BIG FISHWEIR CREEK SEDIMENT CORE COLLECTION AND CHEMICAL ANALYSIS REPORT

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LIST OF ACRONYMS

ALS	ALS Global Laboratories
Amdrill	Amdrill, Inc.
CCV	Continuing Calibration Verification
DGPS	Differentially Corrected Global Positioning System
DLCS	Duplicate Laboratory Control Sample
DO	Dissolved Oxygen
DMS	Duplicate Matrix Spike
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
EPA	Environmental Protection Agency
FDEP	Florida Department of Environmental Protection
g	Gram
ITM	Inland Testing Manual - Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S.
L	Liter
LCS	Laboratory Control Samples
LIMS	Laboratory Information Management System
mg/kg	Milligram per kilogram
mg/L	Milligram per liter (ppm)
µg/L	Microgram per liter (ppb)
µS/cm	Microsiemens per centimeter
ng/kg	Nanogram per kilogram
ng/L	Nanogram per liter (ppt)
pg/L	Picogram per liter (ppq)
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
NAVD88	North American Vertical Datum of 1988
NELAC	National Environmental Laboratory Accreditation Conference
NELAP	National Environmental Laboratory Accreditation Program
NTU	Nephelometric Turbidity Units
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PCP	Pentachlorophenol
PEC	Probable Effect Concentrations
PEL	Probable Effect Level
ppb	Parts per Billion
ppm	Parts per Million
ppt	Parts per Trillion
ppq	Parts per Quadrillion
PQL	Practical Quantitation limit
QAPP	Quality Assurance Project Plan

LIST OF ACRONYMS

(Continued)

QA/QC	Quality Assurance/Quality Control
SCTL	Soil Cleanup Target Level
SOP	Standard Operating Procedure
SQAG	Sediment Quality Assessment Guidelines
SRM	Standard Reference Material
TCDD	Tetrachlorodibenzodioxin
TCLP	Toxicity Characteristic Leaching Procedure
TEC	Threshold Effect Concentrations
TEL	Threshold Effect Level
TEQ	Toxicity Equivalence Quotient
TRPH	Total Recoverable Petroleum Hydrocarbons
USACE	United States Army Corps of Engineers, Jacksonville District
WHO	World Health Organization

1.0 EXECUTIVE SUMMARY

This report presents field data and test results from sediment and water collection activities in Big Fishweir Creek, Jacksonville, Florida, that occurred in October 2019 by Water & Air Research, Inc. (Water & Air). The purpose of this sampling effort was to provide information required by decision makers to evaluate future dredging activities within the creek and to help determine the appropriate method of sediment disposal, which may be placement into nearby wetlands to restore elevations for storm resiliency and/or landfill disposal. Before dredging can occur, sediments and elutriates needed to be tested and compared to sediment and water quality criteria to determine if they contained elevated concentrations of contaminants of concern that may alter the method of placement or disposal of the dredged sediment. Geotechnical vibracores were also collected for testing by the U.S. Army Corps of Engineers (USACE) Jacksonville District. Sampling locations within Big Fishweir Creek are presented on Figure 1.

Prior to initiating field work, a Quality Assurance Project Plan (QAPP) was developed and approved by the U.S. Army Corps of Engineers, Jacksonville District. The sampling and laboratory test procedures used followed those specified in the QAPP (Appendix A). While some problems were encountered, all were successfully resolved. Two problems were notable: 1) The shallowness of the area, which hindered the sampling schedule of activities. 2) Unanticipated elevated detection limits for some contaminants of concern.
Although some problems were encountered, all data were judged acceptable for project needs.

1.1 SEDIMENT CHEMISTRY COMPARISON

Zones-A, -B (Upstream), -B (Downstream), -C, and -D sediment composites were analyzed at ALS Global Laboratories (ALS) for the compounds listed in the QAPP, which included metals, polychlorinated biphenyls (PCB) congeners, herbicides, and dioxins and furans (reported as 2,3,7,8 TCDD Toxic equivalents) and phthalates.

Metals were detected in most zone samples at varying concentrations, however, only lead exceeded the Sediment Quality Assessment Guidelines (SQAG) Fresh and Marine Water

Criteria limits in sediment samples Zone-A, Zone-B (Downstream), and Zone-C. Zone-A and Zone-C yielded lead concentrations slightly above the threshold effect level (TEL) criteria, and Zone-B (Downstream) had a concentration nearly twice the TEL criteria.

The five zone samples were analyzed for chlorinated pesticides. Four pesticides were detected at concentrations above the Fresh and Marine SQAGs, specifically 4,4'-DDD, 4,4'DDE, 4,4'DDT, and chlordane. Zone-A had elevated levels above the SQAGs for 4,4'-DDD, 4,4'DDE, and chlordane. Zone-B (Upstream) and Zone-C both exceeded the 4,4'DDD and 4,4'DDE SQAGs. Zone-B (Downstream) exceeded the SQAGs for all four of these pesticides. Zone-D was the only sample that did not exceed SQAG criteria.

Despite sample clean-up on polycyclic aromatic hydrocarbons (PAH) extracts (per U.S. Environmental Protection Agency [EPA] method) to help reduce background components and to prevent sample dilutions, samples had to be diluted 10 times due to matrix interferences to prevent instrument fouling, therefore the detection limits were elevated 10 times, which exceeded some of the SQAG criteria. The 10 times dilutions also caused some of the non-detected results to exceed the SQAG criteria. Zone-A, Zone-B (Downstream) and Zone-C results exceeded the SQAGs for benzo(a)pyrene, benz(a)anthracene, fluoranthene, and pyrene. Zones-A and -B (Downstream) also exceeded the total PAH criteria. Zone-B (Upstream) results exceeded the SQAG criteria for benz(a)anthracene only. Zone-D did not exceed the SQAG criteria except for fluoranthene, which exceeded the 111 micrograms per kilogram (µg/kg) criteria by 1 µg/kg.

Total recoverable petroleum hydrocarbons (TRPH) results using the FL-PRO method yielded values less than the commercial/industrial Soil Cleanup Target Levels (SCTL). TRPH was analyzed out of the EPA recommended holding time.

Polychlorinated biphenyls (PCB) congeners were analyzed on the five zone composite samples, and the total sum of the congeners were compared to the Fresh and Marine water SQAGs. Zone-A, Zone-B (Upstream), Zone-B (Downstream), and Zone-C had total congener sums greater than the Marine SQAG criteria. Zone-D did not exceed the Fresh and Marine sediment criteria.

Dioxins were analyzed on the five zone samples and the results were compared to the EPA Region IV HazMat Cleanup Screening. All zone samples exceeded the total tetrachlorodibenzodioxin (TCDD) toxicity equivalence quotient (TEQ) criteria except for Zone-D.

There are no guidance criteria for herbicides. Herbicides, including pentachlorophenol (PCP), were analyzed on the sediment zone samples. All results were non-detects.

1.2 ELUTRIATION CHEMISTRY

Elutriates were generated from Zone-A and Zone-D using Sitewater from Zone-A, which is considered freshwater. A background Sitewater sample from Zone-A was also collected. These three aqueous samples were tested for metals, pesticides, PAHs, PCB congeners, herbicides, and phthalates.

Metals were analyzed on the two zone elutriate samples and Sitewater sample. Iron in Zone-D elutriate was the only metal detected above the Class III Fresh or Marine water criteria.

Low levels of pesticides and only PCB 5 were detected in the elutriate samples. Chlordane in Zone-A elutriate was the only pesticide detected in the elutriate samples above the Class III Fresh and Marine water quality criteria. 4,4'-DDT, heptachlor, and toxaphene had elevated detection limits above the criteria due to chromatographic interferences.

Two PAHs, benz(a)anthracene and benzo(b)fluoranthene, were detected above the Class III Fresh and Marine water quality criteria in Zone-D elutriate sample. There were six PAH compounds that had elevated detection limits above the Class III criteria.

There are no guidance criteria for herbicides. All herbicides, along with PCP, were undetected. Class III guidance criteria do exist for PCP; however, the sample results were well below those criteria.

The elutriate samples and Sitewater were analyzed for multiple dioxin, furan, and dioxin-like compounds, and the results were compared to the EPA Region 4 Surface Freshwater Screening Values for Hazardous Waste Sites. The results of this component for Zones-A, -D, and the Sitewater were 'non-detects', but the detection limits were elevated above the guidance criteria.

The three elutriate sample results for total TCDD TEQ were well below the 2005 World Health Organization (WHO) Criteria.

Six phthalate related compounds were analyzed for on the two elutriate samples and Site-water sample. Zone D elutriate had concentrations of bis(2-ethylhexyl)phthalate and di-ethyl phthalate that exceeded the total phthalate esters freshwater criterion of ≤3.0 µg/L. All other aqueous phthalates were not detected. Note that the vibracore sleeves were constructed of a polycarbonate material, therefore phthalates may have been introduced to the sediment samples due to direct contact with the sleeves.

1.3 TOXICITY CHARACTERISTIC LEACHING PROCEDURE CHEMICAL DATA

Toxicity Characteristic Leaching Procedure (TCLP) was performed on Zone-C and Zone-D sediment samples to determine if they are eligible for landfill disposal, if warranted. Zone-C and Zone-D samples had detectable arsenic, barium and lead, but at very low concentrations. There were no metals exceedances above the TCLP criteria.

There were no organic compounds detected in the Zone-C and Zone-D samples, and all 'non-detects' were well below the TCLP criteria.

2.0 INTRODUCTION

Water & Air, teaming with subcontractors Amdrill Inc. (Amdrill), and ALS were tasked with collecting sediment vibracore composite samples for chemistry and geotechnical testing from 18 locations to support future dredging activities within Big Fishweir Creek to comply with Section 404 of the Clean Water Act. TCLP testing and elutriate generation were also performed on the sediment composite samples. Chemical and geotechnical vibracore samples were collected at preselected locations within the creek (Figure 1 and Table 1) and delivered, respectively, to ALS Jax and to the USACEs' geotechnical warehouse. Sampling occurred from October 22 through 28, 2019.

