Total-HpCDF	7.21		0.055	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HpCDF # Homologues	2				12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,7,8-TCDD	66.0		25-164	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8-PeCDD	73.0		25-181	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	57.0		32-141	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	55.0		28-130	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	65.0		23-140	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-OCDD	64.0		17-157	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,7,8-TCDF	56.0		24-169	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8-PeCDF	62.0		24-185	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,4,7,8-PeCDF	67.0		21-178	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	53.0		26-152	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	53.0		26-123	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	56.0		29-147	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	55.0		28-136	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	61.0		28-143	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	69.0		26-138	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	56.0		31-197	%	12-NOV-19	23-NOV-19	R4923853
Lower Bound PCDD/F TEQ (WHO 2005)	0.549			pg/g	12-NOV-19	23-NOV-19	R4923853
Mid Point PCDD/F TEQ (WHO 2005)	0.822			pg/g	12-NOV-19	23-NOV-19	R4923853
Upper Bound PCDD/F TEQ (WHO 2005)	0.907			pg/g	12-NOV-19	23-NOV-19	R4923853
L2375251-9 RM19.6W-SED8							
Sampled By: Client on 28-OCT-19 @ 10:15							
Matrix: Sediment							
Miscellaneous Parameters							
% Moisture	46.7		0.10	%	12-NOV-19	13-NOV-19	R4919908
All PCB congeners by GC/HRMS							
PCB 1	0.77	M,J,R	0.76	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 2	1.60	M,J,R	0.80	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 3	2.50	M,J,R	0.93	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 4	<3.7	[U]	3.7	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 10	<2.1	[U]	2.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 9	<2.2	[U]	2.2	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 7	<2.1	[U]	2.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 6	<2.1	[U]	2.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 5	<2.4	[U]	2.4	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 8	<1.9	[U]	1.9	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 14	<2.8	[U]	2.8	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 11	90.7	M,B	3.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 13/12	<3.0	[U]	3.0	pg/g	12-NOV-19	21-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-9 RM19.6W-SED8							
Sampled By: Client on 28-OCT-19 @ 10:15							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 15	4.5	M,J,R	3.6	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 19	<1.4	[U]	1.4	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 30/18	5.0	M,J	1.7	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 17	2.3	M,J,R	2.0	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 27	<1.5	[U]	1.5	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 24	<1.5	[U]	1.5	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 16	3.1	[J]	2.3	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 32	1.9	M,J	1.4	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 34	<1.2	[U]	1.2	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 23	<1.1	[U]	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 29/26	<1.1	[U]	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 25	<1.1	[U]	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 31	11.0	M,J	1.0	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 28/20	17.6	M,J,B	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 21/33	8.4	M,J,B	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 22	5.8	[J]	1.2	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 36	<1.1	[U]	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 39	<1.1	[U]	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 38	<1.2	[U]	1.2	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 35	1.4	M,J,R	1.2	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 37	8.3	J,B	1.5	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 54	<0.62	[U]	0.62	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 50/53	1.5	M,J	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 45/51	2.5	M,J	1.2	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 46	<1.3	[U]	1.3	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 52	21.6		1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 73	<0.91	[U]	0.91	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 43	<1.3	[U]	1.3	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 69/49	11.6	[J]	1.0	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 48	2.0	M,J,R	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 44/47/65	15.9	M,J,B	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 59/62/75	<0.86	[U]	0.86	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 42	3.9	M,J	1.3	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 41/71/40	6.2	M,J,R	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 64	7.72	[J]	0.90	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 72	<1.3	[U]	1.3	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 68	<1.3	M,U	1.3	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 57	<1.4	[U]	1.4	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 58	<1.4	[U]	1.4	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 67	<1.2	[U]	1.2	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 63	<1.3	[U]	1.3	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 61/70/74/76	33.3	M	1.4	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 66	19.7	M	1.3	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 55	<1.4	M,U	1.4	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 56	7.1	M,J,R	1.4	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 60	4.4	M,J,R	1.4	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 80	<1.2	[U]	1.2	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 79	<1.2	[U]	1.2	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 78	<1.4	[U]	1.4	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 81	<1.5	[U]	1.5	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 77	1.8	M,J,R	1.6	pg/g	12-NOV-19	21-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-9 RM19.6W-SED8							
Sampled By: Client on 28-OCT-19 @ 10:15							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 104	<0.44	[U]	0.44	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 96	<0.48	M,U	0.48	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 103	<1.3	[U]	1.3	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 94	<1.5	[U]	1.5	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 95	13.7	[J]	1.4	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 100/93/102/98	<1.5	[U]	1.5	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 88/91	3.6	M,J	1.4	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 84	4.8	M,J,R	1.6	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 89	<1.5	[U]	1.5	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 121	<1.1	[U]	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 92	4.4	M,J,R	1.5	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 113/90/101	26.8		1.2	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 83/99	16.7	M,J	1.5	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 112	<1.1	[U]	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 109/119/86/97/125/87	18.9	M	1.3	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 117/116/85/110/115	39.3	M	1.2	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 82	2.0	M,J,R	1.7	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 111	<1.1	[U]	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 120	<1.0	[U]	1.0	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 108/124	1.35	M,J	0.85	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 107	2.80	M,J,R	0.83	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 123	<1.0	M,U	1.0	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 106	<0.85	[U]	0.85	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 118	31.4	M	0.98	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 122	<0.93	M,U	0.93	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 114	<1.0	[U]	1.0	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 105	12.7	M,J	1.0	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 127	<0.84	[U]	0.84	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 126	<1.2	[U]	1.2	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 155	<0.22	[U]	0.22	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 152	<0.28	[U]	0.28	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 150	<0.28	[U]	0.28	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 136	2.72	[J]	0.29	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 145	<0.30	[U]	0.30	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 148	<0.39	[U]	0.39	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 151/135	9.40	[J]	0.40	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 154	<0.33	[U]	0.33	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 144	1.10	M,J,R	0.39	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 147/149	23.9		0.98	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 134/143	2.0	M,J,R	1.2	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 139/140	<0.98	[U]	0.98	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 131	<1.3	[U]	1.3	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 142	<1.1	[U]	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 132	9.3	[J]	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 133	<1.1	[U]	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 165	<0.84	[U]	0.84	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 146	6.12	M,J	0.95	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 161	<0.74	[U]	0.74	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 168/153	36.3		0.82	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 141	5.8	[J]	1.0	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 130	2.6	[J]	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-9 RM19.6W-SED8							
Sampled By: Client on 28-OCT-19 @ 10:15							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
PCB 137/164	4.59	M,J	0.86	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 138/163/129	42.6		0.97	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 160	<0.81	[U]	0.81	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 158	2.70	J,R	0.69	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 128/166	8.08	M,J	0.88	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 159	<0.72	M,U	0.72	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 162	<0.77	[U]	0.77	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 167	1.40	M,J,R	0.84	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 156/157	5.2	M,J	1.0	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 169	<0.98	[U]	0.98	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 188	<0.40	[U]	0.40	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 179	3.40	M,J,R	0.40	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 184	<0.40	[U]	0.40	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 176	<0.40	M,U	0.40	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 186	<0.42	[U]	0.42	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 178	1.70	M,J	0.54	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 175	<0.52	[U]	0.52	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 187	14.0	[J]	0.49	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 182	<0.50	[U]	0.50	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 183	4.47	M,J	0.48	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 185	0.89	M,J,R	0.53	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 174	7.48	M,J	0.52	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 177	4.70	M,J,R	0.54	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 181	<0.53	[U]	0.53	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 171/173	2.40	M,J,R	0.54	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 172	1.61	[J]	0.53	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 192	<0.44	[U]	0.44	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 180/193	18.7	M	0.45	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 191	0.53	M,J,R	0.40	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 170	8.90	M,J,R	0.55	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 190	1.40	M,J,R	0.36	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 189	<0.50	[U]	0.50	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 202	1.60	[J]	0.37	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 201	0.46	M,J,R	0.37	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 204	<0.37	[U]	0.37	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 197	<0.39	[U]	0.39	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 200	0.54	J,R	0.36	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 198/199	7.12	M,J	0.50	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 196	1.60	M,J,R	0.49	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 203	4.70	M,J,R	0.47	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 195	1.80	M,J,R	0.68	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 194	4.84	M,J	0.63	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 205	<0.66	[U]	0.66	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 208	1.80	J,R	0.99	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 207	<1.1	[U]	1.1	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 206	5.1	[J]	1.9	pg/g	12-NOV-19	21-NOV-19	R4923853
PCB 209	6.03	[J]	0.24	pg/g	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 1	39.0		5-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 3	42.0		5-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 4	35.0		5-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 15	43.0		5-145	%	12-NOV-19	21-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-9 RM19.6W-SED8							
Sampled By: Client on 28-OCT-19 @ 10:15							
Matrix: Sediment							
All PCB congeners by GC/HRMS							
Surrogate: 13C12 PCB 19	34.0		5-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 37	56.0		5-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 54	40.0		5-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 81	57.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 77	61.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 104	60.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 123	62.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 118	62.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 114	60.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 105	64.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 126	57.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 155	73.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 167	66.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 156/157	70.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 169	68.0	R	10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 188	75.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 189	67.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 202	75.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 205	67.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 208	75.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 206	64.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 209	77.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 28	62.0	R	5-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 111	64.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Surrogate: 13C12 PCB 178	75.0		10-145	%	12-NOV-19	21-NOV-19	R4923853
Total MonoCB	4.87	[J]	0.76	pg/g	12-NOV-19	21-NOV-19	R4923853
Total DiCB	95.2	[J]	1.9	pg/g	12-NOV-19	21-NOV-19	R4923853
Total TriCB	64.8	[J]	1.0	pg/g	12-NOV-19	21-NOV-19	R4923853
Total TetraCB	139	[J]	0.62	pg/g	12-NOV-19	21-NOV-19	R4923853
Total PentaCB	178	[J]	0.44	pg/g	12-NOV-19	21-NOV-19	R4923853
Total HexaCB	164	[J]	0.22	pg/g	12-NOV-19	21-NOV-19	R4923853
Total HeptaCB	70.2	[J]	0.36	pg/g	12-NOV-19	21-NOV-19	R4923853
Total OctaCB	22.7	[J]	0.36	pg/g	12-NOV-19	21-NOV-19	R4923853
Total NonaCB	6.88	[J]	0.99	pg/g	12-NOV-19	21-NOV-19	R4923853
DecaCB	6.03	[J]	0.24	pg/g	12-NOV-19	21-NOV-19	R4923853
Total PCB	752	[J]	1.0	pg/g	12-NOV-19	21-NOV-19	R4923853
Lower Bound PCB TEQ (WHO 2005)	0.00148			pg/g	12-NOV-19	21-NOV-19	R4923853
Mid Point PCB TEQ (WHO 2005)	0.0767			pg/g	12-NOV-19	21-NOV-19	R4923853
Upper Bound PCB TEQ (WHO 2005)	0.152			pg/g	12-NOV-19	21-NOV-19	R4923853
PBDEs by EPA 1614							
BDE 10	<0.037	[U]	0.037	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 7	1.50	[J]	0.034	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 8/11	1.37	M,J	0.024	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 12/13	0.387	M,J	0.021	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 15	1.18	[J]	0.018	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 30	<0.061	[U]	0.061	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 32	<0.043	[U]	0.043	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 17/25	14.3	[J]	0.055	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 28/33	6.25	[J]	0.053	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 35	0.700	M,J,R	0.035	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 37	0.200	M,J,R	0.036	pg/g	12-NOV-19	03-DEC-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-9 RM19.6W-SED8							
Sampled By: Client on 28-OCT-19 @ 10:15							
Matrix: Sediment							
PBDEs by EPA 1614							
BDE 75	0.350	J,R	0.081	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 51	3.45	[J]	0.071	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 49	25.1		0.10	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 71	1.29	[J]	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 47	237		0.12	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 79	4.30	J,R	0.066	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 66	5.53	[J]	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 77	<0.051	[U]	0.051	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 100	47.3		0.18	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 119/120	1.57	M,J,B	0.19	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 99	165		0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 116	<0.29	[U]	0.29	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 118	1.00	J,R	0.20	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 85	8.61	[J]	0.18	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 126	<0.081	[U]	0.081	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 105	<0.20	[U]	0.20	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 155	1.36	[J]	0.093	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 154	17.6	[J]	0.13	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 153	18.2	[J]	0.27	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 140	1.09	[J]	0.30	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 138/166	2.90	[J]	0.51	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 156	<0.58	[U]	0.58	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 128	<0.52	[U]	0.52	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 184	0.320	M,J,R	0.055	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 183	4.35	[J]	0.077	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 191	<0.11	[U]	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 181	<0.11	[U]	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 190	<0.15	[U]	0.15	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 197	3.13	[J]	0.11	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 203	2.52	[J]	0.14	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 196	2.37	[J]	0.14	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 208	5.35	[J]	0.44	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 207	10.2	[J]	0.43	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 206	21.8	[J]	0.48	pg/g	12-NOV-19	03-DEC-19	R4923853
BDE 209	294		0.93	pg/g	12-NOV-19	03-DEC-19	R4923853
PBEB	0.111	M,J	0.042	pg/g	12-NOV-19	03-DEC-19	R4923853
HBB	2.79	J,B	0.091	pg/g	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 15	51.0		20-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 28	53.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 47	38.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 77	72.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 100	21.0	G	25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 99	51.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 126	52.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 154	38.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 153	48.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 183	53.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 197	40.0		25-150	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 207	51.0		20-200	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C12 BDE 209	26.0		20-200	%	12-NOV-19	03-DEC-19	R4923853
Surrogate: 13C6 HBB	51.0		25-150	%	12-NOV-19	03-DEC-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-9 RM19.6W-SED8							
Sampled By: Client on 28-OCT-19 @ 10:15							
Matrix: Sediment							
PBDEs by EPA 1614							
Surrogate: 13C12 BDE 138 Cleanup	26.0	G	30-135	%	12-NOV-19	03-DEC-19	R4923853
Note: Some labelled extraction standards (BDE 209, BDE CL 138) are outside method acceptance criteria. Native results calculated by isotope dilution so no impact to data quality.							
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.065	[U]	0.065	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8-PeCDD	0.090	M,J,R	0.026	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8-HxCDD	0.087	M,J	0.031	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,6,7,8-HxCDD	0.346	M,J	0.031	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8,9-HxCDD	0.190	M,J	0.031	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,6,7,8-HpCDD	8.88		0.053	pg/g	12-NOV-19	23-NOV-19	R4923853
OCDD	59.8		0.063	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,7,8-TCDF	0.190	M,J,R	0.062	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8-PeCDF	0.091	[J]	0.048	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,4,7,8-PeCDF	0.081	[J]	0.033	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8-HxCDF	0.126	[J]	0.047	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,6,7,8-HxCDF	0.067	M,J,R	0.045	pg/g	12-NOV-19	23-NOV-19	R4923853
2,3,4,6,7,8-HxCDF	0.170	J,R	0.041	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,7,8,9-HxCDF	0.130	J,R	0.055	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,6,7,8-HpCDF	1.49	[J]	0.032	pg/g	12-NOV-19	23-NOV-19	R4923853
1,2,3,4,7,8,9-HpCDF	<0.036	[U]	0.036	pg/g	12-NOV-19	23-NOV-19	R4923853
OCDF	3.04	[J]	0.033	pg/g	12-NOV-19	23-NOV-19	R4923853
Total-TCDD	<0.065	[U]	0.065	pg/g	12-NOV-19	23-NOV-19	R4923853
Total TCDD # Homologues	0				12-NOV-19	23-NOV-19	R4923853
Total-PeCDD	0.175		0.026	pg/g	12-NOV-19	23-NOV-19	R4923853
Total PeCDD # Homologues	1				12-NOV-19	23-NOV-19	R4923853
Total-HxCDD	2.13		0.031	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HxCDD # Homologues	5				12-NOV-19	23-NOV-19	R4923853
Total-HpCDD	17.3		0.053	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HpCDD # Homologues	2				12-NOV-19	23-NOV-19	R4923853
Total-TCDF	0.428		0.062	pg/g	12-NOV-19	23-NOV-19	R4923853
Total TCDF # Homologues	3				12-NOV-19	23-NOV-19	R4923853
Total-PeCDF	0.854		0.048	pg/g	12-NOV-19	23-NOV-19	R4923853
Total PeCDF # Homologues	5				12-NOV-19	23-NOV-19	R4923853
Total-HxCDF	0.866		0.055	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HxCDF # Homologues	2				12-NOV-19	23-NOV-19	R4923853
Total-HpCDF	4.08		0.036	pg/g	12-NOV-19	23-NOV-19	R4923853
Total HpCDF # Homologues	2				12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,7,8-TCDD	78.0		25-164	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8-PeCDD	85.0		25-181	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	73.0		32-141	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	74.0		28-130	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	76.0		23-140	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-OCDD	71.0		17-157	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,7,8-TCDF	72.0		24-169	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8-PeCDF	73.0		24-185	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,4,7,8-PeCDF	82.0		21-178	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	68.0		26-152	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	67.0		26-123	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	77.0		29-147	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	67.0		28-136	%	12-NOV-19	23-NOV-19	R4923853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-9 RM19.6W-SED8							
Sampled By: Client on 28-OCT-19 @ 10:15							
Matrix: Sediment							
Dioxins and Furans HR 1613B							
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	72.0		28-143	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	83.0		26-138	%	12-NOV-19	23-NOV-19	R4923853
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	69.0		31-197	%	12-NOV-19	23-NOV-19	R4923853
Lower Bound PCDD/F TEQ (WHO 2005)	0.224			pg/g	12-NOV-19	23-NOV-19	R4923853
Mid Point PCDD/F TEQ (WHO 2005)	0.403			pg/g	12-NOV-19	23-NOV-19	R4923853
Upper Bound PCDD/F TEQ (WHO 2005)	0.436			pg/g	12-NOV-19	23-NOV-19	R4923853
L2375251-10 RINSATE BLANK							
Sampled By: Client on 29-OCT-19 @ 14:00							
Matrix: Water							
All PCB congeners by GC/HRMS							
PCB 1	<7.3	[U]	7.3	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 2	<7.8	[U]	7.8	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 3	<8.8	[U]	8.8	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 4	<110	[U]	110	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 10	<61	[U]	61	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 9	<61	[U]	61	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 7	<60	[U]	60	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 6	<59	[U]	59	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 5	<67	[U]	67	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 8	<55	[U]	55	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 14	<33	[U]	33	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 11	<35	[U]	35	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 13/12	<35	[U]	35	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 15	<40	[U]	40	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 19	<13	[U]	13	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 30/18	<11	[U]	11	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 17	<12	[U]	12	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 27	<9.0	[U]	9.0	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 24	<9.4	[U]	9.4	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 16	<15	[U]	15	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 32	<8.4	[U]	8.4	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 34	<11	[U]	11	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 23	<10	[U]	10	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 29/26	<10	[U]	10	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 25	<10	[U]	10	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 31	<9.5	[U]	9.5	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 28/20	11.0	M,J,R	9.9	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 21/33	<11	[U]	11	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 22	<11	[U]	11	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 36	<9.5	[U]	9.5	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 39	<9.8	[U]	9.8	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 38	<10	[U]	10	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 35	<10	[U]	10	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 37	<12	[U]	12	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 54	<8.6	[U]	8.6	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 50/53	<9.8	[U]	9.8	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 45/51	<10	[U]	10	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 46	<11	[U]	11	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 52	<9.4	[U]	9.4	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 73	<7.9	[U]	7.9	pg/L	05-NOV-19	18-NOV-19	R4919689

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-10 RINSATE BLANK							
Sampled By: Client on 29-OCT-19 @ 14:00							
Matrix: Water							
All PCB congeners by GC/HRMS							
PCB 43	<11	[U]	11	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 69/49	<8.8	[U]	8.8	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 48	<9.7	[U]	9.7	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 44/47/65	<9.1	[U]	9.1	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 59/62/75	<7.4	[U]	7.4	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 42	<11	[U]	11	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 41/71/40	<9.6	[U]	9.6	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 64	<7.8	[U]	7.8	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 72	<9.2	[U]	9.2	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 68	<8.8	[U]	8.8	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 57	<9.6	[U]	9.6	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 58	<9.6	[U]	9.6	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 67	<8.6	[U]	8.6	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 63	<9.1	[U]	9.1	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 61/70/74/76	<9.7	[U]	9.7	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 66	<9.1	[U]	9.1	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 55	<9.9	[U]	9.9	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 56	<9.9	[U]	9.9	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 60	<9.7	[U]	9.7	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 80	<8.4	[U]	8.4	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 79	<8.7	[U]	8.7	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 78	<9.7	[U]	9.7	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 81	<11	[U]	11	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 77	<10	[U]	10	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 104	<8.1	[U]	8.1	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 96	<8.4	[U]	8.4	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 103	<10	[U]	10	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 94	<12	[U]	12	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 95	<11	[U]	11	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 100/93/102/98	<12	[U]	12	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 88/91	<11	[U]	11	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 84	<13	[U]	13	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 89	<12	[U]	12	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 121	<8.6	[U]	8.6	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 92	<12	[U]	12	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 113/90/101	<10	[U]	10	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 83/99	<12	[U]	12	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 112	<8.5	[U]	8.5	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 109/119/86/97/125/87	<10	[U]	10	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 117/116/85/110/115	<9.4	[U]	9.4	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 82	<13	[U]	13	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 111	<8.7	[U]	8.7	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 120	<8.5	[U]	8.5	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 108/124	<8.3	[U]	8.3	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 107	<7.3	[U]	7.3	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 123	<9.7	[U]	9.7	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 106	<7.8	[U]	7.8	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 118	<9.2	[U]	9.2	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 122	<8.7	[U]	8.7	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 114	<10	[U]	10	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 105	<9.8	[U]	9.8	pg/L	05-NOV-19	18-NOV-19	R4919689

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-10 RINSATE BLANK							
Sampled By: Client on 29-OCT-19 @ 14:00							
Matrix: Water							
All PCB congeners by GC/HRMS							
PCB 127	<8.1	[U]	8.1	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 126	<9.9	[U]	9.9	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 155	<2.6	[U]	2.6	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 152	<2.8	[U]	2.8	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 150	<2.8	[U]	2.8	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 136	<2.8	[U]	2.8	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 145	<2.9	[U]	2.9	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 148	<3.7	[U]	3.7	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 151/135	<3.8	[U]	3.8	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 154	<3.2	[U]	3.2	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 144	<3.6	[U]	3.6	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 147/149	<4.3	[U]	4.3	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 134/143	<5.1	[U]	5.1	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 139/140	<4.3	[U]	4.3	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 131	<5.6	[U]	5.6	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 142	<4.8	[U]	4.8	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 132	<5.0	[U]	5.0	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 133	<4.6	[U]	4.6	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 165	<3.7	[U]	3.7	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 146	<4.0	[U]	4.0	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 161	<3.4	[U]	3.4	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 168/153	4.8	M,J,R	3.6	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 141	<4.4	[U]	4.4	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 130	<5.0	[U]	5.0	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 137/164	<3.8	[U]	3.8	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 138/163/129	7.5	M,J,B	4.5	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 160	<3.4	[U]	3.4	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 158	<3.0	[U]	3.0	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 128/166	<3.9	[U]	3.9	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 159	<3.3	[U]	3.3	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 162	<3.3	[U]	3.3	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 167	<3.5	[U]	3.5	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 156/157	<4.8	[U]	4.8	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 169	<3.9	[U]	3.9	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 188	<3.2	[U]	3.2	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 179	<3.1	[U]	3.1	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 184	<3.0	[U]	3.0	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 176	<3.1	[U]	3.1	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 186	<3.2	[U]	3.2	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 178	<4.1	[U]	4.1	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 175	<4.0	[U]	4.0	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 187	<3.8	[U]	3.8	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 182	<3.9	[U]	3.9	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 183	<3.7	[U]	3.7	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 185	<4.6	[U]	4.6	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 174	<3.8	[U]	3.8	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 177	<4.3	[U]	4.3	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 181	<4.2	[U]	4.2	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 171/173	<4.3	[U]	4.3	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 172	<4.3	[U]	4.3	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 192	<3.5	[U]	3.5	pg/L	05-NOV-19	18-NOV-19	R4919689