The sediments for chemistry were analyzed for multiple contaminants of concern. The results were compared to the Florida Department of Environmental Protection's (FDEP) SQAGs. Dioxins were compared to the EPA Region IV HazMat Cleanup Screening Values. Elutriates were generated from the sediments and analyzed for multiple contaminants of concern, and those results were compared to FDEP's Class III Fresh and Saltwater Criteria. TCLP was performed on select sediment samples to determine if they were eligible for municipal landfill disposal, if warranted.

3.0 MATERIALS AND METHODS

3.1 CHEMICALS OF INTEREST

Five sediment composite samples, two elutriate samples, and one Sitewater background sample were analyzed for metals and organic constituents.

Zones-A, -B (Upstream), -B (Downstream), -C, and -D sediment composites were analyzed at ALS for the compounds listed in the SQAGs, including metals, pesticides, PCBs, herbicides, PAHs, TRPH, dioxins and furans (reported as 2,3,7,8 TCDD Toxic Equivalents), and phthalates (Tables 2 through 11).

Elutriates were generated from Zones A and D composite samples (Figure 2) and were analyzed along with site water for the compounds listed on Tables 12 through 18 and compared to the Class III Fresh and Saltwater criteria (whichever criteria was lower). The elutriate contaminates of concern for this project were metals, PAH compounds, phthalates, PCB congeners, organochlorine pesticides, herbicides, and dioxins and furans (reported as 2,3,7,8 TCDD Toxic equivalents). Hardness was analyzed in order to determine the hardness-based metals criteria.

TCLP (EPA Method 1311) was performed on Zones C and D sediment composite samples and were analyzed for the RCRA 8 metals including mercury, organochlorine pesticides, and additional organics (Table 19).

All chemical results are presented in the ALS lab reports found in Appendix C.

3.2 FIELD METHODS AND PROCEDURES

3.2.1 FIELD EQUIPMENT

Sediment samples were collected by Amdrill using a Rossfelder P3 Vibracore. The vibracore drilling apparatus used a continuous 10-foot by 3-inch diameter steel-core barrel with a stainless-steel cutting head, a stainless-steel core catcher, stainless steel rivets, and clear rigid polycarbonate liners (Figure 3).

3.2.2 EQUIPMENT DECONTAMINATION

New vibracore sleeves were used at each location, and all equipment was decontaminated between stations with a Liquinox solution, deionized water, and pesticide-grade isopropanol. Post sample collection, compositing and homogenization of the sediment samples was performed by Water & Air personnel using a stainless-steel mixing vat and stainless-steel spoons (Figure 4). The stainless-steel equipment was decontaminated between samples using, sequentially, Liquinox detergent, tap water rinse, pesticide-grade isopropanol rinse, and de-ionized water rinse (Figure 5). Since aluminum was an analyte of interest, aluminum foil was not used to cover equipment after decontamination (i.e., equipment was used immediately after decontamination).

3.2.3 SEDIMENT SAMPLE COLLECTION

Vibracore samples were collected from 18 locations along Big Fishweir Creek to project depths (Figure 1), which are listed in Table 1. At 13 locations, two separate vibracored samples were collected within 5 feet of each other (i.e. core names ending in GG and GE). Samples were collected from Amdrill's vibracore-equipped vessels (Figures 6 through 8). Differential Global Positioning System (DGPS), along with two newly installed and surveyed tide staff gauges (Figures 9 through 12), were used to determine sampling locations and appropriate vertical datum for sampling depth (referenced to NAVD88). The vertical datum tide gauges were installed on the east and west sides of the Hershel Bridge, and the benchmark used was located on the northwest side of the bridge along the sidewalk. All samples were collected at the proposed sampling locations listed in the QAPP except when debris was encountered. When this occurred, the vibracore was shifted over a couple of feet from the original location and then collected. Sampling coordinates listed on Table 1 are from the actual sampling locations.

Vibracore sampling was continuous to project depth unless refusal was encountered (Table 1). Refusal was defined as no additional penetration of the vibracore with 2 minutes of additional effort applied to penetrate through the resistant layer at maximum vibration. Three attempts were made to reach a depth of 80 percent penetration. A minimum of 85 percent maximum recovery was attainable at most locations; however, at some

locations, pieces of wood (likely logs or thick branches) were encountered at approximately 3 feet below the sediment surface that hindered penetration and/or recovery (Figure 13).

Upon collection, geotechnical sample cores were capped, labeled with the sample ID, the top and bottoms of the cores labeled, and placed in labeled wooden boxes (Figure 14). These cores were delivered to the USACE by Water & Air personnel on October 31, 2019.

All sample collection, processing, handling, transport, and documentation were performed in accordance with current FDEP Standard Operating Procedures for Field Activities (SOPs). Chemistry cores were carefully collected in a manner that prevented sample contamination. Other considerations that the field team were cognizant of were exhaust fumes from vehicles/vessels, generators, and vibracore equipment; cigarette smoke; and dirty/torn nitrile gloves. Sediment cores for chemical analysis were stored on wet ice within 5 minutes of collection. Sediment samples and their chain-of-custodies were delivered to ALS by a field team member after cores were composited and elutriates generated at Water & Air's Gainesville facility.

3.2.4 SAMPLE HANDLING AND CUSTODY

Sediment vibracore samples for chemistry were cut to approximate 18-inch lengths, capped on the ends and taped to secure the caps (Figure 15). The cores were placed in laboratory cleaned ice-chests and immediately covered with wet ice to chill them to less than 6ºC (Figure 16). Some samples had a small residual of sediment within the core sleeves after collection. This residual was placed into prelabeled laboratory grade wide-mouth glass jars with Teflon lined lids and placed in the ice chests along with the cores.

Throughout the day, water was drained from the ice chests and the amount of solid ice was restored to ensure the samples remained appropriately chilled for the duration of the sampling day and for transport to Water & Air (for compositing and homogenization), and then to ALS. All sediment samples were received at the laboratory below 6ºC and with sufficient ice covering the containers.

Sample custody was documented throughout the life of the samples. Samples were not left unattended unless being properly secured (e.g., being placed in a locked vehicle). The temperature of the samples was verified upon receipt at ALS. The thermometer used for this was an infrared thermometer, so the sample was not physically touched by the thermometer and the sample's integrity was not compromised.

The analysis holding times began after the sample was collected in the field. Sample analysis was begun within the recommended holding times, except for TRPH.

3.2.5 SITE WATER COLLECTION AND HANDLING

Sitewater was collected on the final day of sampling from Zone-A (VB-BFWC19-01GE) by submerging laboratory grade 4-liter amber glass jugs 1-foot below the water surface, inverting and filling. Clean nitrile gloves were worn during the collection. The bottles were then placed in ice chests and covered with wet ice. The ice chests were replenished with ice until the elutriates were generated at Water & Air. The elutriate samples remained on ice until delivery to ALS.

3.2.6 HYDROGRAPHIC MEASUREMENTS

Temperature, pH, specific conductance, dissolved oxygen (DO) and turbidity measurements were made in the lower half of the water column at all sediment sampling locations using a YSI EXO multiparameter probe and Hach 2100P turbidimeter to determine whether conditions are predominantly fresh or marine water. The YSI and Hach turbidimeter were calibrated and/or verified daily before and after sampling.

The vertical datum tide markers (NAVD88) were installed in Big Fishweir Creek by Hyatt Surveying on October 22, 2019 (Figures 9 through 12).

4.0 FINAL RESULTS

The contaminants of interest for these sediment samples included: metals, PAHs, PCBs, chlorinated pesticides, herbicides, dioxins/furans, and phthalates. The contaminants of interest for the elutriates are the same as the sediments but included hardness. A complete listing of the analytes and relevant sediment and elutriate results and guidance concentrations are presented in Tables 1 through 19. All analytical methods were either EPA methods or from Standard Methods.

4.1 FIELD MEASUREMENT DATA AND SEDIMENT DESCRIPTIONS

4.1.1 WATER QUALITY

Water quality parameters were measured using a YSI EXO multiparameter instrument, and turbidity was measured using a Hach 2100P turbidimeter (Table 1). Parameters were measured at the sample collection locations immediately before vibracoring.

- Specific conductance: specific conductance ranged from 611 microsiemens per centimeter (µS/cm) at VB-BFWC-01 to 2,160 µS/cm at VB-BFWC-16. This range is indicative of a freshwater environment.
- pH: Site VB-BFWC-04 yielded the lowest pH at 6.52, while Site VB-BFWC-16 had the highest pH at 8.27.
- DO: DO was lower upstream compared to the downstream locations. Site VB-BFWC-02 had a DO value of 1.88 milligrams per liter (mg/L), while Site VB-BFWC-11 had the highest DO concentration at 10.3 mg/L.
- Turbidity: turbidity within the creek varied from 1.03 nephelometric turbidity units (NTU) at VB-BFWC-08GS to 15.1 NTU at VB-BFWC-13. The turbidity tended to be lower at the upstream locations. Turbidity was inadvertently not measured at Sites VB-BFWC-16 through -18 due to a field team oversight.

4.1.2 SEDIMENT DESCRIPTIONS

General sediment descriptions were difficult to make at each location because the polycarbonate sleeves tended to become opaque after sediment collection (despite being clear) due to sediment smudging on the inside of the sleeve. Most cores were composed of a dark

organic fine-sand upper layer and a light gray fine-sand lower layer; however, the following are notable sample observations.

- Sampling locations west of Herschel Bridge tended to require multiple vibracoring attempts due to subsurface obstructions (compared to the sites east of the bridge).
- Sample VB-BFWC-01 had a distinct orange-clay layer approximately 5 feet below the sediment surface.
- VB-BFWC-04 consisted of an upper fine-sand with a lower sandy-clay layer.
- Locations VB-BFWC-05 and VB-BFWC-09 encountered multiple obstructions consisting of logs and branches (see Figure 13).

Field sheets can be found in Appendix B.