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-10 RINSATE BLANK							
Sampled By: Client on 29-OCT-19 @ 14:00							
Matrix: Water							
All PCB congeners by GC/HRMS							
PCB 180/193	<3.7	[U]	3.7	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 191	<3.3	[U]	3.3	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 170	<4.5	[U]	4.5	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 190	<3.1	[U]	3.1	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 189	<4.9	[U]	4.9	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 202	<3.0	[U]	3.0	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 201	<2.8	[U]	2.8	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 204	<2.9	[U]	2.9	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 197	<3.0	[U]	3.0	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 200	<2.8	[U]	2.8	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 198/199	<4.1	[U]	4.1	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 196	<4.0	[U]	4.0	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 203	<3.8	[U]	3.8	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 195	<3.6	[U]	3.6	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 194	<3.5	[U]	3.5	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 205	<3.4	[U]	3.4	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 208	<6.4	[U]	6.4	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 207	<7.0	[U]	7.0	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 206	<11	[U]	11	pg/L	05-NOV-19	18-NOV-19	R4919689
PCB 209	<3.0	[U]	3.0	pg/L	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 1	60.0		5-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 3	62.0		5-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 4	59.0		5-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 15	68.0		5-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 19	63.0		5-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 37	88.0		5-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 54	60.0		5-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 81	84.0		10-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 77	91.0		10-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 104	85.0		10-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 123	86.0		10-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 118	85.0		10-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 114	83.0		10-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 105	85.0		10-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 126	88.0		10-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 155	86.0		10-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 167	97.0		10-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 156/157	92.0		10-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 169	97.0		10-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 188	100.0		10-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 189	94.0		10-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 202	101.0		10-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 205	97.0		10-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 208	100.0		10-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 206	96.0		10-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 209	80.0		10-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 28	69.0		5-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 111	82.0		10-145	%	05-NOV-19	18-NOV-19	R4919689
Surrogate: 13C12 PCB 178	90.0		10-145	%	05-NOV-19	18-NOV-19	R4919689
Total MonoCB	<7.3	[U]	7.3	pg/L	05-NOV-19	18-NOV-19	R4919689
Total DiCB	<33	[U]	33	pg/L	05-NOV-19	18-NOV-19	R4919689

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-10 RINSATE BLANK							
Sampled By: Client on 29-OCT-19 @ 14:00							
Matrix: Water							
All PCB congeners by GC/HRMS							
Total TriCB	11.0	[J]	8.4	pg/L	05-NOV-19	18-NOV-19	R4919689
Total TetraCB	<7.4	[U]	7.4	pg/L	05-NOV-19	18-NOV-19	R4919689
Total PentaCB	<7.3	[U]	7.3	pg/L	05-NOV-19	18-NOV-19	R4919689
Total HexaCB	12.3	[J]	2.6	pg/L	05-NOV-19	18-NOV-19	R4919689
Total HeptaCB	<3.0	[U]	3.0	pg/L	05-NOV-19	18-NOV-19	R4919689
Total OctaCB	<2.8	[U]	2.8	pg/L	05-NOV-19	18-NOV-19	R4919689
Total NonaCB	<6.4	[U]	6.4	pg/L	05-NOV-19	18-NOV-19	R4919689
DecaCB	<3.0	[U]	3.0	pg/L	05-NOV-19	18-NOV-19	R4919689
Total PCB	23.3	[J]	1.0	pg/L	05-NOV-19	18-NOV-19	R4919689
Lower Bound PCB TEQ (WHO 2005)	0			pg/L	05-NOV-19	18-NOV-19	R4919689
Mid Point PCB TEQ (WHO 2005)	0.556			pg/L	05-NOV-19	18-NOV-19	R4919689
Upper Bound PCB TEQ (WHO 2005)	1.11			pg/L	05-NOV-19	18-NOV-19	R4919689
PBDEs by EPA 1614							
BDE 10	<0.82	[U]	0.82	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 7	<0.76	[U]	0.76	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 8/11	<0.54	[U]	0.54	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 12/13	<0.46	[U]	0.46	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 15	<0.40	[U]	0.40	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 30	<1.5	[U]	1.5	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 32	<1.1	[U]	1.1	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 17/25	<1.4	[U]	1.4	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 28/33	<1.3	[U]	1.3	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 35	<0.88	[U]	0.88	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 37	0.95	M,J,B	0.90	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 75	<0.78	[U]	0.78	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 51	<0.68	[U]	0.68	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 49	<0.99	[U]	0.99	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 71	<1.0	[U]	1.0	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 47	17.7	M,J,B	0.68	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 79	<0.64	[U]	0.64	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 66	<1.0	[U]	1.0	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 77	<0.69	[U]	0.69	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 100	5.67	[J]	0.62	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 119/120	<1.2	[U]	1.2	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 99	24.7	J,B	0.91	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 116	<1.9	[U]	1.9	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 118	<1.3	[U]	1.3	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 85	<1.1	[U]	1.1	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 126	<0.69	[U]	0.69	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 105	<1.3	[U]	1.3	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 155	<1.5	[U]	1.5	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 154	<1.9	[U]	1.9	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 153	<3.0	[U]	3.0	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 140	<3.0	[U]	3.0	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 138/166	<5.1	[U]	5.1	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 156	<5.8	[U]	5.8	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 128	<5.2	[U]	5.2	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 184	<0.97	[U]	0.97	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 183	<1.4	[U]	1.4	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 191	<1.9	[U]	1.9	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 181	<1.9	[U]	1.9	pg/L	05-NOV-19	03-DEC-19	R4919689

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-10 RINSATE BLANK							
Sampled By: Client on 29-OCT-19 @ 14:00							
Matrix: Water							
PBDEs by EPA 1614							
BDE 190	<2.7	[U]	2.7	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 197	<1.6	[U]	1.6	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 203	<1.9	[U]	1.9	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 196	<2.0	[U]	2.0	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 208	<3.3	[U]	3.3	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 207	<3.2	[U]	3.2	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 206	<3.6	[U]	3.6	pg/L	05-NOV-19	03-DEC-19	R4919689
BDE 209	<11	[U]	11	pg/L	05-NOV-19	03-DEC-19	R4919689
PBEB	<0.87	[U]	0.87	pg/L	05-NOV-19	03-DEC-19	R4919689
HBB	<1.8	[U]	1.8	pg/L	05-NOV-19	03-DEC-19	R4919689
Surrogate: 13C12 BDE 15	56.0		20-150	%	05-NOV-19	03-DEC-19	R4919689
Surrogate: 13C12 BDE 28	68.0		25-150	%	05-NOV-19	03-DEC-19	R4919689
Surrogate: 13C12 BDE 47	80.0		25-150	%	05-NOV-19	03-DEC-19	R4919689
Surrogate: 13C12 BDE 77	89.0		25-150	%	05-NOV-19	03-DEC-19	R4919689
Surrogate: 13C12 BDE 100	65.0		25-150	%	05-NOV-19	03-DEC-19	R4919689
Surrogate: 13C12 BDE 99	66.0		25-150	%	05-NOV-19	03-DEC-19	R4919689
Surrogate: 13C12 BDE 126	76.0		25-150	%	05-NOV-19	03-DEC-19	R4919689
Surrogate: 13C12 BDE 154	54.0		25-150	%	05-NOV-19	03-DEC-19	R4919689
Surrogate: 13C12 BDE 153	68.0		25-150	%	05-NOV-19	03-DEC-19	R4919689
Surrogate: 13C12 BDE 183	65.0		25-150	%	05-NOV-19	03-DEC-19	R4919689
Surrogate: 13C12 BDE 197	47.0		25-150	%	05-NOV-19	03-DEC-19	R4919689
Surrogate: 13C12 BDE 207	66.0		20-200	%	05-NOV-19	03-DEC-19	R4919689
Surrogate: 13C12 BDE 209	26.0		20-200	%	05-NOV-19	03-DEC-19	R4919689
Surrogate: 13C6 HBB	64.0		25-150	%	05-NOV-19	03-DEC-19	R4919689
Surrogate: 13C12 BDE 138 Cleanup	76.0		30-135	%	05-NOV-19	03-DEC-19	R4919689
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<2.4	[U]	2.4	pg/L	05-NOV-19	20-NOV-19	R4919689
1,2,3,7,8-PeCDD	<1.7	[U]	1.7	pg/L	05-NOV-19	20-NOV-19	R4919689
1,2,3,4,7,8-HxCDD	<2.9	[U]	2.9	pg/L	05-NOV-19	20-NOV-19	R4919689
1,2,3,6,7,8-HxCDD	<2.8	[U]	2.8	pg/L	05-NOV-19	20-NOV-19	R4919689
1,2,3,7,8,9-HxCDD	<2.8	[U]	2.8	pg/L	05-NOV-19	20-NOV-19	R4919689
1,2,3,4,6,7,8-HpCDD	2.5	M,J	2.3	pg/L	05-NOV-19	20-NOV-19	R4919689
OCDD	9.1	J,B	1.4	pg/L	05-NOV-19	20-NOV-19	R4919689
2,3,7,8-TCDF	<1.1	[U]	1.1	pg/L	05-NOV-19	20-NOV-19	R4919689
1,2,3,7,8-PeCDF	<0.74	[U]	0.74	pg/L	05-NOV-19	20-NOV-19	R4919689
2,3,4,7,8-PeCDF	<0.58	[U]	0.58	pg/L	05-NOV-19	20-NOV-19	R4919689
1,2,3,4,7,8-HxCDF	<1.1	[U]	1.1	pg/L	05-NOV-19	20-NOV-19	R4919689
1,2,3,6,7,8-HxCDF	<1.1	[U]	1.1	pg/L	05-NOV-19	20-NOV-19	R4919689
2,3,4,6,7,8-HxCDF	<1.1	[U]	1.1	pg/L	05-NOV-19	20-NOV-19	R4919689
1,2,3,7,8,9-HxCDF	<1.4	[U]	1.4	pg/L	05-NOV-19	20-NOV-19	R4919689
1,2,3,4,6,7,8-HpCDF	<1.1	[U]	1.1	pg/L	05-NOV-19	20-NOV-19	R4919689
1,2,3,4,7,8,9-HpCDF	<1.3	[U]	1.3	pg/L	05-NOV-19	20-NOV-19	R4919689
OCDF	<1.2	[U]	1.2	pg/L	05-NOV-19	20-NOV-19	R4919689
Total-TCDD	<2.4	[U]	2.4	pg/L	05-NOV-19	20-NOV-19	R4919689
Total TCDD # Homologues	0				05-NOV-19	20-NOV-19	R4919689
Total-PeCDD	<1.7	[U]	1.7	pg/L	05-NOV-19	20-NOV-19	R4919689
Total PeCDD # Homologues	0				05-NOV-19	20-NOV-19	R4919689
Total-HxCDD	<2.9	[U]	2.9	pg/L	05-NOV-19	20-NOV-19	R4919689
Total HxCDD # Homologues	0				05-NOV-19	20-NOV-19	R4919689
Total-HpCDD	2.5		2.3	pg/L	05-NOV-19	20-NOV-19	R4919689
Total HpCDD # Homologues	1				05-NOV-19	20-NOV-19	R4919689

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375251-10 RINSATE BLANK							
Sampled By: Client on 29-OCT-19 @ 14:00							
Matrix: Water							
Dioxins and Furans HR 1613B							
Total-TCDF	<1.1	[U]	1.1	pg/L	05-NOV-19	20-NOV-19	R4919689
Total TCDF # Homologues	0				05-NOV-19	20-NOV-19	R4919689
Total-PeCDF	<0.74	[U]	0.74	pg/L	05-NOV-19	20-NOV-19	R4919689
Total PeCDF # Homologues	0				05-NOV-19	20-NOV-19	R4919689
Total-HxCDF	<1.4	[U]	1.4	pg/L	05-NOV-19	20-NOV-19	R4919689
Total HxCDF # Homologues	0				05-NOV-19	20-NOV-19	R4919689
Total-HpCDF	<1.3	[U]	1.3	pg/L	05-NOV-19	20-NOV-19	R4919689
Total HpCDF # Homologues	0				05-NOV-19	20-NOV-19	R4919689
Surrogate: 13C12-2,3,7,8-TCDD	79.0		20-175	%	05-NOV-19	20-NOV-19	R4919689
Surrogate: 13C12-1,2,3,7,8-PeCDD	94.0		21-227	%	05-NOV-19	20-NOV-19	R4919689
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	69.0		21-193	%	05-NOV-19	20-NOV-19	R4919689
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	84.0		25-163	%	05-NOV-19	20-NOV-19	R4919689
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	82.0		23-166	%	05-NOV-19	20-NOV-19	R4919689
Surrogate: 13C12-OCDD	78.0		13-138	%	05-NOV-19	20-NOV-19	R4919689
Surrogate: 13C12-2,3,7,8-TCDF	79.0		22-152	%	05-NOV-19	20-NOV-19	R4919689
Surrogate: 13C12-1,2,3,7,8-PeCDF	88.0		24-185	%	05-NOV-19	20-NOV-19	R4919689
Surrogate: 13C12-2,3,4,7,8-PeCDF	91.0		21-178	%	05-NOV-19	20-NOV-19	R4919689
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	67.0		26-152	%	05-NOV-19	20-NOV-19	R4919689
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	76.0		21-159	%	05-NOV-19	20-NOV-19	R4919689
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	77.0		17-205	%	05-NOV-19	20-NOV-19	R4919689
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	71.0		28-136	%	05-NOV-19	20-NOV-19	R4919689
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	77.0		21-158	%	05-NOV-19	20-NOV-19	R4919689
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	84.0		20-186	%	05-NOV-19	20-NOV-19	R4919689
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	62.0		31-191	%	05-NOV-19	20-NOV-19	R4919689
Lower Bound PCDD/F TEQ (WHO 2005)	0.0274			pg/L	05-NOV-19	20-NOV-19	R4919689
Mid Point PCDD/F TEQ (WHO 2005)	2.90			pg/L	05-NOV-19	20-NOV-19	R4919689
Upper Bound PCDD/F TEQ (WHO 2005)	5.78			pg/L	05-NOV-19	20-NOV-19	R4919689

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
A	Method Blank exceeds ALS DQO. Refer to narrative comments for further information.
EMPC	Estimated Maximum Possible Concentration. Parameter detected but didn't meet all criteria for positive identification.
G	QC result did not meet ALS DQO. Refer to narrative comments for further information.
J,B	The analyte was detected below the calibrated range but above the EDL, and was detected in the Method Blank at >10% of the sample concentration.
J,G	QC result did not meet ALS DQO. Refer to narrative comments for further information. Duplicate expressed in terms of absolute difference.
J,R	The analyte was detected below the calibrated range but above the EDL, and the ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.
M	A peak has been manually integrated.
M,B	A peak has been manually integrated and the analyte was detected in the Method Blank at >10% of the sample concentration.
M,J	A peak has been manually integrated, and the analyte was detected below the calibrated range but above the EDL.
M,J,B	A peak has been manually integrated. Target analyte was detected below the calibrated range but above the EDL. Compound was detected in the method blank at >10% of the sample concentration.
M,J,R	A peak has been manually integrated, the analyte was detected below the calibrated range but above the EDL, and the ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.
M,R	A peak has been manually integrated, and the ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.
M,U	A peak has been manually integrated, and the analyte was not detected above the EDL.
R	The ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.
[B]	The analyte was detected in the Method Blank at >10% of the sample concentration.
[J]	The analyte was detected below the calibrated range but above the EDL.
[U]	The analyte was not detected above the EDL.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
DX-1613B-HRMS-BU	Solid	Dioxins and Furans HR 1613B	USEPA 1613B
Samples are extracted by Soxhlet. The extracts are prepared using column chromatography, reduced in volume and analyzed by isotope-dilution GC/HRMS.			
DX-1613B-HRMS-BU	Water	Dioxins and Furans HR 1613B	USEPA 1613B
Samples are filtered if required. Solids are extracted by Soxhlet using toluene. The liquid portion is extracted by liquid/liquid extraction using dichloromethane. The extracts are prepared using column chromatography, reduced in volume and analyzed by isotope-dilution GC/HRMS			
MOISTURE-BU	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)
This method is used to determine the percent moisture in a sample. Samples are homogenized, moisture is removed by heating at 105°C until constant mass is achieved. The residues are measured gravimetrically and the difference in weight between the wet sample and the dried sample is used to determine the moisture content. This percent moisture can be used, in conjunction with analytical results, to report data on a dry weight basis.			
PBDE-1614-HRMS-BU	Solid	PBDEs by EPA 1614	USEPA 1614
Samples are Dean-Stark Soxhlet extracted with toluene. Extracts are prepared by column chromatography, reduced in volume and analyzed by isotope-dilution GC/HRMS			
PBDE-1614-HRMS-BU	Water	PBDEs by EPA 1614	USEPA 1614
Samples are liquid/liquid extracted with dichloromethane. Extracts are prepared by column chromatography, reduced in volume and analyzed by isotope-dilution GC/HRMS.			
PCB-1668C-O2-HRMS-BU	Solid	All PCB congeners by GC/HRMS	USEPA 1668C
Samples are extracted by Soxhlet and the targets are isolated via multiple cleanup steps then analyzed by gas chromatography/high-resolution mass spectrometry using an SPB-Octyl column by isotope dilution			
PCB-1668C-O2-HRMS-BU	Water	All PCB congeners by GC/HRMS	USEPA 1668C
Samples are extracted by liquid/liquid extraction and the targets are isolated via multiple cleanup steps then analyzed by gas chromatography/high-resolution mass spectrometry using an SPB-Octyl column by isotope dilution.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
BU	ALS ENVIRONMENTAL - BURLINGTON, ONTARIO, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2375251 Report Date: 05-DEC-19

Client: Cash Clients (USD) - Burlington
Hart Crowser 6420 SW Macadam Avenue, Suite 100
Portland OR 97239