4.2 SEDIMENT CHEMICAL DATA

A total of 18 vibracore samples were collected within Big Fishweir Creek (Figure 1). These 18 cores were composited into five separate zone samples as presented on Table 1. Zones-A, -B (Upstream), -B (Downstream), -C, and -D sediment composites were analyzed at ALS for the compounds listed in the QAPP, including metals, PCB congeners, PAHs, herbicides, and dioxins and furans (reported as 2,3,7,8 TCDD Toxic Equivalents), and phthalates (Tables 2 through 11). The SQAG used for comparison are subdivided into either Freshwater or Marine water criteria. All TEQ calculations used one-half the detection limits for compounds that were not detected.

4.2.1 SEDIMENT METALS

Metals were detected in most zone samples at varying concentrations. The following metals have SQAG Fresh and Marine Water Criteria: arsenic, barium, cadmium, chromium, cobalt, copper, lead, mercury, nickel, silver, and zinc. Of all these metals with sediment criteria, only lead exceeded the threshold effect concentrations (TEC)/TEL limits. Zone-B (Upstream) and Zone-D results were below the lead SQAG levels. Zone-A and Zone-C yielded lead concentrations of 30.6 and 34.6 milligrams per kilogram (mg/kg), respectively, which were between the Fresh and Marine TEC/TEL sediment criteria of 36 and 30.2 mg/kg, respectively. Zone-B (Downstream) resulted in a lead concentration above the

TEC/TEL SQAG criteria. Zone-B (Downstream) had a lead concentration of 63.7 mg/kg. No samples exceeded the probable effect concentration (PEC)/probable effect level (PEL) SQAG criteria (Table 2).

4.2.2 SEDIMENT PESTICIDES

The five zone samples were analyzed for chlorinated pesticides (Table 3). Five pesticides were detected at concentrations above the Fresh and Marine SQAGs, specifically lindane, 4,4'-DDD, 4,4'DDE, 4,4'DDT, and chlordane. The TEC/TEL SQAG criteria for these compounds are: lindane (2.4/0.32 mg/kg), 4,4'-DDD (4.9/1.22 mg/kg), 4,4'DDE (3.2/2.07 mg/kg), 4,4'DDT (4.2/1.19 mg/kg), and chlordane (3.2/2.26 mg/kg). The TECs and TELs were exceeded in four of the five composite samples, which may have a minimal impact, however, no PECs or PELs were exceeded except for chlordane in Zone-A and Zone-B (Downstream).

- Zone-A had values above the SQAGs for 4,4'-DDD (4.4 mg/kg), 4,4'DDE (5.3 mg/kg), and chlordane (110 mg/kg).
- Zone-B (Upstream) had values that exceeded the SQAGs for 4,4'DDD (1.3 mg/kg) and 4,4'DDE (3.9 mg/kg).
- Zone-B (Downstream) yielded elevated SQAG results for all five pesticides, lindane (0.54 mg/kg), 4,4'-DDD (3.7 mg/kg), 4,4'DDE (12 mg/kg), 4,4'DDT (1.8 mg/kg) and chlordane (100 mg/kg).
- Zone-C exceeded the SQAGs for lindane (0.61 mg/kg), 4,4'DDD (1.8 mg/kg) and 4,4'DDE (12 mg/kg).
- Zone-D was the only composite sample that did not exceed SQAG criteria.

Note that lindane, 4,4'-DDT, chlordane, and toxaphene had elevated detection limits on some samples which were greater than the SQAG criteria. It was anticipated that toxaphene would have an elevated detection limit greater than the criteria (per the QAPP). These un-detected results with method detection limits greater than the SQAG criteria were not flagged as exceedances.

Those substances that occur at concentrations above the TEC but below the PEC should be considered to be of moderate concern, while those that are present at concentrations in excess of the PECs should be considered to be of relatively high concern (Long and MacDonald 1998).

4.2.3 SEDIMENT PAHS

SQAGs have been developed for individual PAH compounds. There are also Total, Low Molecular Weight, and High Molecular Weight criteria for PAHs. Table 4 presents the results and comparisons to these criteria, and Table 5 shows the benzo(a)pyrene equivalent calculations.

Despite sample cleanup on PAH extracts (per EPA method) to help reduce background components and to prevent sample dilutions, samples had to be diluted 10 times due to matrix interferences to prevent instrument fouling, therefore the detection limits were elevated 10 times, which exceeded some of the SQAG criteria.

The TECs and TELs were exceeded in four of the five composite samples, which may have a minimal impact, however, no PECs or PELs were exceeded (Table 4). Sample Zones-A, Zone-B (Downstream), and Zone-C results exceeded the TEC/TEL SQAGs for benzo(a)pyrene, benz(a)anthracene, fluoranthene, and pyrene. Zones-A and -B (Downstream) also exceeded the total PAH criteria, while Zone-C also exceeded the TEC/TEL SQAG for chrysene. Sample Zone-B (Upstream) results exceeded the TEL SQAG criteria for benz(a)anthracene only. Zone-D did not exceed any SQAG criteria.

Benzo(a)pyrene equivalent calculations on Table 5 shows there were no exceedances in the samples based on the University of Florida's alternative soil cleanup target levels of 1.0 mg/kg.

4.2.4 SEDIMENT PCB CONGENERS

PCB congeners were analyzed on the five zone composite samples, and the total sum of the congeners were compared to the Fresh and Marine water SQAGs. Zone-A, Zone-B (Downstream), and Zone-C had total congener sums greater than the Marine TEL SQAG

criteria of 21.6 µg/kg (Tables 6). Zone-B (Upstream) and Zone-D had total sums at 18.7 and 11.8 µg/kg, respectively, which are below the Fresh and Marine sediment criteria. Zone-C yielded a PCB sum of 88 µg/kg, which is greater than the TEC Freshwater SQAG criteria. All samples are below the PEC/PEL SQAGs. The summation of each congener included the detected congeners and one-half of the detection limit for non-detected congeners for each sample.

Dioxin-like PCBs were summed and were included in the total TCDD calculations for the composite samples (Table 7). The TCDD TEQ results are discussed below.

4.2.5 SEDIMENT DIOXINS

Dioxins were analyzed on the five zone samples and the results were compared to the EPA Region IV HazMat Cleanup Screening Value of 2.5 nanogram per kilogram (ng/kg). All zone samples exceeded the total TCDD TEQ criteria except for Zone-D (Tables 8 and 9).

The total TCDD TEQ calculations, including the dioxin-like PCBs, were compared to the FDEP commercial/industrial risk-based SCTL criteria of 30 ng/kg. Zone-B (Upstream) and Zone-C exceeded the SCTL criteria (48.7 and 31.3 ng/kg, respectively).

4.2.6 SEDIMENT HERBICIDES

There are no guidance criteria for herbicides. Herbicides, including PCP, were analyzed on the sediment zone samples. All results were non-detects (Table 10).

4.2.7 SEDIMENT TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

The five sediment samples, plus a laboratory duplicate of Zone-D, were analyzed for TRPH by the FL-PRO method. None of the sediment results exceeded the SCTL commercial criteria (Table 11). TRPH results ranged from 13.9 mg/kg in Zone-D Duplicate to 138 mg/kg in Zone-B (Downstream). Zone-B (Upstream) had a less than result of 1,250U mg/kg. TRPH was analyzed out of holding time.

4.2.8 SEDIMENT RESULTS COMPARED TO FDEP COMMERCIAL/INDUSTRIAL RISK BASED SOIL CLEANUP TARGET LEVELS

The sediment data for metals, PAHs, PCBs, and TRPH were compared to the FDEP commercial/industrial risk based SCTLs (Table 11). None of the sediment results exceeded these criteria.

4.3 WATER AND ELUTRIATE CHEMICAL DATA

Elutriates were generated from Zone-A and Zone-D using Sitewater from Zone-A, along with a background Sitewater sample from Zone-A (Sitewater). These samples were tested for metals, pesticides, PAHs, PCB congeners, herbicides, and phthalates. All chemical laboratory reports, complete with chain-of-custody forms and laboratory quality assurance narratives, are shown in Appendix C.

4.3.1 AQUEOUS METALS

Metals were run on the two zone elutriate samples and Sitewater sample. Iron in Zone-D elutriate was the only metal detected above the Class III Fresh or Marine water criteria (Table 12). The Class III criteria for iron is ≤0.3 mg/L and the elutriate result for Zone-D was 0.96 mg/L. The Sitewater result was 0.060 mg/L, and Zone-A had an iron elutriate result of 0.17 mg/L. No other metals exceeded the Class III Fresh or Marine water quality criteria.

4.3.2 AQUEOUS PESTICIDES AND PCB CONGENERS

Low levels of pesticides and only one PCB congener were detected in the elutriate samples (Tables 13 and 14). Chlordane was the only pesticide detected in the elutriate samples above the Class III Fresh and Marine water quality criteria. The freshwater criteria for chlordane is 4.3 nanogram per liter (ng/L) and the marine criteria is 4.0 ng/L. The Zone-A chlordane result was 20 ng/L, approximately 5 times the criteria.

Four pesticide compounds had elevated detection limits above the Class III criteria, which were due to chromatographic interferences (see Section 5.2.2). Those compounds were chlordane, 4,4'-DDT, heptachlor, and toxaphene. The 4,4'-DDT result from Zone-D was 1.6U ng/L, while the Class III Fresh and Marine water criteria are both 1.0 ng/L.

Heptachlor in Zones A, D, and the Sitewater were all undetected, however, those non-detects were above the Class III Fresh and Marine water criteria of ≤3.8 ng/L and ≤3.6 ng/L, respectively.

Toxaphene was anticipated to have an elevated detection limit above the water quality criteria of ≤0.2 ng/L (see QAPP in Appendix A). The toxaphene detection limit was 19 ng/L, and the results were reported at 19U ng/L.

Only one PCB congener was detected in the samples above the detection limits, which was Zone-D with a PCB 5 result of 4.7 ng/L. The Class III surface water standards for PCBs in fresh and marine waters are 0.45 micrograms per liter (µg/L) annual average, while the freshwater maximum concentration is 14 µg/L and the marine water maximum is 30 µg/L.

4.3.3 AQUEOUS PAHS

Two PAHs, benz(a)anthracene and benzo(b)fluoranthene, were detected above the Class III Fresh and Marine water quality criteria in Zone-D elutriate sample. Zone-D yielded a result of 0.063 µg/L of benz(a)anthracene and 0.052 µg/L of benzo(b)fluoranthene, both of which are above the Fresh and Marine criteria of ≤0.031 µg/L (Table 15).

There were six PAH compounds that had elevated detection limits above the Class III criteria (see Section 5.2.2). These elevated detection limits were anticipated and documented in the QAPP (Appendix A). The PAH compounds involved are benz(a)anthracene, benzo(g,h,i)perylene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and phenanthrene.

4.3.4 AQUEOUS HERBICIDES AND PENTACHLOROPHENOL

There are no guidance criteria for herbicides. All samples analyzed for herbicides, along with PCP, were undetected. Class III guidance criteria do exist for PCP; however, the sample results were well below those criteria (Table 16).

4.3.5 AQUEOUS DIOXINS

The elutriate samples and Sitewater were analyzed for multiple dioxin, furan, and dioxin-like compounds, and the results were compared to the EPA Region 4 Surface Freshwater Screening Values for Hazardous Waste Sites (Table 17). The screening value for 2,3,7,8-(TCDD) is 0.0031 picogram per liter (pg/L). The anticipated detection limit listed in the QAPP for 2,3,7,8 (TCDD) was 5.0 pg/L. The results of this component for Zones A, D, and the Sitewater were 'non-detects', but they were elevated above the guidance criteria (0.493U, 0.490U, and 0.518U, respectively).

The three elutriate sample results for total TCDD TEQ were well below the 2005 WHO Criteria acute criteria of 3,000 pg/L. Zone-A, Zone-D, and the Sitewater yielded values ranging from 1.46 to 3.04 pg/L, which is well below the 2005 WHO Criteria.

4.3.6 AQUEOUS PHTHALATES

Six phthalate related compounds were analyzed for on the two elutriate samples and Site-water sample (Table 18). The freshwater criterion for total phthalate esters is ≤3.0 µg/L. Zone D elutriate sample had a bis(2-ethylhexyl)phthalate result of 3.0 µg/L and a diethyl phthalate result of 4.93 µg/L. This totals 7.93 µg/L, therefore exceeding the freshwater criterion. All other aqueous phthalates were not detected. Note that the vibracore sleeves were constructed of a polycarbonate material, therefore phthalates may have been introduced to the sediment samples due to direct contact with the sleeves.

4.4 TOXICITY CHARACTERISTIC LEACHING PROCEDURE CHEMICAL DATA

TCLP was performed on Zone-C and Zone-D sediment samples to determine if they are eligible for landfill disposal, if warranted (Table 19).

4.4.1 TOXICITY CHARACTERISTIC LEACHING PROCEDURE METALS

Zone-C and Zone-D samples had arsenic, barium and lead that were detectable, but at very low concentrations. There were no metals exceedances above the TCLP criteria.

4.4.2 TOXICITY CHARACTERISTIC LEACHING PROCEDURE ORGANICS

There were no organic compounds detected in the Zone-C and Zone-D samples, and all 'non-detects' were well below the TCLP criteria.

5.0 QUALITY ASSURANCE AND CONTROL

5.1 FIELD QUALITY ASSURANCE SUMMARY

Generally, field quality control measurements are used to objectively determine the need for immediate corrective actions (i.e., if out of control conditions exist) and to provide a measure of data quality. For this sampling effort, in-situ field measurements were made using a YSI EXO multimeter and a Hach 2100P turbidimeter, both of which required instrument calibration or verification. Raw field data, such as field sheets or calibration forms, were initially reviewed and assessed at the site of data generation. All pertinent data produced was recorded on field sheets. The Water & Air field team leader reviewed the reasonableness of the data collected at each location.

Before leaving each station where field observations or measurements were recorded, the Water & Air Field Team Leader reviewed data documentation for completeness, legibility, and reasonableness. Calculations made and used at the station were reviewed for reasonableness (ex. coring to project depth based on NAVD88). At the end of each sampling day, the field team leader checked chain-of-custody forms to confirm they reflected correct information and requests for necessary analyses. The only field related issues encountered during this field event were the shallowness of the sampling locations (i.e. sampling only during high tide) and making sure sediment core recovery was adequate due to debris below the sediment surface.

The vibracore liners were constructed of a polycarbonate material, therefore phthalates may be a part of the chemical composition of these sleeves. This may have caused a falsely elevated level of phthalates in the sediment samples.

5.2 CHEMICAL LABORATORY QUALITY ASSURANCE AND CONTROL

The condition of samples were assessed and documented immediately upon receipt by ALS's custody department. The contents of the shipping container were checked against the information on the chain-of-custody form. No anomalies were noted. The temperature of the samples were verified and acceptable upon receipt at all associated laboratories. The thermometer used for these temperature checks was an infrared thermometer, so the

samples were not physically touched by the thermometer and the samples were not compromised. No thermal preservation violations occurred.

Holding times begin after the samples were containerized in the field. Sample analyses were begun within the recommended holding times, except for TRPH.

5.2.1 SEDIMENT QUALITY ASSURANCE AND CONTROL

Sample Receipt:

ALS Jacksonville, Florida Lab: Five sediment samples were relinquished by Water & Air personnel for analysis at ALS on October 30, 2019. The samples were stored in accordance with the analytical method requirements.

ALS Kelso, Washington Lab: Five sediment samples were received for analysis at ALS on November 1, 2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included with the lab report. The samples were stored in accordance with the analytical method requirements.

ALS Houston, Texas Lab: Five samples were received for analysis at ALS on November 1, 2019. The samples were received at 0.5°C in good condition and were consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Metals:

- No significant anomalies were noted with this analysis.

Semivolatiles by GC/MS:

- Method 8270D: The reporting limit is elevated for all in sample(s) J1906537(001-005). The sample extract was diluted prior to instrumental analysis due to relatively high levels of non-target background components. The extract was highly colored and viscous, which indicated the need to perform a dilution prior to injection into the instrument. Cleanup of the extract was performed within the scope of the method but did not eliminate enough of the

background components to prevent dilution. The results are flagged to indicate the matrix interference.

- Method 8081B, Low Level Organochlorine Pesticides by GC November 18, 2019: Sample VB-BFWC19-Zone-B (Upstream) required dilution due to the presence of elevated levels of target analyte. The reporting limits are adjusted to reflect the dilution.
- Method 8081B, Low Level Organochlorine Pesticides by GC November 13, 2019: The upper control criterion was exceeded for toxaphene in Continuing Calibration Verification (CCV) KQ1916813-02.R01. The field samples analyzed in this sequence did not contain the analyte in question. Since the apparent problem indicated a potential high bias, the data quality was not affected. No further corrective action was required.
- Method 8081B, Low Level Organochlorine Pesticides by GC November 12, 2019: The recoveries of decachlorobiphenyl and tetrachlorom-xylene in most samples, several analytes in Laboratory Control Sample (LCS) KQ1916139-05, a few analytes in Matrix Spike (MS) KQ1916139-01, and all analytes in Duplicate Matrix Spike (DMS) KQ1916139-02 were outside the control limits listed in the results summary. The limits are default values temporarily in use until sufficient data points are generated to calculate statistical control limits. Based on the method and historic data, the recoveries observed were in the range expected for this procedure. No further corrective action was taken.
- Method 8081B, Low Level Organochlorine Pesticides by GC November 12, 2019: The recoveries of all analytes in DMS KQ1916139-02 were outside the control limits listed in the results summary. The limits are default values temporarily in use until sufficient data points are generated to calculate statistical control limits. Based on the method and historic data, the recoveries observed were in the range expected for this procedure. No further corrective action was taken.

- Method 8081B, Low Level Organochlorine Pesticides by GC November 12, 2019: The recovery of Endosulfan Sulfate in Matrix Spikes (MS/DMS) KQ1916139-01/02 is failing low due to suspected non-homogenous sample.
- Method 8082A, PCB Congeners by GC/ECD November 7, 2019: The upper control criterion was exceeded for PCB 168, 77, 81, and 174 in CCV KQ1916435-01 and KQ1916623-01. The field samples analyzed in this sequence did not contain the analytes in question above the method reporting limit (MRL). Since the apparent problem indicated a potential high bias, the data quality was not affected. No further corrective action was required.
- Method 8082A, PCB Congeners by GC/ECD November 7, 2019: The recoveries of PCB 97 and PCB 99 in Matrix Spikes (MS/DMS) KQ1916140-01/02 and PCB 1 in LCS KQ1916140-06 were outside the control limits listed in the results summary. The limits are default values temporarily in use until sufficient data points are generated to calculate statistical control limits. Based on the method and historic data, the recoveries observed were in the range expected for this procedure. No further corrective action was taken.

Precision and Accuracy:

- EQ1900369: A LCS sample was analyzed and reported in addition to a MS/DMS for this extraction batch. The batch precision (MS/DMS) measurements were determined on another order in the extraction batch. The MS/DMS results are not included in this report. The LCS recoveries are within QC limits.

B flags – Method Blank

- The Method Blank EQ1900369-01 contained low levels of dioxin and furan compounds above the EDL however, below the MRL. The associated compounds in the samples are flagged with 'B' flags where the sample result is less than 10 times the level detected in the method blank.

Y flag – Labeled Standards – (13C-1,2,3,4,6,7,8-HpCDF in J1906537-003)

- Quantification of the native 2,3,7,8-substituted congeners is based on isotopic dilution, which automatically corrects for variation in extraction efficiency and provides accurate values even with poor recovery. Samples that had recoveries of labeled standards outside the acceptance limits are qualified with 'Y' flags

on the Labeled Compound summary pages. In all cases, the signal-to-noise ratios are greater than 10:1 and detection limits were below the MRL.