Contact: Kevin Woodhouse

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
DX-1613B-HRMS-BU	**Water**							
Batch R4919689								
WG3208379-2 LCS								
2,3,7,8-TCDD			80.0		%		67-158	20-NOV-19
1,2,3,7,8-PeCDD			96.0		%		70-142	20-NOV-19
1,2,3,4,7,8-HxCDD			91.0		%		70-164	20-NOV-19
1,2,3,6,7,8-HxCDD			90.0		%		76-134	20-NOV-19
1,2,3,7,8,9-HxCDD			97.0		%		64-162	20-NOV-19
1,2,3,4,6,7,8-HpCDD			96.0		%		70-140	20-NOV-19
OCDD			88.0		%		78-144	20-NOV-19
2,3,7,8-TCDF			94.0		%		75-158	20-NOV-19
1,2,3,7,8-PeCDF			98.0		%		80-134	20-NOV-19
2,3,4,7,8-PeCDF			87.0		%		68-160	20-NOV-19
1,2,3,4,7,8-HxCDF			93.0		%		72-134	20-NOV-19
1,2,3,6,7,8-HxCDF			96.0		%		84-130	20-NOV-19
2,3,4,6,7,8-HxCDF			93.0		%		70-156	20-NOV-19
1,2,3,7,8,9-HxCDF			99.0		%		78-130	20-NOV-19
1,2,3,4,6,7,8-HpCDF			98.0		%		82-122	20-NOV-19
1,2,3,4,7,8,9-HpCDF			86.0		%		78-138	20-NOV-19
OCDF			87.0		%		63-170	20-NOV-19
WG3208379-1 MB								
2,3,7,8-TCDD			<5.6	[U]	pg/L		5.6	20-NOV-19
1,2,3,7,8-PeCDD			<3.8	[U]	pg/L		3.8	20-NOV-19
1,2,3,4,7,8-HxCDD			<6.3	[U]	pg/L		6.3	20-NOV-19
1,2,3,6,7,8-HxCDD			<5.8	[U]	pg/L		5.8	20-NOV-19
1,2,3,7,8,9-HxCDD			<5.9	[U]	pg/L		5.9	20-NOV-19
1,2,3,4,6,7,8-HpCDD			<6.2	M,U	pg/L		6.2	20-NOV-19
OCDD			20.4	M,J	pg/L		5	20-NOV-19
2,3,7,8-TCDF			<3.6	[U]	pg/L		3.6	20-NOV-19
1,2,3,7,8-PeCDF			<2.2	[U]	pg/L		2.2	20-NOV-19
2,3,4,7,8-PeCDF			<1.8	[U]	pg/L		1.8	20-NOV-19
1,2,3,4,7,8-HxCDF			<3.8	[U]	pg/L		3.8	20-NOV-19
1,2,3,6,7,8-HxCDF			<3.7	[U]	pg/L		3.7	20-NOV-19
2,3,4,6,7,8-HxCDF			<3.6	[U]	pg/L		3.6	20-NOV-19
1,2,3,7,8,9-HxCDF			<5.4	[U]	pg/L		5.4	20-NOV-19
1,2,3,4,6,7,8-HpCDF			<4.1	[U]	pg/L		4.1	20-NOV-19
1,2,3,4,7,8,9-HpCDF			<5.4	[U]	pg/L		5.4	20-NOV-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
DX-1613B-HRMS-BU	**Water**							
Batch R4919689								
WG3208379-1 MB								
OCDF			<6.4	[U]	pg/L		6.4	20-NOV-19
Total-TCDD			<5.6	[U]	pg/L		5.6	20-NOV-19
Total-PeCDD			<3.8	[U]	pg/L		3.8	20-NOV-19
Total-HxCDD			<6.3	[U]	pg/L		6.3	20-NOV-19
Total-HpCDD			<6.2	[U]	pg/L		6.2	20-NOV-19
Total-TCDF			<3.6	[U]	pg/L		3.6	20-NOV-19
Total-PeCDF			<2.2	[U]	pg/L		2.2	20-NOV-19
Total-HxCDF			<5.4	[U]	pg/L		5.4	20-NOV-19
Total-HpCDF			<5.4	[U]	pg/L		5.4	20-NOV-19
Surrogate: 13C12-2,3,7,8-TCDD			65.0		%		20-175	20-NOV-19
Surrogate: 13C12-1,2,3,7,8-PeCDD			66.0		%		21-227	20-NOV-19
Surrogate: 13C12-1,2,3,4,7,8-HxCDD			57.0		%		21-193	20-NOV-19
Surrogate: 13C12-1,2,3,6,7,8-HxCDD			69.0		%		25-163	20-NOV-19
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD			65.0		%		23-166	20-NOV-19
Surrogate: 13C12-OCDD			57.0		%		13-138	20-NOV-19
Surrogate: 13C12-2,3,7,8-TCDF			60.0		%		22-152	20-NOV-19
Surrogate: 13C12-1,2,3,7,8-PeCDF			66.0		%		24-185	20-NOV-19
Surrogate: 13C12-2,3,4,7,8-PeCDF			64.0		%		21-178	20-NOV-19
Surrogate: 13C12-1,2,3,4,7,8-HxCDF			56.0		%		26-152	20-NOV-19
Surrogate: 13C12-1,2,3,6,7,8-HxCDF			65.0		%		21-159	20-NOV-19
Surrogate: 13C12-2,3,4,6,7,8-HxCDF			65.0		%		17-205	20-NOV-19
Surrogate: 13C12-1,2,3,7,8,9-HxCDF			58.0		%		28-136	20-NOV-19
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF			64.0		%		21-158	20-NOV-19
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF			69.0		%		20-186	20-NOV-19
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)			64.0		%		31-191	20-NOV-19
PBDE-1614-HRMS-BU	**Water**							
Batch R4919689								
WG3208379-2 LCS								
BDE 10			40.0		%		5-130	02-DEC-19
BDE 7			53.0		%		5-130	02-DEC-19
BDE 8/11			47.0	G	%		50-150	02-DEC-19
BDE 12/13			117.0		%		5-130	02-DEC-19
BDE 15			97.0		%		50-150	02-DEC-19
BDE 30			45.0		%		5-130	02-DEC-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PBDE-1614-HRMS-BU	**Water**							
Batch R4919689								
WG3208379-2 LCS								
BDE 32			108.0		%		50-150	02-DEC-19
BDE 17/25			96.0		%		50-150	02-DEC-19
BDE 28/33			97.0		%		50-150	02-DEC-19
BDE 35			90.0		%		50-150	02-DEC-19
BDE 37			103.0		%		50-150	02-DEC-19
BDE 75			86.0		%		50-150	02-DEC-19
BDE 51			90.0		%		50-150	02-DEC-19
BDE 49			86.0		%		50-150	02-DEC-19
BDE 71			94.0		%		50-150	02-DEC-19
BDE 47			97.0		%		50-150	02-DEC-19
BDE 79			91.0		%		50-150	02-DEC-19
BDE 66			86.0		%		50-150	02-DEC-19
BDE 77			94.0		%		50-150	02-DEC-19
BDE 100			93.0		%		50-150	02-DEC-19
BDE 119/120			107.0		%		50-150	02-DEC-19
BDE 99			94.0		%		50-150	02-DEC-19
BDE 116			38.0	G	%		40-140	02-DEC-19
BDE 118			98.0		%		50-150	02-DEC-19
BDE 85			66.0		%		50-150	02-DEC-19
BDE 126			91.0		%		50-150	02-DEC-19
BDE 105			44.0	G	%		50-150	02-DEC-19
BDE 155			216.0	G	%		50-150	02-DEC-19
BDE 154			94.0		%		50-150	02-DEC-19
BDE 153			91.0		%		50-150	02-DEC-19
BDE 140			116.0		%		50-150	02-DEC-19
BDE 138/166			118.0		%		50-150	02-DEC-19
BDE 156			108.0		%		50-150	02-DEC-19
BDE 128			115.0		%		50-150	02-DEC-19
BDE 184			97.0		%		50-150	02-DEC-19
BDE 183			92.0		%		50-150	02-DEC-19
BDE 191			81.0		%		50-150	02-DEC-19
BDE 181			60.0		%		50-150	02-DEC-19
BDE 190			41.0	G	%		50-150	02-DEC-19
BDE 197			94.0		%		50-150	02-DEC-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PBDE-1614-HRMS-BU	**Water**							
Batch **R4919689**								
WG3208379-2 **LCS**								
BDE 203			54.0		%		50-150	02-DEC-19
BDE 196			74.0		%		50-150	02-DEC-19
BDE 208			92.0		%		50-150	02-DEC-19
BDE 207			89.0		%		50-150	02-DEC-19
BDE 206			88.0		%		50-150	02-DEC-19
BDE 209			76.0		%		50-150	02-DEC-19
PBEB			105.0		%		50-150	02-DEC-19
HBB			95.0		%		50-150	02-DEC-19
COMMENTS: Some targets and surrogates in the LCS are outside method acceptance criteria. None of the affected native targets have been detected in the sample								
WG3208379-1 **MB**								
BDE 10			<1.2	[U]	pg/L		50	02-DEC-19
BDE 7			<1.1	[U]	pg/L		50	02-DEC-19
BDE 8/11			<0.76	[U]	pg/L		100	02-DEC-19
BDE 12/13			<0.65	[U]	pg/L		100	02-DEC-19
BDE 15			<0.57	[U]	pg/L		50	02-DEC-19
BDE 30			<2.1	[U]	pg/L		50	02-DEC-19
BDE 32			<1.5	[U]	pg/L		50	02-DEC-19
BDE 17/25			<1.9	[U]	pg/L		100	02-DEC-19
BDE 28/33			<1.8	[U]	pg/L		100	02-DEC-19
BDE 35			<1.2	[U]	pg/L		50	02-DEC-19
BDE 37			13.7	M,J	pg/L		50	02-DEC-19
BDE 75			<0.88	[U]	pg/L		50	02-DEC-19
BDE 51			<0.77	[U]	pg/L		50	02-DEC-19
BDE 49			<1.1	[U]	pg/L		50	02-DEC-19
BDE 71			<1.2	[U]	pg/L		50	02-DEC-19
BDE 47			9.80	[J]	pg/L		50	02-DEC-19
BDE 79			<0.71	[U]	pg/L		50	02-DEC-19
BDE 66			<1.2	[U]	pg/L		50	02-DEC-19
BDE 77			<0.78	[U]	pg/L		50	02-DEC-19
BDE 100			3.10	M,J,R	pg/L		75	02-DEC-19
BDE 119/120			4.5	[J]	pg/L		75	02-DEC-19
BDE 99			13.6	[J]	pg/L		75	02-DEC-19
BDE 116			<1.7	[U]	pg/L		75	02-DEC-19
COMMENTS: Labelled extraction standards fails low outside method limits. Native results are calculated by istope dilution and not expected to be								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PBDE-1614-HRMS-BU	**Water**							
Batch R4919689								
WG3208379-1 MB								
BDE 118			<1.2	[U]	pg/L		75	02-DEC-19
BDE 85			<1.0	[U]	pg/L		75	02-DEC-19
BDE 126			1.30	M,J,R	pg/L		75	02-DEC-19
BDE 105			<1.2	[U]	pg/L		75	02-DEC-19
BDE 155			<1.3	[U]	pg/L		100	02-DEC-19
BDE 154			5.7	M,J,R	pg/L		100	02-DEC-19
BDE 153			<3.0	[U]	pg/L		100	02-DEC-19
BDE 140			<2.9	[U]	pg/L		100	02-DEC-19
BDE 138/166			<4.9	[U]	pg/L		200	02-DEC-19
BDE 156			<5.6	[U]	pg/L		100	02-DEC-19
BDE 128			<5.0	[U]	pg/L		100	02-DEC-19
BDE 184			3.48	M,J	pg/L		130	02-DEC-19
BDE 183			2.80	M,J,R	pg/L		130	02-DEC-19
BDE 191			<1.3	[U]	pg/L		130	02-DEC-19
BDE 181			<1.3	[U]	pg/L		130	02-DEC-19
BDE 190			<1.8	[U]	pg/L		130	02-DEC-19
BDE 197			<1.3	[U]	pg/L		130	02-DEC-19
BDE 203			<1.6	[U]	pg/L		130	02-DEC-19
BDE 196			<1.6	[U]	pg/L		130	02-DEC-19
BDE 208			<3.4	[U]	pg/L		250	02-DEC-19
BDE 207			<3.4	[U]	pg/L		250	02-DEC-19
BDE 206			<3.7	[U]	pg/L		250	02-DEC-19
BDE 209			<23	[U]	pg/L		250	02-DEC-19
PBEB			<0.74	[U]	pg/L		50	02-DEC-19
HBB			6.58	M,J	pg/L		50	02-DEC-19
Surrogate: 13C12 BDE 15			42.0		%		20-150	02-DEC-19
Surrogate: 13C12 BDE 28			59.0		%		25-150	02-DEC-19
Surrogate: 13C12 BDE 47			67.0		%		25-150	02-DEC-19
Surrogate: 13C12 BDE 77			71.0		%		25-150	02-DEC-19
Surrogate: 13C12 BDE 100			57.0		%		25-150	02-DEC-19
Surrogate: 13C12 BDE 99			57.0		%		25-150	02-DEC-19
Surrogate: 13C12 BDE 126			63.0		%		25-150	02-DEC-19
Surrogate: 13C12 BDE 154			45.0		%		25-150	02-DEC-19
Surrogate: 13C12 BDE 153			57.0		%		25-150	02-DEC-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PBDE-1614-HRMS-BU	**Water**							
Batch	**R4919689**							
WG3208379-1	**MB**							
Surrogate: 13C12 BDE 183			58.0		%		25-150	02-DEC-19
Surrogate: 13C12 BDE 197			44.0		%		25-150	02-DEC-19
Surrogate: 13C12 BDE 207			57.0		%		20-200	02-DEC-19
Surrogate: 13C12 BDE 209			11.0	G	%		20-200	02-DEC-19
Surrogate: 13C6 HBB			55.0		%		25-150	02-DEC-19
Surrogate: 13C12 BDE 138 Cleanup			63.0		%		30-135	02-DEC-19
COMMENTS: Labelled extraction standards fails low outside method limits. Native results are calculated by istope dilution and not expected to be biased								
PCB-1668C-O2-HRMS-BU	**Water**							
Batch	**R4919689**							
WG3208379-2	**LCS**							
PCB 1			98.0		%		60-135	18-NOV-19
PCB 3			94.0		%		60-135	18-NOV-19
PCB 4			114.0		%		60-135	18-NOV-19
PCB 15			105.0		%		60-135	18-NOV-19
PCB 19			94.0		%		60-135	18-NOV-19
PCB 37			97.0		%		60-135	18-NOV-19
PCB 54			96.0		%		60-135	18-NOV-19
PCB 81			94.0		%		60-135	18-NOV-19
PCB 77			92.0		%		60-135	18-NOV-19
PCB 104			90.0		%		60-135	18-NOV-19
PCB 123			100.0		%		60-135	18-NOV-19
PCB 118			95.0		%		60-135	18-NOV-19
PCB 114			100.0		%		60-135	18-NOV-19
PCB 105			102.0		%		60-135	18-NOV-19
PCB 126			90.0		%		60-135	18-NOV-19
PCB 155			95.0		%		60-135	18-NOV-19
PCB 167			96.0		%		60-135	18-NOV-19
PCB 156/157			97.0		%		60-135	18-NOV-19
PCB 169			97.0		%		60-135	18-NOV-19
PCB 188			92.0		%		60-135	18-NOV-19
PCB 189			97.0		%		60-135	18-NOV-19
PCB 202			101.0		%		60-135	18-NOV-19
PCB 205			92.0		%		60-135	18-NOV-19
PCB 208			89.0		%		60-135	18-NOV-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-1668C-O2-HRMS-BU	**Water**							
Batch R4919689								
WG3208379-2 LCS								
PCB 206			89.0		%		60-135	18-NOV-19
PCB 209			108.0		%		60-135	18-NOV-19
WG3208379-1 MB								
PCB 1			<8.7	[U]	pg/L		200	18-NOV-19
PCB 2			<9.9	[U]	pg/L		200	18-NOV-19
PCB 3			<12	[U]	pg/L		200	18-NOV-19
PCB 4			<180	[U]	pg/L		200	18-NOV-19
PCB 10			<110	[U]	pg/L		200	18-NOV-19
PCB 9			<110	[U]	pg/L		200	18-NOV-19
PCB 7			<110	[U]	pg/L		200	18-NOV-19
PCB 6			<100	[U]	pg/L		200	18-NOV-19
PCB 5			<120	[U]	pg/L		200	18-NOV-19
PCB 8			<96	[U]	pg/L		200	18-NOV-19
PCB 14			<63	[U]	pg/L		200	18-NOV-19
PCB 11			<67	[U]	pg/L		200	18-NOV-19
PCB 13/12			<66	[U]	pg/L		200	18-NOV-19
PCB 15			<78	[U]	pg/L		200	18-NOV-19
PCB 19			<23	[U]	pg/L		200	18-NOV-19
PCB 30/18			<22	[U]	pg/L		200	18-NOV-19
PCB 17			<26	[U]	pg/L		200	18-NOV-19
PCB 27			<19	[U]	pg/L		200	18-NOV-19
PCB 24			<20	[U]	pg/L		200	18-NOV-19
PCB 16			<32	[U]	pg/L		200	18-NOV-19
PCB 32			<18	[U]	pg/L		200	18-NOV-19
PCB 34			<21	[U]	pg/L		200	18-NOV-19
PCB 23			<20	[U]	pg/L		200	18-NOV-19
PCB 29/26			<20	[U]	pg/L		200	18-NOV-19
PCB 25			<19	[U]	pg/L		200	18-NOV-19
PCB 31			<18	[U]	pg/L		200	18-NOV-19
PCB 28/20			<19	[U]	pg/L		200	18-NOV-19
PCB 21/33			<21	[U]	pg/L		200	18-NOV-19
PCB 22			<21	[U]	pg/L		200	18-NOV-19
PCB 36			<18	[U]	pg/L		200	18-NOV-19
PCB 39			<19	[U]	pg/L		200	18-NOV-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-1668C-O2-HRMS-BU	**Water**							
Batch R4919689								
WG3208379-1 MB								
PCB 38			<20	[U]	pg/L		200	18-NOV-19
PCB 35			<20	[U]	pg/L		200	18-NOV-19
PCB 37			<25	[U]	pg/L		200	18-NOV-19
PCB 54			<13	[U]	pg/L		200	18-NOV-19
PCB 50/53			<18	[U]	pg/L		200	18-NOV-19
PCB 45/51			<19	[U]	pg/L		200	18-NOV-19
PCB 46			<21	[U]	pg/L		200	18-NOV-19
PCB 52			<18	[U]	pg/L		200	18-NOV-19
PCB 73			<15	[U]	pg/L		200	18-NOV-19
PCB 43			<20	[U]	pg/L		200	18-NOV-19
PCB 69/49			<16	[U]	pg/L		200	18-NOV-19
PCB 48			<18	[U]	pg/L		200	18-NOV-19
PCB 44/47/65			<17	[U]	pg/L		200	18-NOV-19
PCB 59/62/75			<14	[U]	pg/L		200	18-NOV-19
PCB 42			<20	[U]	pg/L		200	18-NOV-19
PCB 41/71/40			<18	[U]	pg/L		200	18-NOV-19
PCB 64			<15	[U]	pg/L		200	18-NOV-19
PCB 72			<16	[U]	pg/L		200	18-NOV-19
PCB 68			<16	[U]	pg/L		200	18-NOV-19
PCB 57			<17	[U]	pg/L		200	18-NOV-19
PCB 58			<17	[U]	pg/L		200	18-NOV-19
PCB 67			<15	[U]	pg/L		200	18-NOV-19
PCB 63			<16	[U]	pg/L		200	18-NOV-19
PCB 61/70/74/76			<17	[U]	pg/L		200	18-NOV-19
PCB 66			<16	[U]	pg/L		200	18-NOV-19
PCB 55			<18	[U]	pg/L		200	18-NOV-19
PCB 56			<18	[U]	pg/L		200	18-NOV-19
PCB 60			<17	[U]	pg/L		200	18-NOV-19
PCB 80			<15	[U]	pg/L		200	18-NOV-19
PCB 79			<15	[U]	pg/L		200	18-NOV-19
PCB 78			<17	[U]	pg/L		200	18-NOV-19
PCB 81			<20	[U]	pg/L		200	18-NOV-19
PCB 77			<20	[U]	pg/L		200	18-NOV-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-1668C-O2-HRMS-BU	**Water**							
Batch R4919689								
WG3208379-1 MB								
PCB 104			<12	[U]	pg/L		200	18-NOV-19
PCB 96			<13	[U]	pg/L		200	18-NOV-19
PCB 103			65	[J]	pg/L		200	18-NOV-19
PCB 94			<19	[U]	pg/L		200	18-NOV-19
PCB 95			<17	[U]	pg/L		200	18-NOV-19
PCB 100/93/102/98			<18	[U]	pg/L		200	18-NOV-19
PCB 88/91			<18	[U]	pg/L		200	18-NOV-19
PCB 84			<19	[U]	pg/L		200	18-NOV-19
PCB 89			<19	[U]	pg/L		200	18-NOV-19
PCB 121			<13	[U]	pg/L		200	18-NOV-19
PCB 92			<18	[U]	pg/L		200	18-NOV-19
PCB 113/90/101			<16	J,R	pg/L		200	18-NOV-19
PCB 83/99			<18	[U]	pg/L		200	18-NOV-19
PCB 112			<13	[U]	pg/L		200	18-NOV-19
PCB 109/119/86/97/125/87			<16	[U]	pg/L		200	18-NOV-19
PCB 117/116/85/110/115			<15	[U]	pg/L		200	18-NOV-19
PCB 82			<20	[U]	pg/L		200	18-NOV-19
PCB 111			<14	[U]	pg/L		200	18-NOV-19
PCB 120			<13	[U]	pg/L		200	18-NOV-19
PCB 108/124			<14	[U]	pg/L		200	18-NOV-19
PCB 107			<12	[U]	pg/L		200	18-NOV-19
PCB 123			<17	[U]	pg/L		200	18-NOV-19
PCB 106			<13	[U]	pg/L		200	18-NOV-19
PCB 118			<16	[U]	pg/L		200	18-NOV-19
PCB 122			<15	[U]	pg/L		200	18-NOV-19
PCB 114			<17	[U]	pg/L		200	18-NOV-19
PCB 105			<18	[U]	pg/L		200	18-NOV-19
PCB 127			<14	[U]	pg/L		200	18-NOV-19
PCB 126			<19	[U]	pg/L		200	18-NOV-19
PCB 155			<4.5	[U]	pg/L		200	18-NOV-19
PCB 152			<5.0	[U]	pg/L		200	18-NOV-19
PCB 150			<4.9	[U]	pg/L		200	18-NOV-19
PCB 136			<5.0	[U]	pg/L		200	18-NOV-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-1668C-O2-HRMS-BU	**Water**							
Batch R4919689								
WG3208379-1 MB								
PCB 145			<5.2	[U]	pg/L		200	18-NOV-19
PCB 148			<6.6	[U]	pg/L		200	18-NOV-19
PCB 151/135			<6.8	[U]	pg/L		200	18-NOV-19
PCB 154			<5.6	[U]	pg/L		200	18-NOV-19
PCB 144			<6.4	[U]	pg/L		200	18-NOV-19
PCB 147/149			<6.4	[U]	pg/L		200	18-NOV-19
PCB 134/143			<7.6	[U]	pg/L		200	18-NOV-19
PCB 139/140			<6.5	[U]	pg/L		200	18-NOV-19
PCB 131			<8.4	[U]	pg/L		200	18-NOV-19
PCB 142			<7.2	[U]	pg/L		200	18-NOV-19
PCB 132			<7.5	[U]	pg/L		200	18-NOV-19
PCB 133			<6.9	[U]	pg/L		200	18-NOV-19
PCB 165			<5.6	[U]	pg/L		200	18-NOV-19
PCB 146			<6.1	[U]	pg/L		200	18-NOV-19
PCB 161			<5.0	[U]	pg/L		200	18-NOV-19
PCB 168/153			5.5	J,R	pg/L		200	18-NOV-19
PCB 141			<6.6	[U]	pg/L		200	18-NOV-19
PCB 130			<7.5	[U]	pg/L		200	18-NOV-19
PCB 137/164			<5.7	[U]	pg/L		200	18-NOV-19
PCB 138/163/129			7.6	[J]	pg/L		200	18-NOV-19
PCB 160			<5.2	[U]	pg/L		200	18-NOV-19
PCB 158			<4.6	[U]	pg/L		200	18-NOV-19
PCB 128/166			<5.9	[U]	pg/L		200	18-NOV-19
PCB 159			<4.9	[U]	pg/L		200	18-NOV-19
PCB 162			<5.0	[U]	pg/L		200	18-NOV-19
PCB 167			<5.2	[U]	pg/L		200	18-NOV-19
PCB 156/157			<7.5	[U]	pg/L		400	18-NOV-19
PCB 169			<6.1	[U]	pg/L		200	18-NOV-19
PCB 188			<5.1	[U]	pg/L		200	18-NOV-19
PCB 179			<5.1	[U]	pg/L		200	18-NOV-19
PCB 184			<5.0	[U]	pg/L		200	18-NOV-19
PCB 176			<5.1	[U]	pg/L		200	18-NOV-19
PCB 186			<5.3	[U]	pg/L		200	18-NOV-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-1668C-O2-HRMS-BU	**Water**							
Batch R4919689								
WG3208379-1 MB								
PCB 178			<6.8	[U]	pg/L		200	18-NOV-19
PCB 175			<6.6	[U]	pg/L		200	18-NOV-19
PCB 187			<6.2	[U]	pg/L		200	18-NOV-19
PCB 182			<6.4	[U]	pg/L		200	18-NOV-19
PCB 183			<6.1	[U]	pg/L		200	18-NOV-19
PCB 185			<7.6	[U]	pg/L		200	18-NOV-19
PCB 174			<6.2	[U]	pg/L		200	18-NOV-19
PCB 177			<7.0	[U]	pg/L		200	18-NOV-19
PCB 181			<6.9	[U]	pg/L		200	18-NOV-19
PCB 171/173			<7.1	[U]	pg/L		200	18-NOV-19
PCB 172			<7.1	[U]	pg/L		200	18-NOV-19
PCB 192			<5.8	[U]	pg/L		200	18-NOV-19
PCB 180/193			<6.1	[U]	pg/L		200	18-NOV-19
PCB 191			<5.5	[U]	pg/L		200	18-NOV-19
PCB 170			<7.4	[U]	pg/L		200	18-NOV-19
PCB 190			<5.1	[U]	pg/L		200	18-NOV-19
PCB 189			<9.3	[U]	pg/L		200	18-NOV-19
PCB 202			<4.1	[U]	pg/L		200	18-NOV-19
PCB 201			<4.1	[U]	pg/L		200	18-NOV-19
PCB 204			<4.2	[U]	pg/L		200	18-NOV-19
PCB 197			<4.3	[U]	pg/L		200	18-NOV-19
PCB 200			<4.1	[U]	pg/L		200	18-NOV-19
PCB 198/199			<5.9	[U]	pg/L		200	18-NOV-19
PCB 196			<5.8	[U]	pg/L		200	18-NOV-19
PCB 203			<5.5	[U]	pg/L		200	18-NOV-19
PCB 195			<6.7	[U]	pg/L		200	18-NOV-19
PCB 194			<6.5	[U]	pg/L		200	18-NOV-19
PCB 205			<6.7	[U]	pg/L		200	18-NOV-19
PCB 208			<13	[U]	pg/L		200	18-NOV-19
PCB 207			<15	[U]	pg/L		200	18-NOV-19
PCB 206			<24	[U]	pg/L		200	18-NOV-19
PCB 209			<5.8	[U]	pg/L		200	18-NOV-19
Surrogate: 13C12 PCB 1			44.0		%		5-145	18-NOV-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-1668C-O2-HRMS-BU	**Water**							
Batch	**R4919689**							
WG3208379-1	**MB**							
Surrogate: 13C12 PCB 3			42.0		%		5-145	18-NOV-19
Surrogate: 13C12 PCB 4			40.0		%		5-145	18-NOV-19
Surrogate: 13C12 PCB 15			43.0		%		5-145	18-NOV-19
Surrogate: 13C12 PCB 19			51.0		%		5-145	18-NOV-19
Surrogate: 13C12 PCB 37			48.0		%		5-145	18-NOV-19
Surrogate: 13C12 PCB 54			40.0		%		5-145	18-NOV-19
Surrogate: 13C12 PCB 81			47.0		%		10-145	18-NOV-19
Surrogate: 13C12 PCB 77			52.0		%		10-145	18-NOV-19
Surrogate: 13C12 PCB 104			52.0		%		10-145	18-NOV-19
Surrogate: 13C12 PCB 123			51.0		%		10-145	18-NOV-19
Surrogate: 13C12 PCB 118			50.0		%		10-145	18-NOV-19
Surrogate: 13C12 PCB 114			49.0		%		10-145	18-NOV-19
Surrogate: 13C12 PCB 105			48.0		%		10-145	18-NOV-19
Surrogate: 13C12 PCB 126			49.0		%		10-145	18-NOV-19
Surrogate: 13C12 PCB 155			52.0		%		10-145	18-NOV-19
Surrogate: 13C12 PCB 167			57.0		%		10-145	18-NOV-19
Surrogate: 13C12 PCB 156/157			53.0		%		10-145	18-NOV-19
Surrogate: 13C12 PCB 169			54.0		%		10-145	18-NOV-19
Surrogate: 13C12 PCB 188			59.0		%		10-145	18-NOV-19
Surrogate: 13C12 PCB 189			52.0		%		10-145	18-NOV-19
Surrogate: 13C12 PCB 202			59.0		%		10-145	18-NOV-19
Surrogate: 13C12 PCB 205			53.0		%		10-145	18-NOV-19
Surrogate: 13C12 PCB 208			57.0		%		10-145	18-NOV-19
Surrogate: 13C12 PCB 206			52.0		%		10-145	18-NOV-19
Surrogate: 13C12 PCB 209			43.0		%		10-145	18-NOV-19
Surrogate: 13C12 PCB 28			49.0		%		5-145	18-NOV-19
Surrogate: 13C12 PCB 111			54.0		%		10-145	18-NOV-19
Surrogate: 13C12 PCB 178			58.0		%		10-145	18-NOV-19
Total MonoCB			<8.7	[U]	pg/L		800	18-NOV-19
Total DiCB			<63	[U]	pg/L		1600	18-NOV-19
Total TriCB			<18	[U]	pg/L		1600	18-NOV-19
Total TetraCB			<13	[U]	pg/L		3200	18-NOV-19
Total PentaCB			65	[J]	pg/L		3200	18-NOV-19
Total HexaCB			13.1	[J]	pg/L		3200	18-NOV-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-1668C-O2-HRMS-BU	**Water**							
Batch R4919689								
WG3208379-1 MB								
Total HeptaCB			<5.0	[U]	pg/L		1600	18-NOV-19
Total OctaCB			<4.1	[U]	pg/L		1600	18-NOV-19
Total NonaCB			<13	[U]	pg/L		800	18-NOV-19
DecaCB			<5.8	[U]	pg/L		800	18-NOV-19
Total PCB			78.5	[J]	pg/L		6400	18-NOV-19
MOISTURE-BU	**Soil**							
Batch R4919908								
WG3209721-3 DUP		**L2375251-1**						
% Moisture		46.8	44.6		%	4.8	20	13-NOV-19
WG3209721-2 LCS								
% Moisture			90.3		%		90-110	13-NOV-19
WG3209721-1 MB								
% Moisture			<0.10		%		0.3	13-NOV-19
DX-1613B-HRMS-BU	**Solid**							
Batch R4923853								
WG3209717-4 DUP		**L2375251-1**						
2,3,7,8-TCDD		<0.11	<0.070	RPD-NA	pg/g	N/A	50	23-NOV-19
1,2,3,7,8-PeCDD		0.150	0.118		pg/g	24	50	23-NOV-19
1,2,3,4,7,8-HxCDD		0.180	0.139		pg/g	26	50	23-NOV-19
1,2,3,6,7,8-HxCDD		1.19	0.765		pg/g	43	50	23-NOV-19
1,2,3,7,8,9-HxCDD		0.522	0.267	G	pg/g	65	50	23-NOV-19
1,2,3,4,6,7,8-HpCDD		17.5	15.4		pg/g	13	50	23-NOV-19
OCDD		155	116		pg/g	29	50	23-NOV-19
2,3,7,8-TCDF		0.415	0.234	G	pg/g	56	50	23-NOV-19
1,2,3,7,8-PeCDF		0.166	0.098	J	pg/g	0.068	0.086	23-NOV-19
2,3,4,7,8-PeCDF		0.420	0.110	G	pg/g	117	50	23-NOV-19
1,2,3,4,7,8-HxCDF		0.270	0.231		pg/g	16	50	23-NOV-19
1,2,3,6,7,8-HxCDF		0.213	0.130		pg/g	48	50	23-NOV-19
2,3,4,6,7,8-HxCDF		0.457	0.400		pg/g	13	50	23-NOV-19
1,2,3,7,8,9-HxCDF		0.203	0.170		pg/g	18	50	23-NOV-19
1,2,3,4,6,7,8-HpCDF		3.50	3.70		pg/g	5.6	50	23-NOV-19
1,2,3,4,7,8,9-HpCDF		0.206	0.237		pg/g	14	50	23-NOV-19
OCDF		10.6	10.7		pg/g	0.9	50	23-NOV-19
Total-TCDD		<0.11	0.112	RPD-NA	pg/g	N/A	50	23-NOV-19