K flags

- Estimated Maximum Possible Concentration (EMPC) - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

2378-TCDF

- Samples analyzed on the DB-5MSUI column were analyzed under conditions where sufficient separation between 2,3,7,8-TCDF and its closest eluter was achieved. Confirmation of this result was not required.

Detection Limits

- Detection limits are calculated for each analyte in each sample by measuring the height of the noise level for each quantitation ion for the associated labeled standard. The concentration equivalent to 2.5 times the height of the noise is then calculated using the appropriate response factor and the weight of the sample. The calculated concentration equals the detection limit.

The TEQ Summary results for each sample have been calculated by ALS/Houston to include:

- WHO-2005 TEFs, The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds (M. Van den Berg et al., Toxicological Sciences 93(2):223-241, 2006)
- 2378-TCDF from the DB-225 column, when confirmation required
- Non-detected compounds are not included in the 'Total'

TRPH by FL-PRO:

Samples were analyzed outside of the EPA suggested holding time.

Method FL-PRO: The control criteria for the following surrogates in sample J2001199-002 and 006 are not applicable: nNonatriacontane.

The analysis of the sample required a dilution, which resulted in a surrogate concentration below the Method Reporting Limit (MRL). No further corrective action was appropriate.

5.2.2 WATER AND ELUTRIATE QUALITY ASSURANCE AND CONTROL

Sample Receipt:

ALS Jacksonville Lab: Three water samples were received for analysis at ALS on October 31, 2019. The samples were stored at minimum in accordance with the analytical method requirements.

ALS Houston Lab: Three samples were received for analysis at ALS in Houston on November 1, 2019. The samples were received at 0.5°C in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry:

- No significant anomalies were noted with this analysis.

Metals:

- No significant anomalies were noted with this analysis.

Semivolatiles by GC/MS:

- The relative percent difference for multiple analytes in the replicate LCS analyses LCS JQ1906453-02 and DLCS JQ1906453-03 were outside control criteria. Recovery in the LCS and Duplicate Laboratory Control Sample (DLCS) was acceptable, which indicates the analytical batch was in control and no further corrective action was appropriate. The data is flagged to indicate the problem.
- Method 8081B, Ultra Low-Level Organochlorine Pesticides by GC/ECD November 15, 2019: The MRL was elevated for Endosulfan II in sample VB-BFWC19-Zone-D and Method Blank KQ1916178-07 after the absence of Endosulfan II was confirmed by GC/MS/MS analysis. No further corrective action was required.

- Method 8081B, Ultra Low-Level Organochlorine Pesticides by GC/ECD November 15, 2019: Insufficient sample volume was received to perform a MS/DMS. A LCS/DLCS was analyzed and reported in lieu of the MS/DMS for these samples.
- Method 8082A, PCB Congeners by GC/ECD November 6, 2019: The upper control criterion was exceeded for PCB 168 and PCB 174 CCV GC36\1106000005.D. The field samples analyzed in this sequence did not contain the analytes in question. Since the apparent problem indicated a potential high bias, the data quality was not affected. No further corrective action was required.
- Method 8082A, PCB Congeners by GC/ECD November 6, 2019: The upper control criterion was exceeded for PCB 138, PCB 183 and PCB 184 in LCS/DLCS KQ1916175-01 and KQ1916175-02 and several PCBs in LCS KQ1916175-03 and KQ1916175-04. The analytes in question were not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.
- Method 8151A, November 5, 2019: The Relative Percent Difference criterion was exceeded for one or more analytes in the LCS/LCSD. All spike recoveries are within limits. The sample data is not significantly affected. No further corrective action was appropriate.

Precision and Accuracy:

- EQ1900367: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in lieu of a MS/DMS for this extraction batch. The LCS and DLCS recoveries are within QC limits.

B flags – Method Blank

- The Method Blank EQ1900367-01 contained low levels of target dioxin and furan compounds above the EDL however below the MRL. The associated compounds in the samples are flagged with 'B' flags where the sample result is less than 10 times the level detected in the method blank.

Y flags – Labeled Standards

- Select labeled standard recoveries were below control limits. Quantification of the native 2,3,7,8-substituted congeners is based on isotopic dilution, which automatically corrects for variation in extraction efficiency and provides accurate values even with poor recovery. Samples that had recoveries of labeled standards outside the acceptance limits are qualified with 'Y' flags on the Labeled Compound summary pages. In all cases, the signal-to-noise ratios are greater than 10:1 and detection limits were below the MRL.

K flags

- EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

2378-TCDF

- Samples analyzed on the DB-5MSUI column were analyzed under conditions where sufficient separation between 2,3,7,8-TCDF and its closest eluter was achieved. Confirmation of this result was not required.

The TEQ Summary results for each sample have been calculated by ALS Houston to include:

- WHO-2005 TEFs, The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds (M. Van den Berg et al., Toxicological Sciences 93(2):223-241, 2006)
- 2378-TCDF from the DB-225 column, when confirmation required
- Non-detected compounds are not included in the 'Total'

6.0 CONCLUSIONS

Vibracore sediment sampling in Big Fishweir Creek, Jacksonville, Florida in October 2019 was found to be difficult due to the shallowness of the area. Vibracore samples could only be collected during hightide despite the shallow draft of the vibracore vessels. All data were collected as planned for the chemical characterization of sediment from Big Fishweir Creek. Appropriate methods and procedures were employed to collect and deliver sediment and elutriate samples to the analytical laboratory in a condition that was representative of the site at the time of collection. No significant problems were encountered during the sampling event or during analytical testing. Some target detection limits were not attainable, however this was anticipated and documented in the QAPP. Some detection limits were elevated due to matrix interferences. All data are judged to be of acceptable quality for project needs.

7.0 REFERENCES

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TABLES

Table 1. Big Fishweir Creek 2019 Sampling Coordinates, Dates/Times, Sediment Penetration/Recovery, and In-Situ Measurements

Boring Designation	Zone Composite Samples	Lat *	Long *	Sampling Date	Sampling Time	Water Depth ft	Tide Gauge (+/-) NAVD88 ft	Elevation at Top of Sediment Surface NAVD88 ft	Sediment Penetration from Sediment Surface ft	Sediment Core Target Recovery Length ft	Sediment Core Recovery Length ft	Water Temp °C	pH std units	Sp. Cond µS/cm	D.O. mg/L	Turbidity NTU
VB-BFWC19-01GG	**Zone A Composite**	30.29177	-81.71929	10/28/19	14:20	3.0	0.6	-2.4	10	10	7.7	24.5	7.29	611	2.03	4.03
VB-BFWC19-01GE				10/25/19	9:35	4.2	1.5	-2.7	3.5	2.3	1.0	23.2	7.31	1,108	3.00	---
VB-BFWC19-02GG		30.29081	-81.71852	10/28/19	13:55	4.2	0.8	-3.4	10	10	8.5	24.4	7.25	664	1.81	4.49
VB-BFWC19-02GE				10/25/19	9:10	5.1	1.5	-3.6	5	1.5	1.5	23.7	7.19	1,380	4.29	---
VB-BFWC19-03GS	Geotech Only	30.29050	-81.71803	10/28/19	13:20	4.4	1.2	-3.2	10	10	8.7	24.6	7.12	897	1.88	---
VB-BFWC19-04GG	**Zone A Composite**	30.29010	-81.71740	10/28/19	12:55	5.4	1.3	-4.1	10	10	9.6	24.5	7.20	1,003	2.64	4.55
VB-BFWC19-04GE				10/25/19	8:45	5.7	1.4	-4.3	2	0.7	1.5	23.8	6.52	1,482	4.93	---
VB-BFWC19-05GG	**Zone B Upstream Composite**	30.29015	-81.71619	10/24/19	15:35	4.2	0.2	-4.0	8.4	10	3.0	23.9	7.63	1,191	6.21	8.63
VB-BFWC19-05GE									3	2	1.6					
VB-BFWC19-06GG		30.29009	-81.71518	10/24/19	13:55	1.9	0.1	-1.8	10	10	8.0	23.5	7.50	1,215	5.41	11.5
VB-BFWC19-06GE									4.5	4.2	3.2					
VB-BFWC19-07GS	Geotech Only	30.29000	-81.71494	10/24/19	12:57	3.7	0.2	-3.5	5.5	10	4.9	23.2	7.46	1,220	4.71	7.30
VB-BFWC19-08GS	Geotech Only	30.29010	-81.71437	10/28/19	11:57	2.2	1.4	-0.8	10	10	8.3	25.2	7.13	1,609	5.56	1.03
VB-BFWC19-09GG	**Zone B Downstream Composite**	30.29006	-81.71239	10/24/19	10:24	1.7	0.7	-1.0	10	10	9.0	22.8	7.64	1,704	6.27	10.9
VB-BFWC19-09GE									6	5	4.2					
VB-BFWC19-10GG		30.28990	-81.71172	10/24/19	9:30	1.5	1.0	-0.5	10	10	8.8	22.6	7.65	1,688	6.95	11.7
VB-BFWC19-10GE									7	5.5	5.2					
VB-BFWC19-11GG	**Zone C Composite**	30.28952	-81.71011	10/23/19	15:10	1.8	0.6	-1.2	10	10	9.5	26.5	7.87	1,851	10.3	14.1
VB-BFWC19-11GE									4.5	3.3	2.8					
VB-BFWC19-12GS	Geotech Only	30.29013	-81.70980	10/23/19	16:10	2.4	0.8	-1.6	10	10	10	26.4	8.17	1,855	10.1	11.7
VB-BFWC19-13GG	**Zone C Composite**	30.29013	-81.70965	10/23/19	16:40	1.1	0.9	-0.2	10	10	8.5	26.4	8.26	1,828	10.2	15.1
VB-BFWC19-13GE									5.4	4.3	4.0					
VB-BFWC19-14GS	Geotech Only	30.29057	-81.70927	10/24/19	8:20	2.2	1.2	-1.0	10	10	9.5	22.5	7.31	1,747	5.86	9.11
VB-BFWC19-15GG	**Zone C Composite**	30.29058	-81.70909	10/24/19	9:00	2.4	1.2	-1.2	10	10	9.5	22.5	7.40	1,649	5.58	10.6
VB-BFWC19-15GE									8	3.3	3.3					
VB-BFWC19-16GG	**Zone D Composite**	30.28822	-81.71035	10/22/19	15:15	2.6	0.8	-1.8	10	10	10	27.2	8.27	2,160	8.57	---
VB-BFWC19-16GE									7	6.2	5.1					
VB-BFWC19-17GG		30.28664	-81.70876	10/22/19	16:35	2.3	0.9	-1.4	10	10	8.1	26.3	7.97	2,140	8.71	---
VB-BFWC19-17GE									10	6.6	6.1					
VB-BFWC19-18GG		30.28535	-81.70758	10/22/19	17:25	5.4	0.9	-4.5	10	10	8.1	26.0	7.95	1,575	8.29	---
VB-BFWC19-18GE									7	3.5	3.5					

Datum: WGS84, NAVD88

Turbidity was measured upstream of vessels

* = Actual sampling location coordinates

Table 2. Test Results for Metals in Sediment Samples Collected from October 22 through October 25, 2019 from Big Fishweir Creek (all units are on a dry weight basis).