COMMENTS: Duplicate did not pass criteria for many targets. Sample contained grass and sticks and was nonhomogenous.

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
DX-1613B-HRMS-BU	**Solid**							
Batch R4923853								
WG3209717-4 DUP		**L2375251-1**						
Total-PeCDD		0.639	0.802		pg/g	23	50	23-NOV-19
Total-HxCDD		7.18	4.34		pg/g	49	50	23-NOV-19
Total-HpCDD		32.9	26.6		pg/g	21	50	23-NOV-19
Total-TCDF		2.09	0.855	G	pg/g	84	50	23-NOV-19
Total-PeCDF		3.45	1.09	G	pg/g	104	50	23-NOV-19
Total-HxCDF		6.11	4.47		pg/g	31	50	23-NOV-19
Total-HpCDF		10.6	12.7		pg/g	18	50	23-NOV-19
COMMENTS: Duplicate did not pass criteria for many targets. Sample contained grass and sticks and was nonhomogenous.								
WG3209717-2 LCS								
2,3,7,8-TCDD			84.0		%		67-158	23-NOV-19
1,2,3,7,8-PeCDD			104.0		%		70-142	23-NOV-19
1,2,3,4,7,8-HxCDD			96.0		%		70-164	23-NOV-19
1,2,3,6,7,8-HxCDD			96.0		%		76-134	23-NOV-19
1,2,3,7,8,9-HxCDD			110.0		%		64-162	23-NOV-19
1,2,3,4,6,7,8-HpCDD			102.0		%		70-140	23-NOV-19
OCDD			97.0		%		78-144	23-NOV-19
2,3,7,8-TCDF			97.0		%		75-158	23-NOV-19
1,2,3,7,8-PeCDF			104.0		%		80-134	23-NOV-19
2,3,4,7,8-PeCDF			94.0		%		68-160	23-NOV-19
1,2,3,4,7,8-HxCDF			98.0		%		72-134	23-NOV-19
1,2,3,6,7,8-HxCDF			100.0		%		84-130	23-NOV-19
2,3,4,6,7,8-HxCDF			98.0		%		70-156	23-NOV-19
1,2,3,7,8,9-HxCDF			105.0		%		78-130	23-NOV-19
1,2,3,4,6,7,8-HpCDF			101.0		%		82-122	23-NOV-19
1,2,3,4,7,8,9-HpCDF			93.0		%		78-138	23-NOV-19
OCDF			83.0		%		63-170	23-NOV-19
WG3209717-1 MB								
2,3,7,8-TCDD			<0.069	[U]	pg/g		0.069	23-NOV-19
1,2,3,7,8-PeCDD			<0.028	[U]	pg/g		0.028	23-NOV-19
1,2,3,4,7,8-HxCDD			<0.037	[U]	pg/g		0.037	23-NOV-19
1,2,3,6,7,8-HxCDD			<0.037	[U]	pg/g		0.037	23-NOV-19
1,2,3,7,8,9-HxCDD			<0.037	[U]	pg/g		0.037	23-NOV-19
1,2,3,4,6,7,8-HpCDD			0.115	M,J	pg/g		0.026	23-NOV-19
OCDD			0.407	[J]	pg/g		0.036	23-NOV-19
2,3,7,8-TCDF			0.057	M,J,R	pg/g		0.04	23-NOV-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
DX-1613B-HRMS-BU	**Solid**							
Batch R4923853								
WG3209717-1 MB								
1,2,3,7,8-PeCDF			0.077	M,J,R	pg/g		0.037	23-NOV-19
2,3,4,7,8-PeCDF			<0.027	[U]	pg/g		0.027	23-NOV-19
1,2,3,4,7,8-HxCDF			0.042	M,J,R	pg/g		0.029	23-NOV-19
1,2,3,6,7,8-HxCDF			0.028	M,J,R	pg/g		0.027	23-NOV-19
2,3,4,6,7,8-HxCDF			<0.026	M,U	pg/g		0.026	23-NOV-19
1,2,3,7,8,9-HxCDF			0.129	M,J	pg/g		0.034	23-NOV-19
1,2,3,4,6,7,8-HpCDF			<0.026	[U]	pg/g		0.026	23-NOV-19
1,2,3,4,7,8,9-HpCDF			<0.030	[U]	pg/g		0.03	23-NOV-19
OCDF			0.052	M,J,R	pg/g		0.035	23-NOV-19
Total-TCDD			<0.069	[U]	pg/g		0.069	23-NOV-19
Total-PeCDD			<0.028	[U]	pg/g		0.028	23-NOV-19
Total-HxCDD			<0.037	[U]	pg/g		0.037	23-NOV-19
Total-HpCDD			0.180	A	pg/g		0.026	23-NOV-19
Total-TCDF			<0.040	[U]	pg/g		0.04	23-NOV-19
Total-PeCDF			<0.037	[U]	pg/g		0.037	23-NOV-19
Total-HxCDF			0.129	A	pg/g		0.034	23-NOV-19
Total-HpCDF			<0.030	[U]	pg/g		0.03	23-NOV-19
Surrogate: 13C12-2,3,7,8-TCDD			86.0		%		25-164	23-NOV-19
Surrogate: 13C12-1,2,3,7,8-PeCDD			89.0		%		25-181	23-NOV-19
Surrogate: 13C12-1,2,3,4,7,8-HxCDD			77.0		%		32-141	23-NOV-19
Surrogate: 13C12-1,2,3,6,7,8-HxCDD			79.0		%		28-130	23-NOV-19
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD			83.0		%		23-140	23-NOV-19
Surrogate: 13C12-OCDD			77.0		%		17-157	23-NOV-19
Surrogate: 13C12-2,3,7,8-TCDF			78.0		%		24-169	23-NOV-19
Surrogate: 13C12-1,2,3,7,8-PeCDF			78.0		%		24-185	23-NOV-19
Surrogate: 13C12-2,3,4,7,8-PeCDF			86.0		%		21-178	23-NOV-19
Surrogate: 13C12-1,2,3,4,7,8-HxCDF			75.0		%		26-152	23-NOV-19
Surrogate: 13C12-1,2,3,6,7,8-HxCDF			76.0		%		26-123	23-NOV-19
Surrogate: 13C12-2,3,4,6,7,8-HxCDF			81.0		%		29-147	23-NOV-19
Surrogate: 13C12-1,2,3,7,8,9-HxCDF			74.0		%		28-136	23-NOV-19
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF			81.0		%		28-143	23-NOV-19
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF			88.0		%		26-138	23-NOV-19
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)			72.0		%		31-197	23-NOV-19

COMMENTS: Blank has low levels of select targets that were within the reference method control limits

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PBDE-1614-HRMS-BU	**Solid**							
Batch R4923853								
WG3209717-4 DUP		**L2375251-1**						
BDE 10		<0.077	<0.079	RPD-NA	pg/g	N/A	50	02-DEC-19
BDE 7		3.51	1.48	G	pg/g	81	50	02-DEC-19
BDE 8/11		3.10	<0.052	G	pg/g	N/A	50	02-DEC-19
BDE 12/13		1.30	0.500	G	pg/g	89	50	02-DEC-19
BDE 15		1.98	0.938	G	pg/g	71	50	02-DEC-19
BDE 30		<0.13	<0.11	RPD-NA	pg/g	N/A	50	02-DEC-19
BDE 32		0.340	0.224		pg/g	41	50	02-DEC-19
BDE 17/25		22.3	11.4	G	pg/g	65	50	02-DEC-19
BDE 28/33		9.00	4.75	G	pg/g	62	50	02-DEC-19
BDE 35		1.70	0.960	G	pg/g	56	50	02-DEC-19
BDE 37		0.390	0.200	J,G	pg/g	0.190	0.148	02-DEC-19
BDE 75		0.430	0.170	J,G	pg/g	0.260	0.19	02-DEC-19
BDE 51		5.37	2.86	G	pg/g	61	50	02-DEC-19
BDE 49		32.8	17.1	G	pg/g	63	50	02-DEC-19
BDE 71		1.65	1.00		pg/g	49	50	02-DEC-19
BDE 47		229	124	G	pg/g	59	50	02-DEC-19
BDE 79		5.35	1.83	G	pg/g	98	50	02-DEC-19
BDE 66		5.72	2.52	G	pg/g	78	50	02-DEC-19
BDE 77		0.315	0.139	J,G	pg/g	0.176	0.164	02-DEC-19
BDE 100		54.7	28.9	G	pg/g	62	50	02-DEC-19
BDE 119/120		2.23	1.48		pg/g	40	50	02-DEC-19
BDE 99		177	93.2	G	pg/g	62	50	02-DEC-19
BDE 116		<0.23	<0.31	RPD-NA	pg/g	N/A	50	02-DEC-19
BDE 118		1.18	0.78		pg/g	41	50	02-DEC-19
BDE 85		9.08	4.30	G	pg/g	71	50	02-DEC-19
BDE 126		0.220	0.127	J	pg/g	0.093	0.174	02-DEC-19
BDE 105		<0.16	<0.22	RPD-NA	pg/g	N/A	50	02-DEC-19
BDE 155		1.50	1.17		pg/g	25	50	02-DEC-19
BDE 154		20.0	11.2	G	pg/g	56	50	02-DEC-19
BDE 153		20.3	10.4	G	pg/g	64	50	02-DEC-19
BDE 140		1.13	0.70		pg/g	47	50	02-DEC-19
BDE 138/166		3.90	2.04	G	pg/g	63	50	02-DEC-19
BDE 156		<0.56	<0.51	RPD-NA	pg/g	N/A	50	02-DEC-19

COMMENTS: Sample and dup are not homogeneous (contains sticks).

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PBDE-1614-HRMS-BU	**Solid**							
Batch R4923853								
WG3209717-4 DUP		**L2375251-1**						
BDE 128		<0.50	<0.45	RPD-NA	pg/g	N/A	50	02-DEC-19
BDE 184		0.530	0.350		pg/g	41	50	02-DEC-19
BDE 183		4.34	2.54	G	pg/g	52	50	02-DEC-19
BDE 191		<0.14	<0.14	RPD-NA	pg/g	N/A	50	02-DEC-19
BDE 181		<0.14	<0.14	RPD-NA	pg/g	N/A	50	02-DEC-19
BDE 190		<0.20	<0.20	RPD-NA	pg/g	N/A	50	02-DEC-19
BDE 197		2.55	1.69		pg/g	41	50	02-DEC-19
BDE 203		3.05	1.54	G	pg/g	66	50	02-DEC-19
BDE 196		2.90	1.50	G	pg/g	64	50	02-DEC-19
BDE 208		8.32	9.22		pg/g	10	50	02-DEC-19
BDE 207		14.2	14.4		pg/g	1.4	50	02-DEC-19
BDE 206		20.9	32.5		pg/g	43	50	02-DEC-19
BDE 209		314	542	G	pg/g	53	50	02-DEC-19
PBEB		0.170	0.120		pg/g	34	50	02-DEC-19
HBB		3.33	2.27		pg/g	38	50	02-DEC-19
COMMENTS: Sample and dup are not homogeneous (contains sticks).								
WG3209717-2 LCS								
BDE 10			20.0		%		5-130	02-DEC-19
BDE 7			32.0		%		5-130	02-DEC-19
BDE 8/11			45.0		%		20-150	02-DEC-19
BDE 12/13			83.0		%		5-130	02-DEC-19
BDE 15			95.0		%		50-150	02-DEC-19
BDE 30			28.0		%		5-130	02-DEC-19
BDE 32			102.0		%		50-150	02-DEC-19
BDE 17/25			92.0		%		50-150	02-DEC-19
BDE 28/33			97.0		%		50-150	02-DEC-19
BDE 35			88.0		%		50-150	02-DEC-19
BDE 37			102.0		%		50-150	02-DEC-19
BDE 75			80.0		%		50-150	02-DEC-19
BDE 51			96.0		%		50-150	02-DEC-19
BDE 49			86.0		%		50-150	02-DEC-19
BDE 71			99.0		%		50-150	02-DEC-19
BDE 47			96.0		%		50-150	02-DEC-19
BDE 79			90.0		%		50-150	02-DEC-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PBDE-1614-HRMS-BU	**Solid**							
Batch R4923853								
WG3209717-2 LCS								
BDE 66			87.0		%		50-150	02-DEC-19
BDE 77			93.0		%		50-150	02-DEC-19
BDE 100			94.0		%		50-150	02-DEC-19
BDE 119/120			92.0		%		50-150	02-DEC-19
BDE 99			94.0		%		50-150	02-DEC-19
BDE 116			50.0		%		40-140	02-DEC-19
BDE 118			103.0		%		50-150	02-DEC-19
BDE 85			105.0		%		50-150	02-DEC-19
BDE 126			93.0		%		50-150	02-DEC-19
BDE 105			112.0		%		50-150	02-DEC-19
BDE 155			93.0		%		50-150	02-DEC-19
BDE 154			97.0		%		50-150	02-DEC-19
BDE 153			94.0		%		50-150	02-DEC-19
BDE 140			123.0		%		50-150	02-DEC-19
BDE 138/166			140.0		%		50-150	02-DEC-19
BDE 156			132.0		%		50-150	02-DEC-19
BDE 128			121.0		%		50-150	02-DEC-19
BDE 184			83.0		%		50-150	02-DEC-19
BDE 183			95.0		%		50-150	02-DEC-19
BDE 191			99.0		%		50-150	02-DEC-19
BDE 181			90.0		%		50-150	02-DEC-19
BDE 190			100.0		%		50-150	02-DEC-19
BDE 197			96.0		%		50-150	02-DEC-19
BDE 203			80.0		%		50-150	02-DEC-19
BDE 196			101.0		%		50-150	02-DEC-19
BDE 208			107.0		%		50-200	02-DEC-19
BDE 207			95.0		%		50-200	02-DEC-19
BDE 206			100.0		%		50-200	02-DEC-19
BDE 209			94.0		%		50-200	02-DEC-19
PBEB			95.0		%		50-150	02-DEC-19
HBB			95.0		%		50-150	02-DEC-19
COMMENTS: Some labelled extraction standards (BDE 209, BDE CL 138) are outside method acceptance criteria. Native results calculated by isotope dilution so no impact to data quality.								
WG3209717-1 MB								
BDE 10			<0.17	[U]	pg/g		5	02-DEC-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PBDE-1614-HRMS-BU	**Solid**							
Batch R4923853								
WG3209717-1 MB								
BDE 7			<0.15	[U]	pg/g		5	02-DEC-19
BDE 8/11			<0.11	[U]	pg/g		10	02-DEC-19
BDE 12/13			<0.094	[U]	pg/g		10	02-DEC-19
BDE 15			<0.081	[U]	pg/g		5	02-DEC-19
BDE 30			<0.27	[U]	pg/g		5	02-DEC-19
BDE 32			<0.19	[U]	pg/g		5	02-DEC-19
BDE 17/25			<0.24	[U]	pg/g		10	02-DEC-19
BDE 28/33			<0.24	[U]	pg/g		10	02-DEC-19
BDE 35			<0.16	[U]	pg/g		5	02-DEC-19
BDE 37			1.11	[J]	pg/g		5	02-DEC-19
BDE 75			<0.14	[U]	pg/g		5	02-DEC-19
BDE 51			<0.12	[U]	pg/g		5	02-DEC-19
BDE 49			<0.18	[U]	pg/g		5	02-DEC-19
BDE 71			<0.19	[U]	pg/g		5	02-DEC-19
BDE 47			3.17	[J]	pg/g		5	02-DEC-19
BDE 79			<0.12	[U]	pg/g		5	02-DEC-19
BDE 66			<0.19	[U]	pg/g		5	02-DEC-19
BDE 77			<0.13	[U]	pg/g		5	02-DEC-19
BDE 100			0.868	[J]	pg/g		7.5	02-DEC-19
BDE 119/120			0.69	[J]	pg/g		7.5	02-DEC-19
BDE 99			2.92	[J]	pg/g		7.5	02-DEC-19
BDE 116			<0.20	[U]	pg/g		7.5	02-DEC-19
BDE 118			<0.14	[U]	pg/g		7.5	02-DEC-19
BDE 85			<0.12	[U]	pg/g		7.5	02-DEC-19
BDE 126			0.210	M,J,R	pg/g		7.5	02-DEC-19
BDE 105			<0.14	[U]	pg/g		7.5	02-DEC-19
BDE 155			<0.21	[U]	pg/g		10	02-DEC-19
BDE 154			<0.27	[U]	pg/g		10	02-DEC-19
BDE 153			<0.34	[U]	pg/g		10	02-DEC-19
BDE 140			<0.33	[U]	pg/g		10	02-DEC-19
BDE 138/166			<0.56	[U]	pg/g		20	02-DEC-19
BDE 156			<0.63	[U]	pg/g		10	02-DEC-19
BDE 128			<0.56	[U]	pg/g		10	02-DEC-19

COMMENTS: Some labelled extraction standards (BDE 209, BDE CL 138) are outside method acceptance criteria. Native results calculated by

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PBDE-1614-HRMS-BU	**Solid**							
Batch R4923853								
WG3209717-1 MB								
BDE 184			0.31	M,J,R	pg/g		13	02-DEC-19
BDE 183			0.54	M,J,R	pg/g		13	02-DEC-19
BDE 191			<0.22	[U]	pg/g		13	02-DEC-19
BDE 181			<0.22	[U]	pg/g		13	02-DEC-19
BDE 190			<0.31	[U]	pg/g		13	02-DEC-19
BDE 197			<0.16	[U]	pg/g		13	02-DEC-19
BDE 203			<0.20	[U]	pg/g		13	02-DEC-19
BDE 196			<0.20	[U]	pg/g		13	02-DEC-19
BDE 208			<0.34	[U]	pg/g		25	02-DEC-19
BDE 207			<0.33	[U]	pg/g		25	02-DEC-19
BDE 206			<0.37	[U]	pg/g		25	02-DEC-19
BDE 209			<2.1	[U]	pg/g		25	02-DEC-19
PBEB			<0.11	[U]	pg/g		5	02-DEC-19
HBB			1.17	M,J	pg/g		5	02-DEC-19
Surrogate: 13C12 BDE 15			40.0		%		20-150	02-DEC-19
Surrogate: 13C12 BDE 28			64.0		%		25-150	02-DEC-19
Surrogate: 13C12 BDE 47			76.0		%		25-150	02-DEC-19
Surrogate: 13C12 BDE 77			86.0		%		25-150	02-DEC-19
Surrogate: 13C12 BDE 100			61.0		%		25-150	02-DEC-19
Surrogate: 13C12 BDE 99			60.0		%		25-150	02-DEC-19
Surrogate: 13C12 BDE 126			71.0		%		25-150	02-DEC-19
Surrogate: 13C12 BDE 154			46.0		%		25-150	02-DEC-19
Surrogate: 13C12 BDE 153			58.0		%		25-150	02-DEC-19
Surrogate: 13C12 BDE 183			63.0		%		25-150	02-DEC-19
Surrogate: 13C12 BDE 197			47.0		%		25-150	02-DEC-19
Surrogate: 13C12 BDE 207			62.0		%		20-200	02-DEC-19
Surrogate: 13C12 BDE 209			14.0	G	%		20-200	02-DEC-19
Surrogate: 13C6 HBB			62.0		%		25-150	02-DEC-19
Surrogate: 13C12 BDE 138 Cleanup			36.0		%		30-135	02-DEC-19

COMMENTS: Some labelled extraction standards (BDE 209, BDE CL 138) are outside method acceptance criteria. Native results calculated by isotope dilution so no impact to data quality.

PCB-1668C-O2-HRMS-BU **Solid**

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-1668C-O2-HRMS-BU	**Solid**							
Batch R4923853								
WG3209717-4 DUP		**L2375251-1**						
PCB 1		2.30	1.00	J,G	pg/g	1.30	1.24	20-NOV-19
PCB 2		4.39	1.70	G	pg/g	88	50	20-NOV-19
PCB 3		3.80	1.93	J,G	pg/g	1.87	1.5	20-NOV-19
PCB 4		8.6	3.4	J	pg/g	5.2	6.2	20-NOV-19
PCB 10		<1.7	<1.6	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 9		<1.7	<1.6	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 7		<1.7	<1.6	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 6		3.7	3.5		pg/g	6.1	50	20-NOV-19
PCB 5		<1.9	<1.8	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 8		17.0	11.9		pg/g	35	50	20-NOV-19
PCB 14		<2.5	<2.1	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 11		112	88.0		pg/g	24	50	20-NOV-19
PCB 13/12		<2.6	<2.2	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 15		5.7	5.1		pg/g	11	50	20-NOV-19
PCB 19		6.9	3.14	J,G	pg/g	3.77	2.8	20-NOV-19
PCB 30/18		48.8	37.8		pg/g	25	50	20-NOV-19
PCB 17		26.0	21.5		pg/g	19	50	20-NOV-19
PCB 27		3.2	2.45		pg/g	27	50	20-NOV-19
PCB 24		<1.1	<0.62	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 16		19.5	12.3		pg/g	45	50	20-NOV-19
PCB 32		16.0	12.9		pg/g	21	50	20-NOV-19
PCB 34		<2.7	1.9	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 23		<2.5	<1.6	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 29/26		25.3	39.5		pg/g	44	50	20-NOV-19
PCB 25		15.1	35.0	G	pg/g	79	50	20-NOV-19
PCB 31		97.8	106		pg/g	8.0	50	20-NOV-19
PCB 28/20		123	137		pg/g	11	50	20-NOV-19
PCB 21/33		68.0	60.0		pg/g	13	50	20-NOV-19
PCB 22		34.4	32.3		pg/g	6.3	50	20-NOV-19
PCB 36		3.1	3.4		pg/g	9.2	50	20-NOV-19
PCB 39		<2.5	<1.6	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 38		<2.6	<1.6	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 35		3.9	2.6		pg/g	40	50	20-NOV-19

COMMENTS: Duplicate did not pass criteria for many targets. Sample contained grass and sticks and was nonhomogenous.

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-1668C-O2-HRMS-BU	**Solid**							
Batch R4923853								
WG3209717-4 DUP		**L2375251-1**						
PCB 37		25.0	17.8		pg/g	34	50	20-NOV-19
PCB 54		<0.72	<0.41	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 50/53		20.0	25.4		pg/g	24	50	20-NOV-19
PCB 45/51		25.9	34.8		pg/g	29	50	20-NOV-19
PCB 46		10.4	12.2		pg/g	16	50	20-NOV-19
PCB 52		339	326		pg/g	3.9	50	20-NOV-19
PCB 73		1.2	3.34	J	pg/g	2.14	2.2	20-NOV-19
PCB 43		9.1	11.0		pg/g	19	50	20-NOV-19
PCB 69/49		169	258		pg/g	42	50	20-NOV-19
PCB 48		30.7	49.7		pg/g	47	50	20-NOV-19
PCB 44/47/65		218	296		pg/g	30	50	20-NOV-19
PCB 59/62/75		15.4	21.2		pg/g	32	50	20-NOV-19
PCB 42		59.2	103	G	pg/g	54	50	20-NOV-19
PCB 41/71/40		92.0	137		pg/g	39	50	20-NOV-19
PCB 64		92.2	134		pg/g	37	50	20-NOV-19
PCB 72		3.3	7.0	J,G	pg/g	3.7	2.6	20-NOV-19
PCB 68		2.4	5.1	J,G	pg/g	2.7	2.6	20-NOV-19
PCB 57		<1.4	4.3	G	pg/g	N/A	50	20-NOV-19
PCB 58		<1.4	2.6	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 67		3.5	8.5	G	pg/g	83	50	20-NOV-19
PCB 63		7.7	15.5	G	pg/g	67	50	20-NOV-19
PCB 61/70/74/76		373	302		pg/g	21	50	20-NOV-19
PCB 66		189	176		pg/g	7.1	50	20-NOV-19
PCB 55		<1.4	<1.4	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 56		78.8	78.2		pg/g	0.8	50	20-NOV-19
PCB 60		27.1	16.4		pg/g	49	50	20-NOV-19
PCB 80		<1.2	<1.2	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 79		4.6	1.7	J,G	pg/g	2.9	2.6	20-NOV-19
PCB 78		<1.4	<1.4	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 81		<1.5	<1.6	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 77		9.2	5.5	G	pg/g	51	50	20-NOV-19
PCB 104		<0.34	<0.61	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 96		3.19	2.40		pg/g	28	50	20-NOV-19
PCB 103		5.6	4.8		pg/g	15	50	20-NOV-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-1668C-O2-HRMS-BU	**Solid**							
Batch R4923853								
WG3209717-4 DUP		**L2375251-1**						
PCB 94		<1.8	<1.5	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 95		295	157	G	pg/g	61	50	20-NOV-19
PCB 100/93/102/98		21.0	20.4		pg/g	2.9	50	20-NOV-19
PCB 88/91		66.2	47.0		pg/g	34	50	20-NOV-19
PCB 84		108	66.8		pg/g	47	50	20-NOV-19
PCB 89		4.3	5.0		pg/g	15	50	20-NOV-19
PCB 121		<1.2	<1.1	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 92		91.2	48.9	G	pg/g	60	50	20-NOV-19
PCB 113/90/101		472	177	G	pg/g	91	50	20-NOV-19
PCB 83/99		259	119	G	pg/g	74	50	20-NOV-19
PCB 112		<1.2	2.7	G	pg/g	N/A	50	20-NOV-19
PCB 109/119/86/97/125/87		294	109	G	pg/g	92	50	20-NOV-19
PCB 117/116/85/110/115		623	290	G	pg/g	73	50	20-NOV-19
PCB 82		55.2	18.8	G	pg/g	98	50	20-NOV-19
PCB 111		<1.3	1.3	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 120		2.0	1.4		pg/g	37	50	20-NOV-19
PCB 108/124		14.6	3.30	G	pg/g	126	50	20-NOV-19
PCB 107		31.4	12.1	G	pg/g	89	50	20-NOV-19
PCB 123		4.4	1.9	J,G	pg/g	2.5	2.4	20-NOV-19
PCB 106		<0.98	<0.89	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 118		431	116	G	pg/g	115	50	20-NOV-19
PCB 122		6.0	2.00	J,G	pg/g	4.00	2.2	20-NOV-19
PCB 114		9.0	2.7	G	pg/g	109	50	20-NOV-19
PCB 105		168	36.0	G	pg/g	129	50	20-NOV-19
PCB 127		<0.97	<0.88	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 126		4.3	1.8	J	pg/g	2.5	2.6	20-NOV-19
PCB 155		<0.24	<0.31	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 152		<0.32	<0.38	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 150		0.97	0.57	J	pg/g	0.40	0.76	20-NOV-19
PCB 136		37.3	15.8	G	pg/g	81	50	20-NOV-19
PCB 145		<0.34	<0.41	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 148		1.26	0.71	J	pg/g	0.55	1.06	20-NOV-19
PCB 151/135		119	52.4	G	pg/g	78	50	20-NOV-19

COMMENTS: Duplicate did not pass criteria for many targets. Sample contained grass and sticks and was nonhomogenous.

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-1668C-O2-HRMS-BU	**Solid**							
Batch R4923853								
WG3209717-4 DUP		**L2375251-1**						
PCB 154		7.18	5.63		pg/g	24	50	20-NOV-19
PCB 144		16.0	5.18	G	pg/g	102	50	20-NOV-19
PCB 147/149		293	122	G	pg/g	82	50	20-NOV-19
PCB 134/143		22.9	9.97	G	pg/g	79	50	20-NOV-19
PCB 139/140		8.1	2.60	G	pg/g	103	50	20-NOV-19
PCB 131		5.8	1.71	J,G	pg/g	4.10	2.8	20-NOV-19
PCB 142		<1.3	<0.79	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 132		155	55.7	G	pg/g	94	50	20-NOV-19
PCB 133		8.4	4.05	G	pg/g	69	50	20-NOV-19
PCB 165		<0.96	<0.60	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 146		68.3	34.0	G	pg/g	67	50	20-NOV-19
PCB 161		<0.84	<0.52	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 168/153		355	146	G	pg/g	83	50	20-NOV-19
PCB 141		63.0	19.8	G	pg/g	104	50	20-NOV-19
PCB 130		32.1	9.70	G	pg/g	107	50	20-NOV-19
PCB 137/164		47.7	15.1	G	pg/g	104	50	20-NOV-19
PCB 138/163/129		461	154	G	pg/g	100	50	20-NOV-19
PCB 160		<0.93	<0.57	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 158		36.9	11.4	G	pg/g	106	50	20-NOV-19
PCB 128/166		78.0	25.6	G	pg/g	101	50	20-NOV-19
PCB 159		1.70	0.99	J	pg/g	0.71	1.64	20-NOV-19
PCB 162		1.43	<0.54	G	pg/g	N/A	50	20-NOV-19
PCB 167		17.0	5.79	G	pg/g	98	50	20-NOV-19
PCB 156/157		55.2	14.0	G	pg/g	119	50	20-NOV-19
PCB 169		<1.1	0.80	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 188		<0.30	<0.25	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 179		26.1	17.9		pg/g	37	50	20-NOV-19
PCB 184		<0.36	<0.32	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 176		8.69	4.52	G	pg/g	63	50	20-NOV-19
PCB 186		<0.37	<0.33	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 178		16.5	9.88	G	pg/g	50	50	20-NOV-19
PCB 175		2.70	1.60	G	pg/g	51	50	20-NOV-19
PCB 187		85.2	52.7		pg/g	47	50	20-NOV-19

COMMENTS: Duplicate did not pass criteria for many targets. Sample contained grass and sticks and was nonhomogenous.

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-1668C-O2-HRMS-BU	**Solid**							
Batch R4923853								
WG3209717-4 DUP		**L2375251-1**						
PCB 182		0.95	<0.40	G	pg/g	N/A	50	20-NOV-19
PCB 183		38.8	21.7	G	pg/g	57	50	20-NOV-19
PCB 185		4.74	3.16		pg/g	40	50	20-NOV-19
PCB 174		58.8	34.5	G	pg/g	52	50	20-NOV-19
PCB 177		38.8	22.3	G	pg/g	54	50	20-NOV-19
PCB 181		0.83	<0.42	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 171/173		18.0	8.20	G	pg/g	75	50	20-NOV-19
PCB 172		11.5	6.59	G	pg/g	54	50	20-NOV-19
PCB 192		<0.39	<0.35	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 180/193		137	81.1	G	pg/g	51	50	20-NOV-19
PCB 191		2.35	1.10	G	pg/g	72	50	20-NOV-19
PCB 170		66.5	33.9	G	pg/g	65	50	20-NOV-19
PCB 190		8.20	5.47		pg/g	40	50	20-NOV-19
PCB 189		2.20	0.71	J	pg/g	1.49	1.5	20-NOV-19
PCB 202		6.10	5.71		pg/g	6.6	50	20-NOV-19
PCB 201		3.80	3.00		pg/g	24	50	20-NOV-19
PCB 204		<0.23	<0.18	RPD-NA	pg/g	N/A	50	20-NOV-19
PCB 197		0.76	0.74		pg/g	2.7	50	20-NOV-19
PCB 200		3.36	1.90	G	pg/g	56	50	20-NOV-19
PCB 198/199		30.5	28.2		pg/g	7.8	50	20-NOV-19
PCB 196		12.4	10.8		pg/g	14	50	20-NOV-19
PCB 203		20.3	19.4		pg/g	4.5	50	20-NOV-19
PCB 195		9.11	5.51		pg/g	49	50	20-NOV-19
PCB 194		20.0	20.8		pg/g	3.9	50	20-NOV-19
PCB 205		1.20	1.08		pg/g	11	50	20-NOV-19
PCB 208		4.30	9.47	G	pg/g	75	50	20-NOV-19
PCB 207		1.70	3.92	G	pg/g	79	50	20-NOV-19
PCB 206		14.0	40.8	G	pg/g	98	50	20-NOV-19
PCB 209		17.2	22.0		pg/g	24	50	20-NOV-19
Total MonoCB		10.5	4.63	G	pg/g	78	50	20-NOV-19
Total DiCB		147	112		pg/g	27	50	20-NOV-19
Total TriCB		516	526		pg/g	1.9	50	20-NOV-19
Total TetraCB		1780	2030		pg/g	13	50	20-NOV-19
Total PentaCB		2970	1250	G	pg/g	82	50	20-NOV-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-1668C-O2-HRMS-BU	**Solid**							
Batch R4923853								
WG3209717-4 DUP		**L2375251-1**						
Total HexaCB		1890	714	G	pg/g	90	50	20-NOV-19
Total HeptaCB		528	305	G	pg/g	54	50	20-NOV-19
Total OctaCB		108	97.1		pg/g	11	50	20-NOV-19
Total NonaCB		20.0	54.2	G	pg/g	92	50	20-NOV-19
DecaCB		17.2	22.0		pg/g	24	50	20-NOV-19
Total PCB		7990	5120		pg/g	44	50	20-NOV-19
COMMENTS: Duplicate did not pass criteria for many targets. Sample contained grass and sticks and was nonhomogenous.								
WG3209717-2 LCS								
PCB 1			105.0		%		60-135	20-NOV-19
PCB 3			104.0		%		60-135	20-NOV-19
PCB 4			102.0		%		60-135	20-NOV-19
PCB 15			106.0		%		60-135	20-NOV-19
PCB 19			98.0		%		60-135	20-NOV-19
PCB 37			111.0		%		60-135	20-NOV-19
PCB 54			105.0		%		60-135	20-NOV-19
PCB 81			99.0		%		60-135	20-NOV-19
PCB 77			99.0		%		60-135	20-NOV-19
PCB 104			91.0		%		60-135	20-NOV-19
PCB 123			99.0		%		60-135	20-NOV-19
PCB 118			103.0		%		60-135	20-NOV-19
PCB 114			101.0		%		60-135	20-NOV-19
PCB 105			104.0		%		60-135	20-NOV-19
PCB 126			97.0		%		60-135	20-NOV-19
PCB 155			97.0		%		60-135	20-NOV-19
PCB 167			102.0		%		60-135	20-NOV-19
PCB 156/157			102.0		%		60-135	20-NOV-19
PCB 169			99.0		%		60-135	20-NOV-19
PCB 188			98.0		%		60-135	20-NOV-19
PCB 189			101.0		%		60-135	20-NOV-19
PCB 202			101.0		%		60-135	20-NOV-19
PCB 205			99.0		%		60-135	20-NOV-19
PCB 208			97.0		%		60-135	20-NOV-19
PCB 206			94.0		%		60-135	20-NOV-19
PCB 209			114.0		%		60-135	20-NOV-19
WG3209717-1 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-1668C-O2-HRMS-BU	**Solid**							
Batch R4923853								
WG3209717-1 MB								
PCB 1			<0.31	[U]	pg/g		9.94	20-NOV-19
PCB 2			0.34	M,J	pg/g		9.94	20-NOV-19
PCB 3			<0.37	M,U	pg/g		9.94	20-NOV-19
PCB 4			<2.0	[U]	pg/g		9.94	20-NOV-19
PCB 10			<1.1	[U]	pg/g		9.94	20-NOV-19
PCB 9			<1.1	[U]	pg/g		9.94	20-NOV-19
PCB 7			<1.1	M,U	pg/g		9.94	20-NOV-19
PCB 6			<1.0	[U]	pg/g		9.94	20-NOV-19
PCB 5			<1.2	[U]	pg/g		9.94	20-NOV-19
PCB 8			1.00	M,J,R	pg/g		9.94	20-NOV-19
PCB 14			<1.4	[U]	pg/g		9.94	20-NOV-19
PCB 11			17.1	M	pg/g		9.94	20-NOV-19
PCB 13/12			<1.5	[U]	pg/g		9.94	20-NOV-19
PCB 15			<1.7	[U]	pg/g		9.94	20-NOV-19
PCB 19			<0.69	[U]	pg/g		9.94	20-NOV-19
PCB 30/18			0.78	M,J,R	pg/g		9.94	20-NOV-19
PCB 17			0.78	M,J,R	pg/g		9.94	20-NOV-19
PCB 27			<0.48	[U]	pg/g		9.94	20-NOV-19
PCB 24			<0.50	[U]	pg/g		9.94	20-NOV-19
PCB 16			<0.76	[U]	pg/g		9.94	20-NOV-19
PCB 32			0.51	J,R	pg/g		9.94	20-NOV-19
PCB 34			<0.72	[U]	pg/g		9.94	20-NOV-19
PCB 23			<0.68	[U]	pg/g		9.94	20-NOV-19
PCB 29/26			<0.67	[U]	pg/g		9.94	20-NOV-19
PCB 25			<0.66	[U]	pg/g		9.94	20-NOV-19
PCB 31			1.40	M,J,R	pg/g		9.94	20-NOV-19
PCB 28/20			3.71	M,J	pg/g		9.94	20-NOV-19
PCB 21/33			1.98	M,J	pg/g		9.94	20-NOV-19
PCB 22			0.96	M,J,R	pg/g		9.94	20-NOV-19
PCB 36			<0.65	[U]	pg/g		9.94	20-NOV-19
PCB 39			<0.68	[U]	pg/g		9.94	20-NOV-19
PCB 38			<0.70	[U]	pg/g		9.94	20-NOV-19
PCB 35			<0.72	[U]	pg/g		9.94	20-NOV-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-1668C-O2-HRMS-BU	**Solid**							
Batch R4923853								
WG3209717-1 MB								
PCB 37			1.96	M,J	pg/g		9.94	20-NOV-19
PCB 54			<0.31	[U]	pg/g		9.94	20-NOV-19
PCB 50/53			<0.51	[U]	pg/g		9.94	20-NOV-19
PCB 45/51			<0.53	M,U	pg/g		9.94	20-NOV-19
PCB 46			<0.59	[U]	pg/g		9.94	20-NOV-19
PCB 52			1.49	M,J	pg/g		9.94	20-NOV-19
PCB 73			<0.42	[U]	pg/g		9.94	20-NOV-19
PCB 43			<0.58	[U]	pg/g		9.94	20-NOV-19
PCB 69/49			0.74	J,R	pg/g		9.94	20-NOV-19
PCB 48			<0.52	M,U	pg/g		9.94	20-NOV-19
PCB 44/47/65			1.84	M,J	pg/g		9.94	20-NOV-19
PCB 59/62/75			<0.39	[U]	pg/g		9.94	20-NOV-19
PCB 42			<0.59	[U]	pg/g		9.94	20-NOV-19
PCB 41/71/40			0.89	M,J,R	pg/g		9.94	20-NOV-19
PCB 64			0.59	M,J,R	pg/g		9.94	20-NOV-19
PCB 72			<0.42	[U]	pg/g		9.94	20-NOV-19
PCB 68			<0.40	M,U	pg/g		9.94	20-NOV-19
PCB 57			<0.44	[U]	pg/g		9.94	20-NOV-19
PCB 58			<0.44	[U]	pg/g		9.94	20-NOV-19
PCB 67			<0.38	[U]	pg/g		9.94	20-NOV-19
PCB 63			<0.41	[U]	pg/g		9.94	20-NOV-19
PCB 61/70/74/76			2.90	M,J,R	pg/g		9.94	20-NOV-19
PCB 66			1.76	M,J	pg/g		9.94	20-NOV-19
PCB 55			<0.46	[U]	pg/g		9.94	20-NOV-19
PCB 56			0.84	M,J	pg/g		9.94	20-NOV-19
PCB 60			0.56	M,J,R	pg/g		9.94	20-NOV-19
PCB 80			<0.38	[U]	pg/g		9.94	20-NOV-19
PCB 79			<0.40	[U]	pg/g		9.94	20-NOV-19
PCB 78			<0.44	[U]	pg/g		9.94	20-NOV-19
PCB 81			<0.52	[U]	pg/g		9.94	20-NOV-19
PCB 77			<0.44	M,U	pg/g		9.94	20-NOV-19
PCB 104			<0.16	[U]	pg/g		9.94	20-NOV-19
PCB 96			<0.16	[U]	pg/g		9.94	20-NOV-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-1668C-O2-HRMS-BU	**Solid**							
Batch R4923853								
WG3209717-1 MB								
PCB 103			<0.47	[U]	pg/g		9.94	20-NOV-19
PCB 94			<0.56	[U]	pg/g		9.94	20-NOV-19
PCB 95			<0.49	[U]	pg/g		9.94	20-NOV-19
PCB 100/93/102/98			<0.52	[U]	pg/g		9.94	20-NOV-19
PCB 88/91			<0.52	[U]	pg/g		9.94	20-NOV-19
PCB 84			<0.56	M,U	pg/g		9.94	20-NOV-19
PCB 89			<0.55	[U]	pg/g		9.94	20-NOV-19
PCB 121			<0.38	[U]	pg/g		9.94	20-NOV-19
PCB 92			<0.53	[U]	pg/g		9.94	20-NOV-19
PCB 113/90/101			0.82	[J]	pg/g		9.94	20-NOV-19
PCB 83/99			<0.53	[U]	pg/g		9.94	20-NOV-19
PCB 112			<0.38	[U]	pg/g		9.94	20-NOV-19
PCB 109/119/86/97/125/87			<0.46	[U]	pg/g		9.94	20-NOV-19
PCB 117/116/85/110/115			0.99	M,J,R	pg/g		9.94	20-NOV-19
PCB 82			<0.60	[U]	pg/g		9.94	20-NOV-19
PCB 111			<0.39	[U]	pg/g		9.94	20-NOV-19
PCB 120			<0.37	[U]	pg/g		9.94	20-NOV-19
PCB 108/124			<0.28	[U]	pg/g		9.94	20-NOV-19
PCB 107			<0.27	[U]	pg/g		9.94	20-NOV-19
PCB 123			<0.31	[U]	pg/g		9.94	20-NOV-19
PCB 106			<0.28	[U]	pg/g		9.94	20-NOV-19
PCB 118			0.81	M,J	pg/g		9.94	20-NOV-19
PCB 122			<0.30	[U]	pg/g		9.94	20-NOV-19
PCB 114			<0.34	[U]	pg/g		9.94	20-NOV-19
PCB 105			0.48	M,J,R	pg/g		9.94	20-NOV-19
PCB 127			<0.28	[U]	pg/g		9.94	20-NOV-19
PCB 126			<0.36	[U]	pg/g		9.94	20-NOV-19
PCB 155			<0.12	[U]	pg/g		9.94	20-NOV-19
PCB 152			<0.15	[U]	pg/g		9.94	20-NOV-19
PCB 150			<0.15	[U]	pg/g		9.94	20-NOV-19
PCB 136			<0.15	[U]	pg/g		9.94	20-NOV-19
PCB 145			<0.16	[U]	pg/g		9.94	20-NOV-19
PCB 148			<0.21	[U]	pg/g		9.94	20-NOV-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-1668C-O2-HRMS-BU	**Solid**							
Batch R4923853								
WG3209717-1 MB								
PCB 151/135			<0.22	[U]	pg/g		9.94	20-NOV-19
PCB 154			<0.18	[U]	pg/g		9.94	20-NOV-19
PCB 144			<0.21	[U]	pg/g		9.94	20-NOV-19
PCB 147/149			0.39	M,J,R	pg/g		9.94	20-NOV-19
PCB 134/143			<0.37	[U]	pg/g		9.94	20-NOV-19
PCB 139/140			<0.31	[U]	pg/g		9.94	20-NOV-19
PCB 131			<0.40	[U]	pg/g		9.94	20-NOV-19
PCB 142			<0.36	[U]	pg/g		9.94	20-NOV-19
PCB 132			<0.36	[U]	pg/g		9.94	20-NOV-19
PCB 133			<0.35	[U]	pg/g		9.94	20-NOV-19
PCB 165			<0.27	[U]	pg/g		9.94	20-NOV-19
PCB 146			<0.31	[U]	pg/g		9.94	20-NOV-19
PCB 161			<0.24	[U]	pg/g		9.94	20-NOV-19
PCB 168/153			0.73	[J]	pg/g		9.94	20-NOV-19
PCB 141			<0.32	[U]	pg/g		9.94	20-NOV-19
PCB 130			<0.37	[U]	pg/g		9.94	20-NOV-19
PCB 137/164			<0.28	[U]	pg/g		9.94	20-NOV-19
PCB 138/163/129			0.76	M,J	pg/g		9.94	20-NOV-19
PCB 160			<0.26	[U]	pg/g		9.94	20-NOV-19
PCB 158			<0.22	[U]	pg/g		9.94	20-NOV-19
PCB 128/166			<0.28	[U]	pg/g		9.94	20-NOV-19
PCB 159			<0.23	[U]	pg/g		9.94	20-NOV-19
PCB 162			<0.25	[U]	pg/g		9.94	20-NOV-19
PCB 167			<0.25	[U]	pg/g		9.94	20-NOV-19
PCB 156/157			<0.36	[U]	pg/g		19.881	20-NOV-19
PCB 169			<0.30	[U]	pg/g		9.94	20-NOV-19
PCB 188			<0.10	[U]	pg/g		9.94	20-NOV-19
PCB 179			<0.11	[U]	pg/g		9.94	20-NOV-19
PCB 184			<0.11	[U]	pg/g		9.94	20-NOV-19
PCB 176			<0.11	[U]	pg/g		9.94	20-NOV-19
PCB 186			<0.11	[U]	pg/g		9.94	20-NOV-19
PCB 178			<0.15	[U]	pg/g		9.94	20-NOV-19
PCB 175			<0.14	[U]	pg/g		9.94	20-NOV-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-1668C-O2-HRMS-BU	**Solid**							
Batch R4923853								
WG3209717-1 MB								
PCB 187			<0.13	[U]	pg/g		9.94	20-NOV-19
PCB 182			<0.14	[U]	pg/g		9.94	20-NOV-19
PCB 183			<0.13	[U]	pg/g		9.94	20-NOV-19
PCB 185			<0.14	[U]	pg/g		9.94	20-NOV-19
PCB 174			<0.14	[U]	pg/g		9.94	20-NOV-19
PCB 177			<0.15	[U]	pg/g		9.94	20-NOV-19
PCB 181			<0.14	[U]	pg/g		9.94	20-NOV-19
PCB 171/173			<0.15	[U]	pg/g		9.94	20-NOV-19
PCB 172			<0.15	[U]	pg/g		9.94	20-NOV-19
PCB 192			<0.12	[U]	pg/g		9.94	20-NOV-19
PCB 180/193			0.29	[J]	pg/g		9.94	20-NOV-19
PCB 191			<0.11	[U]	pg/g		9.94	20-NOV-19
PCB 170			<0.15	[U]	pg/g		9.94	20-NOV-19
PCB 190			<0.10	[U]	pg/g		9.94	20-NOV-19
PCB 189			<0.13	[U]	pg/g		9.94	20-NOV-19
PCB 202			<0.096	[U]	pg/g		9.94	20-NOV-19
PCB 201			<0.10	[U]	pg/g		9.94	20-NOV-19
PCB 204			<0.10	[U]	pg/g		9.94	20-NOV-19
PCB 197			<0.11	[U]	pg/g		9.94	20-NOV-19
PCB 200			<0.10	[U]	pg/g		9.94	20-NOV-19
PCB 198/199			<0.14	[U]	pg/g		9.94	20-NOV-19
PCB 196			<0.14	[U]	pg/g		9.94	20-NOV-19
PCB 203			<0.13	[U]	pg/g		9.94	20-NOV-19
PCB 195			<0.14	[U]	pg/g		9.94	20-NOV-19
PCB 194			<0.13	[U]	pg/g		9.94	20-NOV-19
PCB 205			<0.15	[U]	pg/g		9.94	20-NOV-19
PCB 208			<0.28	[U]	pg/g		9.94	20-NOV-19
PCB 207			<0.32	[U]	pg/g		9.94	20-NOV-19
PCB 206			<0.56	[U]	pg/g		9.94	20-NOV-19
PCB 209			<0.11	[U]	pg/g		9.94	20-NOV-19
Surrogate: 13C12 PCB 1			51.0		%		5-145	20-NOV-19
Surrogate: 13C12 PCB 3			57.0		%		5-145	20-NOV-19
Surrogate: 13C12 PCB 4			46.0		%		5-145	20-NOV-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-1668C-O2-HRMS-BU	**Solid**							
Batch	**R4923853**							
WG3209717-1	**MB**							
Surrogate: 13C12 PCB 15			64.0		%		5-145	20-NOV-19
Surrogate: 13C12 PCB 19			45.0		%		5-145	20-NOV-19
Surrogate: 13C12 PCB 37			84.0	R	%		5-145	20-NOV-19
Surrogate: 13C12 PCB 54			52.0		%		5-145	20-NOV-19
Surrogate: 13C12 PCB 81			90.0		%		10-145	20-NOV-19
Surrogate: 13C12 PCB 77			108.0		%		10-145	20-NOV-19
Surrogate: 13C12 PCB 104			84.0		%		10-145	20-NOV-19
Surrogate: 13C12 PCB 123			98.0		%		10-145	20-NOV-19
Surrogate: 13C12 PCB 118			96.0		%		10-145	20-NOV-19
Surrogate: 13C12 PCB 114			96.0		%		10-145	20-NOV-19
Surrogate: 13C12 PCB 105			98.0		%		10-145	20-NOV-19
Surrogate: 13C12 PCB 126			96.0		%		10-145	20-NOV-19
Surrogate: 13C12 PCB 155			111.0		%		10-145	20-NOV-19
Surrogate: 13C12 PCB 167			111.0		%		10-145	20-NOV-19
Surrogate: 13C12 PCB 156/157			103.0		%		10-145	20-NOV-19
Surrogate: 13C12 PCB 169			108.0		%		10-145	20-NOV-19
Surrogate: 13C12 PCB 188			130.0		%		10-145	20-NOV-19
Surrogate: 13C12 PCB 189			107.0		%		10-145	20-NOV-19
Surrogate: 13C12 PCB 202			129.0		%		10-145	20-NOV-19
Surrogate: 13C12 PCB 205			109.0		%		10-145	20-NOV-19
Surrogate: 13C12 PCB 208			128.0		%		10-145	20-NOV-19
Surrogate: 13C12 PCB 206			109.0		%		10-145	20-NOV-19
Surrogate: 13C12 PCB 209			120.0		%		10-145	20-NOV-19
Surrogate: 13C12 PCB 28			76.0		%		5-145	20-NOV-19
Surrogate: 13C12 PCB 111			94.0		%		10-145	20-NOV-19
Surrogate: 13C12 PCB 178			115.0		%		10-145	20-NOV-19
Total MonoCB			0.34	[J]	pg/g		39.761	20-NOV-19
Total DiCB			18.1	[J]	pg/g		79.523	20-NOV-19
Total TriCB			12.1	[J]	pg/g		79.523	20-NOV-19
Total TetraCB			11.6	[J]	pg/g		159.046	20-NOV-19
Total PentaCB			3.10	[J]	pg/g		159.046	20-NOV-19
Total HexaCB			1.88	[J]	pg/g		159.046	20-NOV-19
Total HeptaCB			0.29	[J]	pg/g		79.523	20-NOV-19
Total OctaCB			<0.096	[U]	pg/g		79.523	20-NOV-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-1668C-O2-HRMS-BU	**Solid**							
Batch R4923853								
WG3209717-1 MB								
Total NonaCB			<0.28	[U]	pg/g		39.761	20-NOV-19
DecaCB			<0.11	[U]	pg/g		39.761	20-NOV-19
Total PCB			47.4	[J]	pg/g		318.091	20-NOV-19