	Percent Solids	Aluminum		Antimony		Arsenic		Barium		Beryllium		Boron		Cadmium		Calcium		Chromium		Cobalt		Copper		Iron		Lead		Magnesium	
Sample ID	%	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q
Zone A	59.3	1550	---	0.09	B,J	0.60	---	14.1	---	0.12	J	5	B,J	0.11	J	16800	---	3.49	---	0.52	---	3.11	---	2230	---	**30.6**	---	414	---
Zone B Upstream	74.5	525	---	0.08	B,J	0.33	J	4.97	---	0.03	J	3	B,J	0.09	J	7120	---	1.83	---	0.19	J	1.98	---	735	---	19.2	---	213	---
Zone B Downstream	56.5	1480	---	0.24	J	1.48	---	11.3	---	0.09	J	9	B,J	0.28	---	3710	---	5.92	---	0.72	---	9.14	---	3980	---	**63.7**	---	934	---
Zone C	45.2	2780	---	0.11	J	1.77	---	16.3	---	0.19	J	7	B,J	0.34	---	3580	---	8.52	---	0.66	---	7.96	---	5130	---	**34.6**	---	961	---
Zone D	71.6	515	---	0.07	B,J	0.26	J	2.93	---	0.03	U	3	B,J	0.09	J	1500	---	1.86	---	0.18	J	3.14	---	761	---	15.3	---	259	---
PEC	NV	NV		NV		33		60		NV		NV		5.0		NV		110		NV		150		NV		130		NV	
PEL	NV	NV		NV		41.6		NV		NV		NV		4.21		NV		160		NV		108		NV		112		NV	
SQAG TEC Freshwater	NV	NV		NV		9.8		20		NV		NV		1.0		NV		43		50		32		NV		36		NV	
SQAG TEL Marine	NV	NV		NV		7.24		NV		NV		NV		0.676		NV		52.3		NV		18.7		NV		30.2		NV	

	Percent Solids	Manganese		Mercury		Molybdenum		Nickel		Potassium		Selenium		Silver		Sodium		Strontium		Thallium		Tin		Titanium		Vanadium		Zinc	
Sample ID	%	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q
Zone A	59.3	37.5	---	0.019	---	0.40	J	1.5	---	155	---	0.10	J	0.02	J	489	---	34.9	---	0.034	J	1.9	B,J	23.4	---	3.20	---	27.9	---
Zone B Upstream	74.5	8.42	---	0.011	---	0.16	J	0.64	J	61	B	0.08	U	0.01	J	310	---	10.4	---	0.012	J	1.6	B,J	27.4	---	1.46	---	20.7	---
Zone B Downstream	56.5	19.3	---	0.036	---	0.90	J	2.4	---	159	---	0.30	J	0.06	J	494	---	22.2	---	0.030	J	2.3	B,J	46.7	---	5.70	---	78.4	---
Zone C	45.2	29.6	---	0.105	---	1.1	J	2.5	---	260	---	0.40	J	0.14	J	317	---	32.1	---	0.060	J	2.5	B,J	58.0	---	5.90	---	48.0	---
Zone D	71.6	6.32	---	0.009	---	0.20	J	0.65	J	63	B	0.08	U	0.01	J	333	---	6.39	---	0.009	J	1.3	B,J	39.7	---	1.53	---	22.5	---
PEC	NV	NV		1.1		NV		49		NV		NV		2.2		NV		NV		NV		NV		NV		NV		460	
PEL	NV	NV		0.696		NV		42.8		NV		NV		1.77		NV		NV		NV		NV		NV		NV		271	
SQAG TEC Freshwater	NV	NV		0.18		NV		23		NV		NV		1.0		NV		NV		NV		NV		NV		NV		120	
SQAG TEL Marine	NV	NV		0.13		NV		15.9		NV		NV		0.733		NV		NV		NV		NV		NV		NV		124	

Notes:

1 - Q = Data qualifiers: U = Not detected; I = Estimated value between the method detection limit and the reporting limit; B = Analyte detected in sample and associated method blank; J = Estimated value (discussed in the project case narrative), NV = No Value

2 - Dashes (---) indicated that no qualifiers exist.

3 - SQAG TEL = Sediment Quality Assessment Guidelines Threshold Effect Levels for Freshwater and Marine. These guidelines are from Florida Department of Environmental Protection's Sediment Guidelines.

4 - The specific conductance in Big Fishweir Creek is indicative of a freshwater environment.

5 - **BOLDED** concentrations indicate an exceedance of one or more SQAGs values.

Table 3. Test Results for Organochlorine Pesticides in Sediment Samples Collected from October 22 through October 25, 2019 from Big Fishweir Creek (all units are on a dry weight basis).

	Percent Solids	Dieldrin		Lindane (gamma-BHC) *		4,4'-DDD		4,4'-DDE		4,4'-DDT *		Aldrin		Endosulfan I		Endosulfan II		Endosulfan Sulfate		Endrin		Endrin Aldehyde	
Sample ID	%	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q
Zone A	59.3	0.45	U	0.45	U	**4.4**	---	**5.3**	---	5.5	U	0.84	U	3.4	U	1.5	U	1.5	U	0.58	JP	1.4	J
Zone B Upstream	74.5	0.22	U	0.31	U	**1.3**	J	**3.9**	---	1.8	U	0.59	JP	1.5	---	3.8	U	170	---	0.32	U	0.89	U
Zone B Downstream	56.5	0.67	U	**0.54**	JP	**3.7**	P	**12**	---	**1.8**	JP	0.90	U	0.56	U	3.7	U	51	---	0.49	U	1.4	U
Zone C	45.2	0.39	U	**0.61**	JP	**1.8**	JP	**12**	---	6.0	U	1.1	U	0.66	U	1.3	U	1.8	U	0.57	U	1.6	U
Zone D	71.6	0.26	U	0.36	U	0.70	U	1.0	J	0.71	U	0.69	U	1.1	U	1.5	JP	1.2	U	0.38	U	1.1	U
SQAG PEC	NV	62		5.0		28		31		63		NV		NV		NV		NV		210		NV	
SQAG PEL	NV	4.3		0.99		7.81		374		4.77		NV		NV		NV		NV		NV		NV	
SQAG TEC Freshwater	NV	1.9		2.4		4.9		3.2		4.2		NV		NV		NV		NV		2.2		NV	
SQAG TEL Marine	NV	0.715		0.32		1.22		2.07		1.19		NV		NV		NV		NV		NV		NV	

	Percent Solids	Endrin Ketone		Heptachlor		Heptachlor Epoxide		Methoxychlor		Toxaphene *		alpha-BHC		beta-BHC		delta-BHC		alpha-Chlordane		gamma-Chlordane		Chlordane	
Sample ID	%	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q
Zone A	59.3	2.9	U	0.56	U	0.94	U	1.5	U	49	U	0.42	U	0.39	U	0.40	U	5.8	---	15	---	**110**	---
Zone B Upstream	74.5	0.55	JP	0.39	U	0.66	U	0.71	U	34	U	0.29	U	0.27	U	0.28	U	1.2	---	2.8	P	4.8	U
Zone B Downstream	56.5	1.6	P	0.59	U	1.0	U	1.1	U	52	U	0.44	U	0.41	U	0.43	U	5.7	---	14	---	**100**	---
Zone C	45.2	0.80	U	0.69	U	1.2	U	1.3	U	60	U	0.51	U	1.6	U	0.50	U	1.1	J	3.8	---	8.5	U
Zone D	71.6	0.53	U	0.46	U	0.77	U	0.83	U	40	U	0.34	U	0.32	U	0.33	U	0.82	J	1.6	P	5.6	U
SQAG PEC	NV	NV		NV		16		NV		32		NV		NV		NV		NV		NV		18	
SQAG PEL	NV	NV		NV		NV		NV		NV		NV		NV		NV		NV		NV		4.79	
SQAG TEC Freshwater	NV	NV		NV		2.5		NV		0.1		NV		NV		NV		NV		NV		3.2	
SQAG TEL Marine	NV	NV		NV		NV		NV		NV		NV		NV		NV		NV		NV		2.26	

Notes:

1 - Q = data qualifiers: U = not detected; J = Estimated value; P = The GC or HPLC confirmation criteria was exceeded and the relative percent difference is greater than 40% between the two analytical results; NV = No Value

2 - Dashes (---) indicated that no qualifiers exist.

3 - * = The method detection limit for these undetected compounds were greater than some SCTLs, therefore, these results were not flagged as exceedances.

4 - SQAG TEL = Sediment Quality Assessment Guidelines Threshold Effect Levels for Freshwater and Marine. These guidelines are from Florida Department of Environmental Protection's Sediment Guidelines.

5 - The specific conductance in Big Fishweir Creek is indicative of a freshwater environment.