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
A	Method Blank exceeds ALS DQO. Refer to narrative comments for further information.
G	QC result did not meet ALS DQO. Refer to narrative comments for further information.
J	Duplicate results and limits are expressed in terms of absolute difference.
J,G	QC result did not meet ALS DQO. Refer to narrative comments for further information. Duplicate expressed in terms of absolute difference.
J,R	The analyte was detected below the calibrated range but above the EDL, and the ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.
M	A peak has been manually integrated.
M,J	A peak has been manually integrated, and the analyte was detected below the calibrated range but above the EDL.
M,J,R	A peak has been manually integrated, the analyte was detected below the calibrated range but above the EDL, and the ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.
M,U	A peak has been manually integrated, and the analyte was not detected above the EDL.
R	The ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.
[J]	The analyte was detected below the calibrated range but above the EDL.
[U]	The analyte was not detected above the EDL.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CHAIN OF CUSTODY

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PAGE 1 OF 1 COC#

PROJECT NAME: Upriver Reach Sediment Investigation
PROJECT NUMBER: 150-002-017/Task 4
PROJECT MANAGER: Kevin Woodhouse
COMPANY NAME: Hart Crowser
ADDRESS: 6420 SW Macadam Ave Suite 100
CITY/STATE/ZIP: Portland, OR
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SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	PCBs Aroclors ☐ Congeners ☑ by 1668	Pesticides/Herbicides 8081☐ 8141☐ 8151☐ (16M)	Chlorophenolics - 8151M PCP☐ Tri ☐ Tetra ☐	Metals, Total or Dissolved (See List below)	Cyanide ☐ Hex-Chrom ☐	(circle) pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS, Turb.	(circle) NH_3-N, COD, TKN, TOC, DOC, NO_2+NO_3, T-Phos	TOX 9020☐ AOX 1650☐ 506☐	Alkalinity ☐ CO_3 ☐ HCO_3 ☐	Dioxins/Furans 1613 ☒ 8290 ☐	Dissolved Gases RSK 175 ☐ CO_2☐ Methane ☐ Ethane☐ Ethene☐	PBDEs by 6220 or 1614	Total Solids by PSEP	REMARKS
RM16.1E-SED1	10/28/19	1705		SED	2	X	X							X		X	X		
RM16.3E-SED1-DUP	10/28/19	1705			3														
RM16.3E SED2	10/29/19	1000			2														
RM16.3E-SED3	10/29/19	1300			2														
RM16.3E-SED4	10/29/19	1205			2														
RM16.4E-SED5	10/29/19	1135			2														
RM16.4W-SED6	10/28/19	1200			2														
RM19.5W-SED7	10/28/19	1430			3														
RM19.6W-SED8	10/28/19	1015			3														
Rinsate Blank	10/29/19	1400		W															

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
X II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
___ IV. Data Validation Report
___ V. EDD

INVOICE INFORMATION

P.O. # 150-002-017/4
Bill To: Hart Crowser

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 day
X Standard (15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: _____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
Archive sample material for 6 months

Container Supply Number
103872

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: 10/30/19 1005	Signature: 10/30/19 1005	Signature: 10/30/19 1245	Signature: 10/30/19 1245
Printed Name: Kevin Woodhouse	Printed Name: Brian Bauman	Printed Name: Brian Mat	Printed Name: Aaron Burton
Firm: HC	Firm: HC	Firm: HC	Firm: ALS

Relinq. 10/30/19 1300 Received by 31-oct-2019 14:15 1.6°C

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GRAVIMETRIC DATA PACKAGE

Section 1: PROJECT NARRATIVE and RESULTS

ALSE Project Information

Project ID: BUR100
Contact: Claire Kocharakkal
Submission ID(s): L2375251

Client Project Information

Project ID: 150-002-017/TASK 4
Project Description: UPRIVER REACH SEDIMENT INVESTIGATION
Contact: Kevin Woodhouse

Analytical Method: Total Solids by PSEP 1986, sediment

ALS Sample ID	Client Sample Descriptions	Matrix	Date Sampled	Date Received	Date Subsampled	% Solids	% Expected	DUP RPD & LCS % Rec
L2375251-1	RM16.1E-SED1	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	53.2%		
WG3209721-3	Duplicate	QC	n/a	n/a	12-Nov-19	55.4%	53.2%	4%
L2375251-2	RM16.1E-SED1-DUP	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	54.4%		
L2375251-3	RM16.3E-SED2	Sediment	29-Oct-19	31-Oct-19	12-Nov-19	51.7%		
L2375251-4	RM16.3E-SED3	Sediment	29-Oct-19	31-Oct-19	12-Nov-19	66.4%		
L2375251-5	RM16.3E-SED4	Sediment	29-Oct-19	31-Oct-19	12-Nov-19	71.9%		
L2375251-6	RM16.4E-SED5	Sediment	29-Oct-19	31-Oct-19	12-Nov-19	81.6%		
L2375251-7	RM19.4W-SED6	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	61.1%		
L2375251-8	RM19.5W-SED7	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	59.1%		
L2375251-9	RM19.6W-SED8	Sediment	28-Oct-19	31-Oct-19	12-Nov-19	53.3%		
WG3209721-1	Method Blank	QC	n/a	n/a	12-Nov-19	100.0%	100.0%	
WG3209721-2	Laboratory Control Sample	QC	n/a	n/a	12-Nov-19	54.8%	50.0%	109.7%

Comments and Notes:
a) Sample Integrity:

The samples were received at ALS-Burlington in good condition at 1.6 degrees C.

b) Gravimetric Analysis:

Sediment subsamples were accurately weighed into tared jars and oven-dried as described. An initial dry weight was taken and five further weights were recorded over a 7 day period for a total of six weighings. Although successive weighings trended towards heavier weights, the relative percent difference between the initial and final dry weights were less than 0.2%.

I certify that this data package is in compliance with the terms and condition of the contract , both technically and for completeness, for other than any conditions detailed above. Release of the data contained in this data package (hardcopy and/or electronic version) has been authorized by the Laboratory Manager or their designee, as verified by the following signature.

Steve Kennedy, Technical Supervisor

9-Dec-19
Date

1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6

SVOC DATA PACKAGE

SECTION 2: DATA CALCULATIONS

Dry Weight Workup Sheet

Batch ID:	WG3209721
Analyst:	Jackson Pegg

--e-signature--

Date/Time into Oven	12-Nov-19 14:00	**Date/Time out of Oven**	13-Nov-19 17:00
Temperature:	101.0	**Temperature:**	105.2
Control range: 101°C - 109°C			
Oven ID:	5704	**Balance ID:**	7116

Fill in the following information:

LIMS Initials: JP11

ALS E-mail: jackson.pegg@alsglobal.com

SUBSAMPLING

Sample I.D.	Client I.D.	Weighboat Weight (g)	Weighboat+Wet Sample (g)	Weighboat+Dry Sample (g)	%Moisture
WG3209721-1	Method Blank	106.8778	116.9809	116.9828	-0.02%
WG3209721-2	Laboratory Control Sample	106.8972	117.7709	112.8600	45.16%
L2375251-1	RM16.1E-SED1	106.4346	157.3755	133.5297	46.81%
WG3209721-3	Duplicate(L2375251-1)	106.4707	156.4678	134.1512	44.64%
L2375251-2	RM16.1E-SED1-DUP	106.7306	156.7754	133.9566	45.60%
L2375251-3	RM16.3E-SED2	107.0604	157.3138	133.0402	48.30%
L2375251-4	RM16.3E-SED3	106.6429	156.6315	139.8105	33.65%
L2375251-5	RM16.3E-SED4	119.3693	169.4796	155.4091	28.08%
L2375251-6	RM16.4E-SED5	119.4916	169.5763	160.3636	18.39%
L2375251-7	RM19.4W-SED6	119.6867	169.9687	150.4231	38.87%
L2375251-8	RM19.5W-SED7	119.7048	169.8888	149.3688	40.89%
L2375251-9	RM19.6W-SED8	119.9489	170.0411	146.6427	46.71%
	See Special Instructions				
	Use jars large enough to hold 50g				
	Use 4 point balance				

	Date/Time/Name
Subsampling:	12-Nov-2019 / 2:00PM Jackson Pegg
Client Labels Checked:	12-Nov-2019 / 2:00PM Jackson Pegg
	--e-signature--
Balance Verified	12-Nov-2019 / 2:00PM Jackson Pegg
	--e-signature--
Upload + DV checklist	21-Nov-2019 / 5:15PM Ubongabasi Emah
	--e-signature--
ANREV + DV checklist	22-Nov-2019/ 8:15AM Emmanuel Furlonge
	--e-signature--
DPPR + DV checklist	22-Nov-19/ 8:36am/ Mark McHugh
	--e-signature--

Reagent Lot Numbers:

Reagent Lot Numbers:

Reagent	Lot#	Manufacturer
Muffled Soil (LCS)	ORG-SOIL-016	
Sand	ORG-SAND-125	
Corn Oil	N/A	

Procedure:

***This batchsheet is a guideline only. Please see test procedure for complete set of instructions**
ONLY the 4-place Analytical Balance can be used for this procedure
Glass jars must be used, subsample = 50g
SOIL
MB use 10g muffled sand.
LCS weigh 5g muffled soil. Record value below. Weigh 5g DI water. Record value below. Record combined value on front of batchsheet.
LCS values soil (g): 112.8771 soil + water (g): 117.7709
TISSUES
MB use empty weighboat. LCS use 5g corn oil
PROCEDURE:
- Perform duplicate with every batch
- Record weight of weighboat.
- Homogenize sample well and subsample 50g onto a preweighed jar, spread evenly, record weight.
- Place pans onto baking sheet and place into 105degC oven overnight (min 6 hours)
- Remove from oven and place into dessicator
- Take weights until a stable weight achieved

Comments:

1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6

SVOC DATA PACKAGE

SECTION 3: INSTRUMENT DATA

Percent Solids Determination Weight Log

All Weights in grams

Date/Time/Analyst Samples in Dessicator:	13-Nov-19/ 17:00/UE	14-Nov-19/ 17:00/UE	15-Nov-29/ 15:45/UE	18-Nov-19/ 16:25/UE	19-Nov-19/ 16:30/UE	20-Nov-19/ 16:55/UE	21-Nov-19/ 17:00/UE	Balance ID = 7116
Rel. Humidity (Ω1)		2	2	2	2	2	2	Ω1 = Inside Desiccator
Rel. Humidity (Ω2)		42	45	42	44	46	47	
Temperature (Ω1)		21	21	22	22	22	22	Ω2 = Outside Desiccator
Temperature (Ω2)		21	21	22	22	21	22	
Balance Zero		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Relative Percent Difference Between Wt.1 and Wt.6
Balance Check		20.0000	20.0000	19.9999	19.9998	19.9999	19.9998	
Sample ID	**Tare Weight**	**Weight 1**	**Weight 2**	**Weight 3**	**Weight 4**	**Weight 5**	**Weight 6**	
WG3209721-1	**106.8878**	116.9821	116.9822	116.9825	116.9824	116.9822	**116.9828**	0.001%
WG3209721-2	**106.8972**	112.8489	112.8526	112.8509	112.8528	112.8536	**112.8600**	0.010%
L2375251-1	**106.4346**	133.3829	133.4237	133.4592	133.4832	133.5004	**133.5297**	0.110%
WG3209721-3	**106.4707**	133.9989	134.0412	134.0756	134.0994	134.1185	**134.1512**	0.114%
L2375251-2	**106.7306**	133.8195	133.8558	133.8876	133.9103	133.9274	**133.9566**	0.102%
L2375251-3	**107.0604**	132.8798	132.9173	132.9578	132.9833	133.0048	**133.0402**	0.121%
L2375251-4	**106.6429**	139.6313	139.6735	139.7186	139.7468	139.7717	**139.8105**	0.128%
L2375251-5	**119.3693**	155.2730	155.3094	155.3412	155.3618	155.3794	**155.4091**	0.088%
L2375251-6	**119.4916**	160.1725	160.2193	160.2669	160.2981	160.3216	**160.3636**	0.119%
L2375251-7	**119.6867**	150.2782	150.3185	150.3498	150.3708	150.3884	**150.4231**	0.096%
L2375251-8	**119.7048**	149.2318	149.2663	149.2990	149.3200	149.3380	**149.3688**	0.092%
L2375251-9	**119.9489**	146.4950	146.5312	146.5681	146.5893	146.6096	**146.6427**	0.101%
Balance Zero	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	
Balance Check	20.0000	20.0000		19.9999	19.9998	19.9999	19.9998	

CHAIN OF CUSTODY

SR# L2375251

1317 South 13th Ave., Kelso, WA 98626 | +1 360 577 7222 | +1 800 695 7222 | +1 360 636 1068 (fax)

PAGE 1 OF 1 COC#

PROJECT NAME: Upriver Reach Sediment Investigation
PROJECT NUMBER: 150-002-017/Task 4
PROJECT MANAGER: Kevin Woodhouse
COMPANY NAME: Hart Crowser
ADDRESS: 6420 SW Macadam Ave Suite 100
CITY/STATE/ZIP: Portland, OR
E-MAIL ADDRESS: Kevin.Woodhouse@hartcrowser.com
PHONE #: 971-808-5178 FAX #:
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	PCBs Aroclors ☐ Congeners ☑ by 1668	Pesticides/Herbicides 8081☐ 8141☐ 8151☐ (16M)	Chlorophenolics - 8151M PCP☐ Tri ☐ Tetra ☐	Metals, Total or Dissolved (See List below)	Cyanide ☐ Hex-Chrom ☐	(circle) pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS, Turb.	(circle) NH_3-N, COD, TKN, TOC, DOC, NO_2+NO_3, T-Phos	TOX 9020☐ AOX 1650☐ 506☐	Alkalinity ☐ CO_3 ☐ HCO_3 ☐	Dioxins/Furans 1613 ☒ 8290 ☐	Dissolved Gases RSK 175 ☐ CO_2☐ Methane ☐ Ethane☐ Ethene☐	PBDEs by 6220 or 1614	Total Solids by PSEP	REMARKS
RM16.1E-SED1	10/28/19	1705		SED	2	X	X							X		X	X		
RM16.3E-SED1-DUP	10/28/19	1705			3														
RM16.3E SED2	10/29/19	1000			2														
RM16.3E-SED3	10/29/19	1300			2														
RM16.3E-SED4	10/29/19	1205			2														
RM16.4E-SED5	10/29/19	1135			2														
RM16.4W-SED6	10/28/19	1200			2														
RM19.5W-SED7	10/28/19	1430			3														
RM19.6W-SED8	10/28/19	1015			3														
Rinsate Blank	10/29/19	1400		W															

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
X II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
___ IV. Data Validation Report
___ V. EDD

INVOICE INFORMATION

P.O. # 150-002-017/4
Bill To: Hart Crowser

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 day
X Standard (15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: _____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
Archive sample material for 6 months

Container Supply Number
103872

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: 10/30/19 1005	Signature: 10/30/19 1005	Signature: 10/30/19 1245	Signature: 10/30/19 1245
Printed Name: Kevin Woodhouse	Printed Name: Brian Bauman	Printed Name: Brian Mat	Printed Name: Aaron Burton
Firm: HC	Firm: HC	Firm: HC	Firm: ALS

Relinq. 10/30/19 1300 Received by 31-oct-2019 14:15 1.6°C

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APPENDIX C
Laboratory Analytical Testing QA Review

APPENDIX C
LABORATORY ANALYTICAL TESTING QA REVIEW

This appendix documents the results of a quality assurance (QA) review of the analytical data for sediment samples collected on October 28 and 29, 2019, for the Upriver Reach Sediment Investigation. Field procedures used for sample collection are discussed in detail in Appendix A and summarized in Section 4 of this Field and Data Report. Hart Crowser submitted sediment samples to Pace Analytical (Pace) of Mt. Juliet, Tennessee, and ALS Environmental (ALS) in Burlington, Canada, for chemical analyses. Pace subcontracted grain size analyses to Beaver Engineering of Nashville, Tennessee. Copies of the analytical laboratory reports are included in Appendix B. Upon review, the analytical data are valid with qualifications for their intended use.