6 - **BOLDED** concentrations indicate an exceedance of one or more SQAGs values.

Table 4. Test Results for PAHs and Bis(2-ethylhexyl) Phthalate in Sediment Samples Collected from October 22 through October 25, 2019 from Big Fishweir Creek (all units are on a dry weight basis).

	Percent Solids	1-Methylnaphthalene		2-Methylnaphthalene *		Acenaphthene *		Acenaphthylene *		Anthracene *		Benzo(g,h,i)perylene		Benzo(a)pyrene (BaP)		Benz(a)anthracene		Benzo(b)fluoranthene		Benzo(k)fluoranthene		Chrysene *		Dibenzo(a,h)anthracene *	
Sample ID	%	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q
Zone A	59.3	300	U	256	U	344	U	245	U	178	U	245	U	**168**	J	**281**	J	222	U	267	U	211	U	300	U
Zone B Upstream	74.5	37.5	U	31.9	U	43.0	U	30.6	U	22.2	U	51.1	---	60.8	---	**76.4**	---	115	---	37.3	J	59.6	---	37.5	U
Zone B Downstream	56.5	351	U	299	U	403	U	286	U	208	U	286	U	**307**	J	**481**	---	509	---	312	U	**247**	J	351	U
Zone C	45.2	42.5	U	36.2	U	48.8	U	34.6	U	25.2	U	91.7	---	**97.0**	---	**117**	---	186	---	55.3	---	84.5	---	42.5	U
Zone D	71.6	38.1	U	32.4	U	43.7	U	31.0	U	22.6	U	55.9	---	59.7	---	73.5	---	108	---	33.8	U	52.7	---	38.1	U
PEC	NV	NV		NV		89		130		850		NV		1500		1100		NV		NV		1300		140	
PEL	NV	NV		201		88.9		128		245		NV		763		693		NV		NV		846		135	
SQAG TEC Freshwater	NV	NV		NV		6.7		5.9		57		NV		150		110		NV		NV		170		33	
SQAG TEL Marine	NV	NV		20.2		6.7		5.9		46.9		NV		88.8		74.8		NV		NV		108		6.2	

	Percent Solids	Fluoranthene		Fluorene *		Indeno(1,2,3-cd)pyrene		Naphthalene *		Phenanthrene *		Pyrene		Benzo(a)pyrene Equivalency Concentration	Total PAHs	Total Low Molecular Weight PAHs	Total High Molecular Weight PAHs	Bis(2-ethylhexyl) Phthalate *	
Sample ID	%	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	Q
Zone A	59.3	**235**	J	245	U	245	U	344	U	189	U	**231**	J	371	**2710**	900	1170	5340	U
Zone B Upstream	74.5	104	---	30.6	U	46.2	J	43.0	U	23.6	U	97.6	---	104	798	112	417	600	U
Zone B Downstream	56.5	**598**	---	286	U	286	U	403	U	221	U	**584**	---	567	**4449**	1053	2393	805	U
Zone C	45.2	**189**	---	34.6	U	77.9	---	48.8	U	42.0	J	**193**	---	157	1291	156	702	1010	U
Zone D	71.6	112	---	31.0	U	50.4	---	43.7	U	29.8	J	104	---	102	803	132	420	150	J
PEC	NV	2200		540		NV		560		1200		1500		NV	23000	NV	NV	2600	
PEL	NV	1490		144		NV		391		544		1398		NV	16770	1442	6676	2647	
SQAG TEC Freshwater	NV	420		77		NV		180		200		200		NV	1600	NV	NV	180	
SQAG TEL Marine	NV	113		21.2		NV		34.6		86.7		153		NV	1684	312	655	182	

Notes:

1 - Q = data qualifiers; U = not detected; J = estimated value, NV = No Value

2 - Dashes (---) indicated that no qualifiers exist.

3 - * = The method detection limit for these undetected compounds were greater than the SQAGs, therefore, these results were not flagged as exceedances.

4 - SQAG TEL = Sediment Quality Assessment Guidelines Threshold Effect Levels for Freshwater and Marine. These guidelines are from Florida Department of Environmental Protection's Sediment Guidelines.

5 - The specific conductance in Big Fishweir Creek is indicative of a freshwater environment.

6 - **BOLDED** concentrations indicate an exceedance of one or more SQAG values.

7 - The Benzo(a)pyrene Equivalency Concentration factors and Total PAHs were calculated by using one half of the detection limit for compounds that were not detected.

8 - Benzo(a)pyrene Equivalency Concentration factors for the following PAHs: Benzo(a)pyrene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenzo(a,h)anthracene, and Indeno(1,2,3-cd)pyrene.

9 - Total High Molecular Weight PAHs (1/2 DL if undetected): Benzo(a)anthracene, Benzo(a)pyrene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Pyrene

10 - Total Low Molecular Weight PAHs (1/2 DL if undetected): Acenaphthene, Acenaphthylene, Anthracene, Fluorene, Naphthalene, 2-Methylnaphthalene, Phenanthrene

11 - Note that the samples were diluted 10x due to matrix interferences, therefore the detection limits were elevated 10x.

Table 5. Benzo(a)pyrene Equivalents Calculations in Sediment Samples Collected from October 22 through October 25, 2019 from Big Fishweir Creek.

Benzo(a)pyrene Conversion Table

For Direct Exposure Soil Cleanup Target Levels

Facility/Site Name:	Big Fishweir Creek 2019
Site Location:	Jacksonville, FL
Facility/Site ID No.:	

SCTL Type	Value	Units
Residential Direct Exposure SCTL	0.1	mg/kg
Industrial Direct Exposure SCTL	0.7	mg/kg
Alternative SCTL (Optional)	1	mg/kg
Site Specific Background (Optional)	1.7	mg/kg

TEF = Toxic Equivalency Factor

	Soil Sample #	Zone A	Zone B (Up)	Zone B (Down)	Zone C	Zone D					
	Sample Date	1/24/2019	1/24/2019	1/24/2019	1/24/2019	1/24/2019					
	Sample Location:	Jacksonville, FL	Jacksonville, FL	Jacksonville, FL	Jacksonville, FL	Jacksonville, FL					
	Depth (ft):										
Contaminant Concentrations											
Contaminant	**TEF**	Zone A (mg/kg)	Zone B (Up) (mg/kg)	Zone B (Down) (mg/kg)	Zone C (mg/kg)	Zone D (mg/kg)					
Benzo(a)pyrene	1.0	0.168	0.0608	0.307	0.097	0.0597					
Benzo(a)anthracene	0.1	0.281	0.0764	0.481	0.117	0.0735					
Benzo(b)fluoranthene	0.1	0.111	0.115	0.509	0.186	0.108					
Benzo(k)fluoranthene	0.01	0.134	0.0374	0.156	0.0553	0.0169					
Chrysene	0.001	0.106	0.0596	0.247	0.0845	0.0527					
Dibenz(a,h)anthracene	1.0	0.15	0.0185	0.175	0.0212	0.019					
Indeno(1,2,3-cd)pyrene	0.1	0.122	0.0462	0.143	0.0779	0.0504					
Benzo(a)pyrene Equivalents											
Contaminant	**TEF**	Zone A (mg/kg)	Zone B (Up) (mg/kg)	Zone B (Down) (mg/kg)	Zone C (mg/kg)	Zone D (mg/kg)					
Benzo(a)pyrene	1.0	0.1680	0.0608	0.3070	0.0970	0.0597	0.0000	0.0000	0.0000	0.0000	0.0000
Benzo(a)anthracene	0.1	0.0281	0.0076	0.0481	0.0117	0.0074	0.0000	0.0000	0.0000	0.0000	0.0000
Benzo(b)fluoranthene	0.1	0.0111	0.0115	0.0509	0.0186	0.0108	0.0000	0.0000	0.0000	0.0000	0.0000
Benzo(k)fluoranthene	0.01	0.0013	0.0004	0.0016	0.0006	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000
Chrysene	0.001	0.0001	0.0001	0.0002	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000
Dibenz(a,h)anthracene	1.0	0.1500	0.0185	0.1750	0.0212	0.0190	0.0000	0.0000	0.0000	0.0000	0.0000
Indeno(1,2,3-cd)pyrene	0.1	0.0122	0.0046	0.0143	0.0078	0.0050	0.0000	0.0000	0.0000	0.0000	0.0000
Total Equivalents											
Total Benzo(a)pyrene Equivalents		**0.4**	**0.1**	**0.6**	**0.2**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Comparisons to SCTLs											
Does This Sample Exceed:		**Zone A (mg/kg)**	**Zone B (Up) (mg/kg)**	**Zone B (Down) (mg/kg)**	**Zone C (mg/kg)**	**Zone D (mg/kg)**					
The Residential Direct Exposure SCTL of 0.1 mg/kg?		**EXCEEDS**	**OK**	**EXCEEDS**	**EXCEEDS**	**OK**	**OK**	**OK**	**OK**	**OK**	**OK**
The Industrial Direct Exposure SCTL of 0.7 mg/kg?		**OK**	**OK**	**OK**	**OK**	**OK**	**OK**	**OK**	**OK**	**OK**	**OK**
The Alternative SCTL of 1 mg/kg?		**OK**	**OK**	**OK**	**OK**	**OK**	**OK**	**OK**	**OK**	**OK**	**OK**
The Site Specific Background Concentration of 1.7 mg/kg?		**OK**	**OK**	**OK**	**OK**	**OK**	**OK**	**OK**	**OK**	**OK**	**OK**

Benzo(a)Pyrene Equivalents Calculator Instructions

Summary Criteria for Table Entries

Detection	**Concentration Reported**	**Data Qualifier**	**Enter**
Various	Quantified with certainty	None	reported value
Various	Estimated	J	reported (estimated) value
ND at MDL	MDL	U	1/2 reported value
< MDL	Estimated	T	reported (estimated) value
≥ MDL but < PQL	Estimated	I	reported (estimated) value
≥ MDL but < PQL	PQL	M	1/2 reported value

INSTRUCTIONS: Calculate Total Benzo(a)pyrene Equivalents if at least one of the carcinogenic PAHs is detected in the sample at a concentration equal to or higher than the Method Detection Limit (MDL), whether quantified with certainty (the concentration reported has no qualifier) or estimated (the concentration reported has a "J", "T" or "I" qualifier). Enter the contaminant concentrations (in mg/kg) for all seven carcinogenic PAHs in the yellow boxes using the following criteria (and see table below):

1. If quantified with certainty, or estimated and has the "J" qualifier, enter the reported value;
2. If not detected at the MDL (the concentration reported is the MDL followed by the "U" qualifier) enter 1/2 of the reported value;
3. If detected at a concentration lower than the MDL and the concentration is estimated (has the "T" qualifier) enter the estimated value;
4. If detected at a concentration equal to or higher than the MDL but lower than the Practical Quantitation Limit (PQL) and the concentration is estimated (has the "I" qualifier) enter the estimated value;

5. If detected at a concentration equal to or higher than the MDL but lower than the PQL and it is not estimated (the concentration reported is the PQL followed by the "M" qualifier) enter 1/2 of the reported value.