The laboratories performed ongoing QA/ quality control (QC) reviews of laboratory procedures. Level II data packages were reviewed. Hart Crowser reviewed the data, using laboratory QC results summary sheets to check that they met data quality objectives for the project. Data review followed the procedures described in the Sediment Sampling Work Plan (Work Plan; Hart Crowser 2019). Validation of the analytical data was completed following Environmental Protection Agency (EPA) National Functional Guidelines for dioxins/furans, organic compounds, and organic compounds data review (EPA 2011, 2017a,b), modified to include criteria specific to the individual analytical methods and laboratory performance-based control limits. The QA review included examination and validation of the laboratory's summary reports, including:

- Case narratives;
- Chain-of-custody (COC) documentation;
- Sample receiving condition;
- Holding times;
- Analytical methods, detection limits, and reporting limits;
- Method blanks;
- Surrogate recoveries;
- Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) recoveries;
- Matrix spike and matrix spike duplicate (MS/MSD) recoveries and relative percent difference (RPD);
- Laboratory duplicate RPD, where applicable; and
- Calibration data, if provided.

1.0 Analytical Methods and Reporting Limits

This section describes the analytical methods and detection/reporting limits for the chemical analyses.

1.1 Analytical Methods

A total of nine sediment samples were collected and submitted to ALS and Pace. Sediment samples were analyzed for the following:

- Grain size distribution by ASTM Method D422;
- Total organic carbon (TOC) by U.S. Department of Agriculture (USDA) Loss on Ignition (LOI) method for sediment and EPA Method 9060A for water;
- Total solids by Puget Sound Estuary Protocol 1986;
- Metals by EPA Method 6020B;
- Mercury by EPA Method 7471B;
- Total petroleum hydrocarbons (TPH) as diesel by Northwest Method NWTPH-Dx;
- Dioxins/furans by EPA Method 1613B;
- Organochlorine pesticides by EPA Method 1669M;
- Polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8270D-SIM and select phenols and phthalates by EPA Method 8270D;
- Polybrominated diphenyl ethers (PBDEs) by EPA Method 1614; and
- Polychlorinated biphenyls (PCB) congeners by EPA Method 1668C.

The analytical test methods used by ALS and Pace and were the same as specified in the Work Plan (Hart Crowser 2019) with the following exception. TOC for sediment samples were analyzed by Method USDA LOI instead of the Work Plan specified method of PSEP 1986. Both methods utilize a combustion chamber to drive off carbon and provide comparable results. Sample results were not qualified.

1.2 Method Detection and Reporting Limits

Method detection limits (MDLs) or estimated detection limits (EDLs) are the minimum concentration of a chemical compound that can be measured and reported that the compound is present, and is based on instrumentation abilities and sample matrix. Method reporting limits (MRLs) are set by the laboratory and are based on the low standard of the initial calibration curve or low-level calibration check standard, and represent the concentration that can be accurately quantified. In some cases, the MRL and EDL/MDL is raised due to dilutions or matrix interferences.

The laboratory reported sample results to the EDL/MDL. Analytical results that fell between the EDL/MDL and MRL are estimated and qualified with J flags in the report tables. Non-detected results are reported at the associated EDL/MDL and are reported with U flags in the report tables.

2.0 Chain of Custody and Sample Receiving Condition

The following provides a summary of the review of COC procedures and sample receiving conditions.

2.1 Chain of Custody

The COCs were filled out with the requested analyses. The samples were collected and submitted to ALS and Pace. Pace subcontracted grain size analysis to Beaver Engineering.

2.2 Sample Receiving Conditions

Sample/Cooler Temperatures. The receiving temperatures were within the 2 to 6°C acceptance criteria, or were below 2°C. As low temperatures would not significantly affect sample quality, no sample results were qualified.

Sample Preservation. All samples were properly preserved.

3.0 Data Quality Assurance

Data quality is indicated by assessing their completeness, representativeness, accuracy, precision, and comparability. An evaluation of the data follows.

3.1 Completeness

Completeness is defined as the percentage of measurements made that are judged to be valid. The completeness goal is essentially a sufficient amount of valid data that is generated to meet the objectives of the data. Two laboratory reports were received and are included in Appendix B. No sample results were rejected based on the data validation. The data completeness for the samples is 100 percent for all requested analyses.

3.2 Representativeness

Representativeness is a measure of how closely the results reflect the actual concentration of the parameters in the medium sampled. It is not possible to measure this directly, so representativeness is controlled and ensured by using standard protocols for sample handling and custody, analyzing samples within prescribed holding times, and analyzing blank samples.

Sample Handling and Custody. Samples were collected in general accordance with industry standards. These included requirements for collection, containers, labeling, packaging, shipping, and storage. Compliance with these procedures has been documented on chain of custody forms. Copies of the chain of custody forms are included with the laboratory reports in Appendix B.

Holding Times. Collection dates for all samples submitted are documented on the chain of custody form. Collection and analyses dates are indicated in the laboratory reports. Holding times were met for all samples.

Method Blanks. Method blanks are prepared by the laboratory and analyzed to check for the possibility that the sample may become contaminated during the analysis process. Blanks were analyzed for all

analytical tests requested. Method blanks for several analyses contained detections of target compounds. Method blank detections and associated data qualifications are noted below.

- Method Blank R3468995-1: TOC detected in method blank for batch. TOC concentration in associated sample is less 5 times the method blank concentration and sample result qualified as non-detected and U flagged.
- Method Blank R3468712-1: Chromium and manganese detection in method blank for batch. Concentrations in associated samples less than 5 times the method blank concentration were qualified as non-detected and U flagged, B and J flags were removed from these sample results.
- Method Blank R3468349-1: Chromium detected in method blank for batch. Associated sample concentrations were greater than 5 times the method blank concentration and sample results were not qualified.
- Method Blank R3467909-2: Naphthalene and 2-Methylnaphthalene detected in method blank for batch. Associated sample result is less than 5 times the method blank concentration and qualified as non-detected and U flagged; B and J flags were removed from the sample result.
- Method Blank WG3209717-1: Multiple PBDEs detected in method blank. PBDE results in associated samples that are less 5 times the method blank concentration and sample were qualified as non-detected and U-flagged, B flags were removed. Sample results greater than 5 times the method blank concentration were not qualified and the B flags removed. Multiple PBDEs detected in method blank with R qualifiers indicating ion ratios did not meet positive identification criteria. Method blank results were considered non-detected and B flags were removed from associated sample results.
- Method Blank WG3208379-1: Multiple PBDEs detected in method blank. PBDE results in associated samples that are less 5 times the method blank concentration and sample were qualified as non-detected and U-flagged, B flags were removed. Sample results greater than 5 times the method blank concentration were not qualified and the B flags removed. Multiple PBDEs detected in method blank with R qualifiers indicating ion ratios did not meet positive identification criteria. Method blank results were considered non-detected and B flags were removed from associated sample results.
- Dioxins/Furans: The method blank had detections between EDL and MRL for 1,2,3,4,6,7,8-HpCDD (0.115 µg/kg), OCDD (0.407 µg/kg), and 123789-HxCDF (0.129 µg/kg). Sample results less than five times the method blank concentration (10 times for OCDD and OCDF) were qualified as non-detected and the B flag was replaced with a U flag.
- PCBs Method Blank WG3209717-1: The method blank had detections for PCB 2 (0.34 µg/kg), PCB 11 (17.1 µg/kg), PCBs 28/20 (3.71 µg/kg), PCBs 21/33 (1.98 µg/kg), PCB 37 (1.96 µg/kg), PCB 52 (1.49 µg/kg), PCBs 44/47/65 (1.84 µg/kg), PCB 66 (1.76 µg/kg), PCB 56 (0.84 µg/kg), PCBs 113/90/101 (0.82 µg/kg), PCB 118 (0.81 µg/kg), PCBs 168/153 (0.73 µg/kg), PCBs 138/163/129 (0.76 µg/kg), and PCBs 180/193 (0.29 µg/kg). Results were not qualified if sample concentrations were greater than 5 times the method blank. Results were qualified with UJ flags if sample concentrations were less than 5 times the method blank and B flags were removed.

3.3 Accuracy

Accuracy or bias measures the closeness of the measured value to the true value. Accuracy is the agreement between a measured value and its true or accepted value. While it is not possible to determine absolute accuracy for environmental samples, the analyses of standards and spiked samples provides an indirect assessment of accuracy.

Surrogates. In a surrogate analysis, a known amount of a compound similar to the constituent of interest is added to a sample and measured. The surrogate analysis assesses the accuracy of a chemical measurement by comparing the measured value to the actual spiked value. Up to 15 surrogates are added to each sample. Surrogate recoveries were within laboratory control limits with the following exceptions.

- PCBs. Recovery for labelled standard 13C12-PCB 209 in sample RM16.3E-SED3 was below control limits. Sample results for PCB 209 in Sample RM16.3E-SED3 were qualified with J flag.
- Dioxins/Furans. Recovery for labelled standard 13C-123478-HxCDD was below control limits for sample RM16.3E-SED2. Results for 123478-HxCDD in sample RM16.3E-SED2 were qualified with J flag.

Matrix Spike Samples. Matrix spike (MS) analyses are performed on samples submitted to the laboratory that are of the same matrix as the actual sample. This is spiked with known levels of the constituents of interest. These analyses are used to assess the potential for matrix interference with recovery or detection of the constituents of interest and the accuracy of the determination. The spiked sample results are compared to the expected result (i.e., sample concentration plus spike amount) and are reported as percent recovery. Matrix spikes were prepared for some organic and inorganic methods from samples outside the project but within the QC batch. MS analytical results were all within acceptable ranges.

Laboratory Control Samples. Laboratory control samples (LCS) were used by the laboratory to assess the accuracy of the analytical equipment in analyzing all requested analytes. The sample is prepared from the analyte-free matrix, which is then spiked with known levels of the constituents of interest (i.e., a standard). The concentrations are measured, and the results are compared to the known spiked levels. This comparison is expressed as percent recovery. All LCS results were within acceptable limits.

Calibration Criteria. Initial calibration curves (ICAL) and continuing calibration verification checks (CCVs) are prepared and analyzed on each instrument. The ICALs and CCVs were not included in data packages and not reviewed.

Other Criteria. Sample results for arsenic and lead for RM16.1E-SED1-DUP failed the serial dilution test or post-spike criteria and qualified by the laboratory with an O1 flag for matrix interference. Sample results qualified as estimated and J flagged.

Sample results for pesticides, PCBs, and dioxins/furans qualified by the laboratory with M flags indicating manual peak integration had the M flag removed. Sample results that were qualified by the laboratory with R flags indicating the ion ratios did not meet positive identification criteria (ion abundance ratios) were replaced with UJ flags indicating the results were not detected above the estimated MDL.

Matrix interference for mercury in Rinsate Sample interfered with the ability to make an accurate determination and sample result was qualified by the laboratory with J3 and J6 flags. J3 and J6 flags were removed.

3.4 Precision

Precision is the degree of reproducibility or agreement between independent or repeated measurements. Analytical variability is expressed as the relative percent difference (RPD) between field or laboratory replicates and between the primary and duplicate MS and LCS analyses.

Laboratory Sample Duplicates. A laboratory duplicate is a second analysis of a sample. A second bottle or aliquot of a sample is prepared along with the original. It is analyzed and compared to the first to assess the precision of the analytical method. The laboratory duplicate sample RPDs were within the acceptability criteria.

Matrix Spike Sample Duplicate. A second MS sample (a.k.a., the MS duplicate [MSD]) is prepared as above and analyzed. This is compared to the initial MS to assess the precision of the analytical method by calculating the RPD. MS/MSD RPDs were within control limits with the following exceptions.

- Batch WG1373138: The MSD RPDs exceeded control limits for batch WG1373138. The MDL for the associated sample was qualified as estimated and J flagged.
- Batch WG1374081: 2,4-Dinitrophenol was non-detected in MS or MSD sample for batch WG1374081. All other analytes within RPD control limits and sample results not qualified.
- Batch WG1374060: RPD control limits exceeded for multiple compounds. Associated sample results qualified as estimated for detections and J flagged or qualified as non-detected with estimated MDLs and UJ flagged.

Laboratory Control Sample Duplicate. A duplicate is a second analysis of an LCS. The duplicate is then prepared along with the original. It is analyzed and compared to the first to assess the precision of the analytical method. The LCS RPDs were within the acceptability criteria.

3.5 Comparability

All samples were analyzed in accordance with accepted methods of the EPA or DEQ. The analytical test methods used by the laboratories were generally the same or equivalent analytical methods specified in the Work Plan (Hart Crowser 2019). Only TOC was analyzed by different but equivalent analytical method as specified in the Work Plan.

4.0 References

GSI and Hart Crowser 2019. Sediment Sampling Work Plan, Upriver Reach Sediment Investigation, Upriver Reach, Lower Willamette River, Portland, Oregon. October 25, 2019.

State of Oregon Department of Environmental Quality (DEQ) 2016. Quality Assurance Project Plan EPA PA/SI Investigations. DEQ05-LQ-069-QAPP, Version 2.2. Updated August 14, 2012.

EPA 2011. USEPA National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins (CDDs) and Chlorinated Dibenzofurans (CDFs) Data Review. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation (OSRTI), Washington, DC. EPA 540-R-11-016. September 2011.

EPA 2017a. USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation (OSRTI), Washington, DC. EPA-540-R-2017-001. January 2017.

EPA 2017b. USEPA National Functional Guidelines for Organic Superfund Methods Data Review. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation (OSRTI), Washington, DC. EPA-540-R-2017-002. January 2017.

DATA QUALITY REVIEW			
Job Number:	150-002-017/5	**Review Date:**	12/4/19
Project:	Upriver Reach Sediment Investigation	**Reviewer:**	Kevin Woodhouse
Laboratory:	Pace Analytical	**Laboratory Job ID#:**	L1155761
Sample ID Numbers:			
RM16.1E-SED1, RM16.1E-SED1-DUP, RM16.3E-SED2, RM16.3E-SED3, RM16.3E-SED4, RM16.4E-SED5, RM19.4W-SED6, RM19.5W-SED7, RM19.6W-SED8, RINSATE BLANK			
Sample Receiving Discrepancies:			
None			

DATA QUALITY REVIEW					
Job Number:	150-002-017/5	**Review Date:**		12/4/19	
Project:	Upriver Reach Sediment Investigation	**Reviewer:**		Kevin Woodhouse	
Laboratory:	Pace Analytical	**Laboratory Job ID#:**		L1155761	
Analysis:	SM 2540 G-2011, total solids	**Matrix:**	Sediment		
Sample ID Numbers:					
RM16.1E-SED1, RM16.1E-SED1-DUP, RM16.3E-SED2, RM16.3E-SED3, RM16.3E-SED4, RM16.4E-SED5, RM19.4W-SED6, RM19.5W-SED7, RM19.6W-SED8					
Sampling Date:	10/28/19 and 10/29/19	**Extraction Date:**		11/7/19	
Analysis Date:	11/7/19				
Holding Times and Reporting Limits:					
Acceptable					
Method, Trip, and Field Blanks:					
MD is ND					
Surrogate Recoveries:					
NA					
Laboratory Control Samples (LCS):					
Recovery within control limits.					
Matrix Spike/Matrix Spike Duplicate (MS/MSD):					
NA					
Laboratory Duplicate:					
RPD within control limits.					
Field Duplicate:					
RPD <10% for RM16.1E-SED1 and RM16.1E-SED1-DUP field duplicate.					
Calibration Criteria:					
Not reviewed, not included in data package.					
Qualification Summary:					
Not qualified.					

DATA QUALITY REVIEW			
Job Number:	150-002-017/5	**Review Date:**	12/4/19
Project:	Upriver Reach Sediment Investigation	**Reviewer:**	Kevin Woodhouse
Laboratory:	Pace Analytical	**Laboratory Job ID#:**	L1155761
Analysis:	EPA 9060A, TOC	**Matrix:**	water

Sample ID Numbers:			
RINSATE BLANK			
Sampling Date:	10/29/19	**Extraction Date:**	11/3/19
Analysis Date:	11/3/19		

Holding Times and Reporting Limits:
Acceptable
Method, Trip, and Field Blanks:
Detection of 387 µg/L in MB R3468995-1. Sample concentration <5x, sample qualified with U.
Surrogate Recoveries:
NA
Laboratory Control Samples (LCS):
Recovery within control limits.
Matrix Spike/Matrix Spike Duplicate (MS/MSD):
NA
Laboratory Duplicate:
RPD within control limits.
Field Duplicate:
NA
Calibration Criteria:
Not reviewed, not included in data package.
Qualification Summary:
RINSATE BLANK qualified as U, sample value <5x Method blank concentration.

DATA QUALITY REVIEW			
Job Number:	150-002-017/5	**Review Date:**	12/4/19
Project:	Upriver Reach Sediment Investigation	**Reviewer:**	Kevin Woodhouse
Laboratory:	Pace Analytical	**Laboratory Job ID#:**	L1155761
Analysis:	USDA LOI, TOC	**Matrix:**	Sediment

Sample ID Numbers:			
RM16.1E-SED1, RM16.1E-SED1-DUP, RM16.3E-SED2, RM16.3E-SED3, RM16.3E-SED4, RM16.4E-SED5, RM19.4W-SED6, RM19.5W-SED7, RM19.6W-SED8			
Sampling Date:	10/28/19 and 10/29/19	**Extraction Date:**	11/5/19
Analysis Date:	11/5/19		

Holding Times and Reporting Limits:
Acceptable
Method, Trip, and Field Blanks:
MB is ND
Surrogate Recoveries:
NA
Laboratory Control Samples (LCS):
Recovery within control limits.
Matrix Spike/Matrix Spike Duplicate (MS/MSD):
NA
Laboratory Duplicate:
RPDs within control limits.
Field Duplicate:
RPD <10% for RM16.1E-SED1 and RM16.1E-SED1-DUP field duplicate.
Calibration Criteria:
Not reviewed, not included in data package.
Qualification Summary:
Not qualified.

DATA QUALITY REVIEW					
Job Number:	150-002-017/5	**Review Date:**		12/4/19	
Project:	Upriver Reach Sediment Investigation	**Reviewer:**		Kevin Woodhouse	
Laboratory:	Pace Analytical	**Laboratory Job ID#:**		L1155761	
Analysis:	EPA 7470/A, mercury	**Matrix:**	water		
Sample ID Numbers:					
RINSATE BLANK					
Sampling Date:	10/29/19	**Extraction Date:**		10/31/19	
Analysis Date:	11/1/19				
Holding Times and Reporting Limits:					
Acceptable					
Method, Trip, and Field Blanks:					
MB is ND					
Surrogate Recoveries:					
NA					
Laboratory Control Samples (LCS):					
Recoveries and RPDs within control limits.					
Matrix Spike/Matrix Spike Duplicate (MS/MSD):					
MS/MSD recoveries in control, RPD exceeds control limit. Laboratory precision biased low. Sample qualified with J3 and J6 by laboratory for estimated detection limit.					
Laboratory Duplicate:					
NA					
Field Duplicate:					
NA					
Calibration Criteria:					
Not reviewed, not included in data package.					
Qualification Summary:					
Matrix interference interfered with ability to make accurate determination for mercury in RINSATE BLANK J3 and J6 qualifiers replaced with UJ qualifier.					

DATA QUALITY REVIEW			
Job Number:	150-002-017/5	**Review Date:**	12/4/19
Project:	Upriver Reach Sediment Investigation	**Reviewer:**	Kevin Woodhouse
Laboratory:	Pace Analytical	**Laboratory Job ID#:**	L1155761
Analysis:	EPA 7471/B, mercury	**Matrix:**	Sediment

Sample ID Numbers:			
RM16.1E-SED1, RM16.1E-SED1-DUP, RM16.3E-SED2, RM16.3E-SED3, RM16.3E-SED4, RM16.4E-SED5, RM19.4W-SED6, RM19.5W-SED7, RM19.6W-SED8			
Sampling Date:	10/28/19 and 10/29/19	**Extraction Date:**	11/4/19
Analysis Date:	11/4/19		

Holding Times and Reporting Limits:
Acceptable
Method, Trip, and Field Blanks:
MB is ND
Surrogate Recoveries:
NA
Laboratory Control Samples (LCS):
Recoveries and RPDs within control limits.
Matrix Spike/Matrix Spike Duplicate (MS/MSD):
Recoveries and RPDs within control limits.
Laboratory Duplicate:
NA
Field Duplicate:
RPD <10% for RM16.1E-SED1 and RM16.1E-SED1-DUP field duplicate.
Calibration Criteria:
Not reviewed, not included in data package.
Qualification Summary:
Not qualified.

DATA QUALITY REVIEW					
Job Number:	150-002-017/5	**Review Date:**	12/4/19		
Project:	Upriver Reach Sediment Investigation	**Reviewer:**	Kevin Woodhouse		
Laboratory:	Pace Analytical	**Laboratory Job ID#:**	L1155761		
Analysis:	EPA 6020B, metals	**Matrix:**	Water		
Sample ID Numbers:					
RINSATE BLANK					
Sampling Date:	10/29/19	**Extraction Date:**	11/5/19		
Analysis Date:	11/5/19				
Holding Times and Reporting Limits:					
Acceptable					
Method, Trip, and Field Blanks:					
Detections in Method Blank R3468712-1. Chromium at 1.03 °ug/L, Manganese at 0.609 ug/L.					
Surrogate Recoveries:					
NA					
Laboratory Control Samples (LCS):					
Recoveries and RPDs within control limits.					
Matrix Spike/Matrix Spike Duplicate (MS/MSD):					
Recoveries and RPDs within control limits.					
Laboratory Duplicate:					
NA					
Field Duplicate:					
NA					
Calibration Criteria:					
Not reviewed, not included in data package.					
Qualification Summary:					
Sample concentrations for chromium and manganese <5x Method Blank concentrations. Sample qualified with U, J and B qualifiers removed.					

DATA QUALITY REVIEW					
Job Number:	150-002-017/5	**Review Date:**	12/4/19		
Project:	Upriver Reach Sediment Investigation	**Reviewer:**	Kevin Woodhouse		
Laboratory:	Pace Analytical	**Laboratory Job ID#:**		L1155761	
Analysis:	EPA 6020B, metals	**Matrix:**	Sediment		
Sample ID Numbers:					
RM16.1E-SED1, RM16.1E-SED1-DUP, RM16.3E-SED2, RM16.3E-SED3, RM16.3E-SED4, RM16.4E-SED5, RM19.4W-SED6, RM19.5W-SED7, RM19.6W-SED8					
Sampling Date:	10/28/19 and 10/29/19	**Extraction Date:**	11/3/19		
Analysis Date:	11/4/19				
Holding Times and Reporting Limits:					
Acceptable					
Method, Trip, and Field Blanks:					
Detection in Method Blank R3468349-1 of chromium at 0.480 mg/kg. Sample concentrations >5x method blank concentrations, no results qualified.					
Surrogate Recoveries:					
NA					
Laboratory Control Samples (LCS):					
Recoveries and RPDs within control limits.					
Matrix Spike/Matrix Spike Duplicate (MS/MSD):					
Recoveries and RPDs within control limits.					
Laboratory Duplicate:					
NA					
Field Duplicate:					
RPD ≤20% for RM16.1E-SED1 and RM16.1E-SED1-DUP field duplicate.					
Calibration Criteria:					
Not reviewed, not included in data package.					
Qualification Summary:					
Arsenic and lead for RM16.1E-SED1-DUP failed serial dilution test or post-spike criteria and indicates matrix interference. Sample results qualified with O1 by the laboratory. Sample results qualified with J for estimated values, O1 qualifier removed.					

DATA QUALITY REVIEW					
Job Number:	150-002-017/5	**Review Date:**	12/4/19		
Project:	Upriver Reach Sediment Investigation	**Reviewer:**	Kevin Woodhouse		
Laboratory:	Pace Analytical	**Laboratory Job ID#:**	L1155761		
Analysis:	NWTPH-Dx, TPHd	**Matrix:**	Water		
Sample ID Numbers:					
RINSTAE BLANK					
Sampling Date:	10/29/19	**Extraction Date:**	11/2/19		
Analysis Date:	11/2/19				
Holding Times and Reporting Limits:					
Acceptable					
Method, Trip, and Field Blanks:					
MB is ND					
Surrogate Recoveries:					
Within control limits.					
Laboratory Control Samples (LCS):					
Recoveries and RPDs within control limits.					
Matrix Spike/Matrix Spike Duplicate (MS/MSD):					
NA					
Laboratory Duplicate:					
NA					
Field Duplicate:					
NA					
Calibration Criteria:					
Not reviewed, not included in data package.					
Qualification Summary:					
Not qualified					

DATA QUALITY REVIEW			
Job Number:	150-002-017/5	**Review Date:**	12/4/19
Project:	Upriver Reach Sediment Investigation	**Reviewer:**	Kevin Woodhouse
Laboratory:	Pace Analytical	**Laboratory Job ID#:**	L1155761
Analysis:	NWTPH-Dx, TPHd	**Matrix:**	Sediment

Sample ID Numbers:			
RM16.1E-SED1, RM16.1E-SED1-DUP, RM16.3E-SED2, RM16.3E-SED3, RM16.3E-SED4, RM16.4E-SED5, RM19.4W-SED6, RM19.5W-SED7, RM19.6W-SED8			
Sampling Date:	10/28/19 and 10/29/19	**Extraction Date:**	11/2/19
Analysis Date:	11/2/19		

Holding Times and Reporting Limits:
Acceptable
Method, Trip, and Field Blanks:
MB is ND
Surrogate Recoveries:
Within control limits.
Laboratory Control Samples (LCS):
Recoveries and RPDs within control limits.
Matrix Spike/Matrix Spike Duplicate (MS/MSD):
NA
Laboratory Duplicate:
NA
Field Duplicate:
RPD >20 and outside control limits. RPD results not used for sample result quantitation, sample results not qualified.
Calibration Criteria:
Not reviewed, not included in data package.
Qualification Summary:
Not qualified

DATA QUALITY REVIEW			
Job Number:	150-002-017/5	**Review Date:**	12/4/19
Project:	Upriver Reach Sediment Investigation	**Reviewer:**	Kevin Woodhouse
Laboratory:	Pace Analytical	**Laboratory Job ID#:**	L1155761
Analysis:	EPA 8270D, SVOCs	**Matrix:**	Water

Sample ID Numbers:			
RINSTAE BLANK			
Sampling Date:	10/29/19	**Extraction Date:**	11/2/19
Analysis Date:	11/3/19		

Holding Times and Reporting Limits:
Acceptable
Method, Trip, and Field Blanks:
MB is ND
Surrogate Recoveries:
Within control limits.
Laboratory Control Samples (LCS):
Recoveries and RPDs within control limits.
Matrix Spike/Matrix Spike Duplicate (MS/MSD):
Recoveries and RPDs within control limits.
Laboratory Duplicate:
NA
Field Duplicate:
NA
Calibration Criteria:
Not reviewed, not included in data package.
Qualification Summary:
Not qualified.

DATA QUALITY REVIEW			
Job Number:	150-002-017/5	**Review Date:**	12/4/19
Project:	Upriver Reach Sediment Investigation	**Reviewer:**	Kevin Woodhouse
Laboratory:	Pace Analytical	**Laboratory Job ID#:**	L1155761
Analysis:	EPA 8270D, SVOCs	**Matrix:**	Sediment

Sample ID Numbers:			
RM16.1E-SED1, RM16.1E-SED1-DUP, RM16.3E-SED2, RM16.3E-SED3, RM16.3E-SED4, RM16.4E-SED5, RM19.4W-SED6, RM19.5W-SED7, RM19.6W-SED8			
Sampling Date:	10/28/19 and 10/29/19	**Extraction Date:**	11/2/19
Analysis Date:	11/3/19		

Holding Times and Reporting Limits:
Acceptable
Method, Trip, and Field Blanks:
MB is ND
Surrogate Recoveries:
Within control limits.
Laboratory Control Samples (LCS):
Recoveries within control limits.
Matrix Spike/Matrix Spike Duplicate (MS/MSD):
RPDs within control limits. Non-detect for 2,4-dinitrophenol in MS/MSD, matrix interference prevented an accurate determination of the target compound. All other MS/MSD results within control limits and sample results not qualified.
Laboratory Duplicate:
NA
Field Duplicate:
RPD >20 for Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, and Pyrene. RPD results not used for sample result quantitation, sample results not qualified.
Calibration Criteria:
Not reviewed, not included in data package.
Qualification Summary:
Not qualified.

DATA QUALITY REVIEW					
Job Number:	150-002-017/5	**Review Date:**		12/4/19	
Project:	Upriver Reach Sediment Investigation	**Reviewer:**		Kevin Woodhouse	
Laboratory:	Pace Analytical	**Laboratory Job ID#:**		L1155761	
Analysis:	EPA 8270D-SIM, PAHs	**Matrix:**	Water		
Sample ID Numbers:					
RINSTAE BLANK					
Sampling Date:	10/29/19	**Extraction Date:**		11/2/19	
Analysis Date:	11/2/19				
Holding Times and Reporting Limits:					
acceptable					
Method, Trip, and Field Blanks:					
Detections in Method Blank . Naphthalene at 0.0227 µg/L, 2-Methylnaphthalene at 0.00903 µg/L. Sample results <5x method blank concentration. Sample qualified with U, B and J qualifiers removed.					
Surrogate Recoveries:					
Within control limits.					
Laboratory Control Samples (LCS):					
Recoveries and RPDs within control limits.					
Matrix Spike/Matrix Spike Duplicate (MS/MSD):					
Recoveries and RPDs within control limits.					
Laboratory Duplicate:					
NA					
Field Duplicate:					
NA					
Calibration Criteria:					
Not reviewed, not included in data package.					
Qualification Summary:					
Naphthalene and 2-Methylnaphthalene qualified with U for RINSAE BLANK.					

DATA QUALITY REVIEW			
Job Number:	150-002-017/5	**Review Date:**	12/4/19
Project:	Upriver Reach Sediment Investigation	**Reviewer:**	Kevin Woodhouse
Laboratory:	Pace Analytical	**Laboratory Job ID#:**	L1155761
Analysis:	EPA 8270D-SIM, PAHs	**Matrix:**	Sediment

Sample ID Numbers:			
RM16.1E-SED1, RM16.1E-SED1-DUP, RM16.3E-SED2, RM16.3E-SED3, RM16.3E-SED4, RM16.4E-SED5, RM19.4W-SED6, RM19.5W-SED7, RM19.6W-SED8			
Sampling Date:	10/29/19	**Extraction Date:**	11/2/19
Analysis Date:	11/3/19		

Holding Times and Reporting Limits:
Acceptable
Method, Trip, and Field Blanks:
MB is ND
Surrogate Recoveries:
Within control limits
Laboratory Control Samples (LCS):
Recoveries and RPDs within control limits.
Matrix Spike/Matrix Spike Duplicate (MS/MSD):
Recoveries within control limits. RPDs for multiple compounds outside control limits. Detections qualified with estimated values and J flagged. Non-detected results qualified with estimated MDLs and UJ flagged.
Laboratory Duplicate:
NA
Field Duplicate:
RPD >20 for Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, and Pyrene. Sample results not qualified.
Calibration Criteria:
Not reviewed, not included in data package.
Qualification Summary:
Not qualified.

Qualifiers:
EMPC(K) = U on individual analytes; EMPC=J on Totals
U= Non-detect at reported result

DATA QUALITY REVIEW			
Job Number:	150-002-017/4	**Review Date:**	12/07/19
Project:	Upriver Reach Sediment Investigation	**Reviewer:**	R. McGinnis
Laboratory:	ALS-Burlington	**Laboratory Job ID#:**	L2375251
Sample ID Numbers:			
RM16.3E-SED1, RM16.3E-SED2, RM16.3E-SED3, RM16.3E-SED4, RM16.3E-SED5, RM16.3E-SED6, RM16.3E-SED7 RM16.3E-SED8,			
Sample Receiving Discrepancies: None			

DATA QUALITY REVIEW

Job Number:	150-002-017/4	**Review Date:**	12/07/19
Project:	Upriver Reach Sediment Investigation	**Reviewer:**	R. McGinnis
Laboratory:	ALS-Burlington	**Laboratory Job ID#:**	L2375251
Analysis:	EPA 1613B – Dioxins/furans	**Matrix:**	Sediment

Sample ID Numbers:

RM16.3E-SED1, RM16.3E-SED2, RM16.3E-SED3, RM16.3E-SED4, RM16.3E-SED5, RM16.3E-SED6, RM16.3E-SED7 RM16.3E-SED8,

Sampling Date:	10/29/19	**Extraction Date:**	11/12/19
Analysis Date:	11/20/19		

Holding Times and Storage Temp:

Acceptable.

Mass Resolution (>10,000):

Not Reviewed – not included in summary data package

Window Defining Mixture:

Not Reviewed – not included in summary data package

Column Performance Mixture (<25%):

Not Reviewed – not included in summary data package

ICAL: %RSD, Absolute RT, Ion Abundance, S/N

Not Reviewed – not included in summary data package

CCV: %D, Absolute RT, RRT, Ion Abundance, S/N

Not Reviewed – not included in summary data package

Method Blank:

The method blank had "R" qualified results (ion ratios did not meet positive identification criteria) for 2378-TCDF,12378-PeCDF, 123478-HxCDF, 123678-HxCDF, and OCDF. Blank results for these compounds were considered non-detected and the "B" qualifier was removed from sample results for these analytes.

Method blank had detections between EDL and MRL for 1234678-HpCDD (0.115 pg/g), OCDD (0.407 pg/g), and 123789-HxCDF (0.129 pg/g).

- Results were not qualified if sample concentrations were > 5x MB (10 x for OCDD and OCDF).
- Results were qualified with UJ if sample concentrations were < 5xMB (10 x for OCDD and OCDF).

Duplicate Sample Analysis

Analytical results were not qualified based on sample duplicate results. The laboratory indicated the sample was very heterogeneous and contained grass and twigs.

OPR – LCS/LCSD:
Acceptable
Labeled Compound Recoveries:
Sample SED2: Recovery for the 37Cl-2378-TCDD cleanup standard was low. Results were not qualified since the result is not used for sample quantitation. Recovery for 13C-123478-HxCDD was low. Results for 123478-HxCDD were qualified J (estimated).
Sample Analyte Relative Retention Times
Not Reviewed – not included in summary data package

Qualification Summary:
The M qualifier (indicating the lab performed manual peak integration) was removed. All sample "R" flagged results (ion ratios did not meet positive identification criteria) were qualified "UJ" (non-detected with an estimated detection limit) Detections below the reporting limit qualified as estimated (J). The "B" qualifier was removed from sample results. • Results were not qualified if sample concentrations were > 5x MB (10 x for OCDD and OCDF). • Results were qualified with UJ if sample concentrations were < 5xMB (10 x for OCDD and OCDF).

DATA QUALITY REVIEW			
Job Number:	150-002-017/5	**Review Date:**	12/4/19
Project:	Upriver Reach Sediment Investigation	**Reviewer:**	Kevin Woodhouse
Laboratory:	ALS Environmental	**Laboratory Job ID#:**	L2375251
Sample ID Numbers:			
RM16.1E-SED1, RM16.1E-SED1-DUP, RM16.3E-SED2, RM16.3E-SED3, RM16.3E-SED4, RM16.4E-SED5, RM19.4W-SED6, RM19.5W-SED7, RM19.6W-SED8, RINSATE BLANK			
Sample Receiving Discrepancies:			
None			

DATA QUALITY REVIEW

Job Number:	150-002-017/5	**Review Date:**	12/12/19
Project:	Upriver Reach Sediment Investigation	**Reviewer:**	Kevin Woodhouse
Laboratory:	ALS Environmental	**Laboratory Job ID#:**	L2375251
Analysis:	EPA 1614, PBDEs	**Matrix:**	Sediment

Sample ID Numbers:

RM16.1E-SED1, RM16.1E-SED1-DUP, RM16.3E-SED2, RM16.3E-SED3, RM16.3E-SED4, RM16.4E-SED5, RM19.4W-SED6, RM19.5W-SED7, RM19.6W-SED8

Sampling Date:	10/28/19 and 10/29/19	**Extraction Date:**	11/12/19
Analysis Date:	12/2/19		

Holding Times and Reporting Limits:

Acceptable

Method, Trip, and Field Blanks:

Method blank had detections of the following: PBDE 37 (1.11 µg/kg), PBDE 47 (3.17 µg/kg), PBDE 99 (2.92 µg/kg), PBDE 100 (0.868 µg/kg), PBDE 119/120 (0.69 µg/kg), PBDE 126 (0.21 µg/kg), PBDE 183 (0.54 µg/kg), and PBDE 184 (0.31 µg/kg). Results with Method Blank detections were qualified with UJ if results were <5x the Method Blank detection or were not qualified if sample result was <5x Method Blank detection.

The method blank had R qualified results (ion ratios did not meet positive identification criteria) for PBDE 126, 183, and 184. Blank results for these compounds were considered non-detected and the B qualifier was removed from sample results for these analytes

Surrogate Recoveries:

Surrogate 13C12 PBDE 209 below recovery limit in Method Blank, RM16.3E-SED2, RM16.3E-SED3, and RM16.3E-SED4. Sample results qualified for PBDE 209 qualified as UJ (non-detected with an estimated detection limit).

Laboratory Control Samples (LCS):

Recoveries within control limits.

Matrix Spike/Matrix Spike Duplicate (MS/MSD):

NA

Laboratory Duplicate:

RPD outside of control limits for PBDE 7, 8/11, 12/13, 17/25, 28/33, 35, 37/ 75, 51, 47, 79, 66, 77, 100, 99, 85, 153, 154, 138/166, 183, 196, 203, 209. Lab noted sample and duplicate are not homogenous and contains sticks. Results not qualified based sample duplicate results.

Field Duplicate:

Acceptable

Calibration Criteria:

Not reviewed, not included in data package.
Qualification Summary:
Results qualified with an M, indicating the lab manually integrated a peak, had the qualifier removed. Results with Method Blank detections were qualified with UJ if results were <5x the Method Blank detection or were not qualified if sample result was <5x Method Blank detection. All sample results with R qualifier (indicating ion ratios did not meet positive identification criteria) were qualified UJ (non-detected with an estimated detection limit).

DATA QUALITY REVIEW

Job Number:	150-002-017/5	**Review Date:**	12/12/19
Project:	Upriver Reach Sediment Investigation	**Reviewer:**	Kevin Woodhouse
Laboratory:	ALS Environmental	**Laboratory Job ID#:**	L2375251
Analysis:	EPA 1614, PBDEs	**Matrix:**	Water

Sample ID Numbers:

RINSATE BLANK

Sampling Date:	10/28/19 and 10/29/19	**Extraction Date:**	11/5/19
Analysis Date:	12/2/19		

Holding Times and Reporting Limits:

Acceptable

Method, Trip, and Field Blanks:

Method blank had detections of PBDE 37 (13.7 pg/L), PBDE 47 (9.8 pg/L), PBDE 99 (13.6 pg/L), PBDE 100 (3.10 pg/L), PBDE 119/120 (4.5 pg/L), PBDE 126 (1.3 pg/L), PBDE 154 (5.7 pg/L), PBDE 183 (2.8 pg/L), and PBDE 184 (3.48 pg/L). Results with Method Blank detections were qualified with UJ if results were <5x the Method Blank detection or were not qualified if sample result was <5x Method Blank detection.

The method blank had R qualified results (ion ratios did not meet positive identification criteria) for PBDE 100,126, 154, and 183. Method blank results for these compounds were considered non-detected and the B qualifier was removed from sample results for these analytes

Surrogate Recoveries:

Within control limits.

Laboratory Control Samples (LCS):

Recoveries outside control limits for PBDE 8/11, 116, 105, 155, and 190. Sample results not qualified for QC batch failure.

Matrix Spike/Matrix Spike Duplicate (MS/MSD):

NA

Laboratory Duplicate:

NA

Field Duplicate:

NA

Calibration Criteria:

Not reviewed, not included in data package.

Qualification Summary:

Results qualified with an M, indicating the lab manually integrated a peak, had the qualifier removed.

Results with Method Blank detections were qualified with UJ if results were <5x the Method Blank detection or were not qualified if sample result was <5x Method Blank detection.

All sample results with R qualifier (indicating ion ratios did not meet positive identification criteria) were qualified UJ (non-detected with an estimated detection limit).

DATA QUALITY REVIEW			
Job Number:	150-002-017/4	**Review Date:**	12/07/19
Project:	Upriver Reach Sediment Investigation	**Reviewer:**	R. McGinnis
Laboratory:	ALS-Burlington	**Laboratory Job ID#:**	L2375251
Sample ID Numbers:			
RM16.3E-SED1, RM16.3E-SED2, RM16.3E-SED3, RM16.3E-SED4, RM16.3E-SED5, RM16.3E-SED6, RM16.3E-SED7 RM16.3E-SED8,			
Sample Receiving Discrepancies: None			

DATA QUALITY REVIEW

Job Number:	150-002-017/4	**Review Date:**	12/07/19
Project:	Upriver Reach Sediment Investigation	**Reviewer:**	R. McGinnis
Laboratory:	ALS-Burlington	**Laboratory Job ID#:**	L2375251
Analysis:	EPA 1668C – PCB congeners	**Matrix:**	Sediment

Sample ID Numbers:

RM16.3E-SED1, RM16.3E-SED2, RM16.3E-SED3, RM16.3E-SED4, RM16.3E-SED5, RM16.3E-SED6, RM16.3E-SED7 RM16.3E-SED8,

Sampling Date:	10/29/19	**Extraction Date:**	11/12/19
Analysis Date:	11/20/19		

Holding Times and Storage Temp:

Acceptable.

Mass Resolution (>10,000):

Not Reviewed – not included in summary data package

Window Defining Mixture:

Not Reviewed – not included in summary data package

Column Performance Mixture (<25%):

Not Reviewed – not included in summary data package

ICAL: %RSD, Absolute RT, Ion Abundance, S/N

Not Reviewed – not included in summary data package

CCV: %D, Absolute RT, RRT, Ion Abundance, S/N

Not Reviewed – not included in summary data package

Method Blank:

The method blank had "R" qualified results (ion ratios did not meet positive identification criteria) for PCBs 8,30/18. 17, 32, 31, 22, 69/49, 41/70/40, 64, 61/70/74/76, 60, 117/116/85/110/115, 105, and 147/148. Blank results for these compounds were considered non-detected and the "B" qualifier was removed from sample results for these analytes.

Method blank had detections for PCB 2 (0.34 pg/g), PCB 11 (17.1 pg/g), PCBs 28/20 (3.71 pg/g), PCBs 21/33 (1.98 pg/g), PCB 37 (1.96 pg/g), PCB 52 (1.49 pg/g), PCBs 44/47/65 (1.84 pg/g), PCB 66 (1.76 pg/g), PCB 56 (0.84 pg/g), PCBs 113/90/101), PCB 118 (0.81 pg/g), PCBs 168/153), PCBs 138/163/129 (0.76 pg/g), and PCBs 180/193 (0.29 pg/g).

Results were not qualified if sample concentrations were > 5x MB.

Results were qualified with UJ if sample concentrations were < 5xMB.

Duplicate Sample Analysis
Analytical results were not qualified based on sample duplicate results. The laboratory indicated the sample was very heterogeneous and contained grass and twigs.

OPR – LCS/LCSD:
Acceptable
Labeled Compound Recoveries:
Sample SED3: Recovery for the 13C12-PCB 209 was low. Results for PCB 209 in Sample SED3 were qualified J (estimated).
Sample Analyte Relative Retention Times
Not Reviewed – not included in summary data package

Qualification Summary:
The M qualifier (indicating the lab performed manual peak integration) was removed. All sample "R" flagged results (ion ratios did not meet positive identification criteria) were qualified "UJ" (non-detected with an estimated detection limit) Detections below the reporting limit were qualified as estimated (J). The "B" qualifier was removed from sample results. • Results were not qualified if sample concentrations were > 5x MB. • Results were qualified with UJ if sample concentrations were < 5xMB.

DATA QUALITY REVIEW			
Job Number:	150-002-017/5	**Review Date:**	12/07/19
Project:	Upriver Reach Sediment Investigation	**Reviewer:**	Roger McGinnis
Laboratory:	ALS Environmental	**Laboratory Job ID#:**	L2375251
Sample ID Numbers:			
RM16.3E-SED1, RM16.3E-SED1-DUP, RM16.3E-SED2, RM16.3E-SED3, RM16.3E-SED4, RM16.3E-SED5, RM16.3E-SED6, RM16.3E-SED7 RM16.3E-SED8			
Sample Receiving Discrepancies:			
None			

DATA QUALITY REVIEW

Job Number:	150-002-017/5	**Review Date:**	12/07/19
Project:	Upriver Reach Sediment Investigation	**Reviewer:**	Roger McGinnis
Laboratory:	ALS Environmental	**Laboratory Job ID#:**	L2375251
Analysis:	EPA 1699 - pesticides	**Matrix:**	Sediment

Sample ID Numbers:

MBNC-DP

Sampling Date:	10/29/19	**Extraction Date:**	11/12/19
Analysis Date:	11/23/19		

Holding Times and Reporting Limits:

Holding times and MRL acceptable. Detections below MRL qualified with J.

Samples reported as dry weight.

ICAL: %RSD, Absolute RT, Ion Abundance, S/N

Not Reviewed – not included in summary data package

CCV: %D, Absolute RT, RRT, Ion Abundance, S/N

Not Reviewed – not included in summary data package

Method, Trip, and Field Blanks:

Rinse blank had no detections.

MB had detection for delta-BHC (0.768 ug/kg), Chlorpyrofos (1.10 ug/kg), and Endosulan I (0.128 ug/kg).

- Results were not qualified if sample concentrations were > 5x MB
- Results were qualified with UJ (undetected with an estimated quantitation limit) if sample concentrations were < 5xMB

Surrogate:

Not applicable

Labeled standard Recoveries:

Acceptable

OPR – LCS/LCSD:

Acceptable

Matrix spikes:

Not applicable

Duplicate Sample Analysis:

Acceptable

Qualification Summary:

The M qualifier (indicating the lab performed manual peak integration) was removed.

Detections below the reporting limit were qualified as estimated (J).

Results for analytes flagged R by the lab (ion ratios did not meet positive compound identification criteria) were qualified UJ (undetected with an estimated detection limit).

The “B” qualifier was removed from sample results.

- Results were not qualified if sample concentrations were > 5x MB.
- Results were qualified with UJ if sample concentrations were < 5xMB.