Table 6. Test Results for PCBs in Sediment Samples Collected from October 22 through October 25, 2019 from Big Fishweir Creek (all units are on a dry weight basis; µg/kg).

Sample ID	Percent Solids	PCB 1		PCB 101		PCB 105		PCB 110		PCB 114		PCB 118		PCB 119		PCB 123		PCB 126		PCB 128		PCB 132		PCB 138		PCB 141		PCB 149		PCB 151		PCB 153		PCB 156		PCB 157		PCB 158		PCB 166	
	%	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q
Zone A	59.3	2.6	U	2.5	U	0.15	U	1.0	---	0.15	U	0.62	---	0.20	U	0.15	U	0.21	U	0.42	U	0.78	U	2.2	---	0.36	JP	1.4	---	0.45	J	1.9	P	0.15	U	0.16	U	0.21	U	0.17	U
Zone B Upstream	74.5	2.5	U	0.57	U	0.14	U	0.37	JP	0.14	U	0.11	U	0.19	U	0.64	U	0.42	J	0.34	U	0.27	U	0.82	P	0.17	J	0.71	---	0.21	J	0.95	P	0.14	U	0.15	U	0.10	JP	0.17	U
Zone B Downstream	56.5	3.3	U	3.4	U	0.19	U	1.3	P	0.19	U	0.23	U	5.2	U	0.27	U	0.27	U	0.61	J	0.19	U	2.0	---	0.30	J	1.6	---	0.57	U	1.8	P	0.19	U	0.21	U	0.23	U	0.22	U
Zone C	45.2	3.9	U	5.2	U	0.23	U	3.1	---	0.23	U	1.9	---	0.30	U	0.23	U	0.32	U	0.86	J	0.23	U	3.9	---	0.50	J	5.0	---	1.0	---	5.6	P	0.31	J	0.25	U	0.49	U	0.31	JP
Zone D	71.6	2.4	U	0.29	U	0.14	U	0.26	J	0.14	U	0.24	J	0.86	U	0.14	U	0.19	U	0.14	J	0.14	U	0.31	JP	0.11	U	0.27	J	0.14	U	0.46	J	0.14	U	0.15	U	0.08	U	0.16	U

Sample ID	Percent Solids	PCB 167		PCB 168		PCB 169		PCB 170		PCB 174		PCB 177		PCB 18		PCB 180		PCB 183		PCB 184		PCB 187		PCB 189		PCB 194		PCB 195		PCB 201		PCB 203		PCB 206		PCB 209		PCB 28		PCB 31	
	%	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q
Zone A	59.3	0.74	---	0.72	U	0.25	U	0.86	---	0.76	U	0.21	JP	0.27	U	1.5	---	0.24	JP	1.6	U	0.54	J	0.12	U	0.22	U	0.14	U	0.20	U	0.28	J	0.17	U	0.27	U	0.27	U	3.0	U
Zone B Upstream	74.5	0.37	J	0.17	U	0.23	U	0.44	U	0.64	U	0.19	U	0.26	U	0.74	---	0.17	U	0.18	U	0.47	J	0.11	U	0.21	U	0.13	U	0.19	U	0.15	U	0.17	U	0.26	U	0.40	U	0.86	U
Zone B Downstream	56.5	0.75	U	0.22	U	0.32	U	0.85	J	0.77	JP	0.25	U	0.35	U	1.3	---	0.22	U	1.5	U	0.57	J	0.15	U	0.28	U	0.18	U	0.25	U	0.29	JP	0.22	U	0.35	U	0.35	U	0.16	U
Zone C	45.2	1.4	U	0.83	U	0.38	U	2.1	---	1.9	---	0.67	JP	0.74	JP	3.8	---	0.80	J	3.4	U	2.0	---	0.18	U	0.72	J	0.21	U	0.30	U	0.65	JP	0.55	J	0.58	J	0.68	U	0.71	U
Zone D	71.6	0.18	JP	0.16	U	0.22	U	0.18	JP	0.13	U	0.18	U	0.25	U	0.13	U	0.16	U	0.27	U	0.18	U	0.11	U	0.20	U	0.13	U	0.18	U	0.15	U	0.16	U	0.25	U	0.25	U	0.52	U

Sample ID	Percent Solids	PCB 33		PCB 37		PCB 44		PCB 49		PCB 5		PCB 52		PCB 56		PCB 60		PCB 66		PCB 70		PCB 74		PCB 77		PCB 8		PCB 81		PCB 87		PCB 90		PCB 95		PCB 97		PCB 99		Total PCBs
	%	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg
Zone A	59.3	0.39	JP	1.2	---	0.26	JP	0.50	JP	2.5	---	0.65	---	0.15	U	16	---	0.79	U	0.75	U	0.89	U	0.25	U	0.36	U	1.8	U	1.1	U	0.22	U	1.0	---	0.12	U	0.34	U	46.3
Zone B Upstream	74.5	0.30	U	0.44	U	0.20	U	0.16	J	0.96	---	0.23	U	0.14	U	3.7	P	0.22	U	0.17	U	0.43	U	0.23	U	1.4	U	0.70	U	1.1	U	0.21	U	0.41	J	0.11	U	0.33	U	18.7
Zone B Downstream	56.5	0.41	U	1.9	---	0.66	J	0.78	---	4.2	---	0.90	---	0.19	U	18	---	1.6	U	1.1	P	0.42	U	0.47	U	0.46	U	2.4	U	2.3	U	3.3	U	1.5	---	0.15	U	0.44	U	56.4
Zone C	45.2	0.49	U	0.86	U	1.3	---	2.3	---	15	---	2.6	---	0.50	U	5.8	P	3.0	U	1.8	---	0.34	U	0.38	U	0.71	U	5.4	U	4.5	U	0.34	U	4.3	---	0.18	U	0.52	U	**88.0**
Zone D	71.6	0.29	U	0.32	U	0.19	JP	0.15	U	0.58	---	0.22	U	0.14	U	2.8	---	0.21	U	0.16	U	0.20	U	0.22	U	0.32	U	0.58	U	0.13	U	0.20	U	0.17	U	0.11	U	0.31	U	11.8

SQAG TEC Freshwater (µg/kg)	60	SQAG PEC (Total PCBs)(µg/kg)	680
SQAG TEL Marine (µg/kg)	21.6	SQAG PEL (Total PCBs)(µg/kg)	189

Notes:

1 - Q = data qualifiers: U = Not detected; J = Estimated value; P = The GC or HPLC confirmation criteria was exceeded and the relative percent difference is greater than 40% between the two analytical results.

2 - SQAG TEL = Sediment Quality Assessment Guidelines Threshold Effect Levels for Freshwater and Marine. These guidelines are from Florida Department of Environmental Protection's Sediment Guidelines.

3 - Total PCBs = the sum of detected congeners and one-half of the detection limit for non-detected congeners.

4 - The specific conductance in Big Fishweir Creek is indicative of a freshwater environment.

5 - **BOLDED** concentrations indicate an exceedance of one or more SQAGs values.

FDEP commercial/industrial risk-based Soil Cleanup Target Level (SCTL) for Total PCBs = 2.6 mg/kg (or 2,600 µg/kg)

Table 7. Dioxin-Like PCB Calculation of Total TCDD in Sediment Samples Collected from October 22 through October 25, 2019 from Big Fishweir Creek, Jacksonville, Florida

Sediment evaluation for dredging and disposal at Bartram Island DMMA (Disposal Criteria require concentrations less than commercial/industrial SCTLs for RCRA metals, PAHs, PCBs, and TRPH)

Polychlorinated biphenyl (PCB) Congener	Soil Sample #	**Zone A**	**Zone B Upstream**	**Zone B Downstream**	**Zone C**	**Zone D**
	Sample Date	10/24/2019	10/24/2019	10/24/2019	10/24/2019	10/24/2019
	Location:	Big Fishweir Creek	Big Fishweir Creek	Big Fishweir Creek	Big Fishweir Creek	Big Fishweir Creek
	Depth (ft):	na	na	na	na	na
	WHO 2005 TEFs	Concentration (ug/kg) *	Concentration (ug/kg) *	Concentration (ug/kg) *	Concentration (ug/kg) *	Concentration (ug/kg) *
PCB 105	0.00003	0.075	0.07	0	0.115	0.07
PCB 114	0.00003	0.075	0.07	0	0.115	0.07
PCB 118	0.00003	0.62	0.055	0	1.9	0.24
PCB 123	0.00003	0.075	0.32	0	0.115	0.07
PCB 126	0.1	0.105	0.42	0	0.16	0.095
PCB 156	0.00003	0.075	0.07	0	0.31	0.07
PCB 157	0.00003	0.08	0.075	0	0.125	0.075
PCB 167	0.00003	0.74	0.37	0	0.7	0.18
PCB 169	0.03	0.125	0.115	0	0.19	0.11
PCB 189	0.00003	0.06	0.055	0	0.09	0.055
PCB 77	0.0001	0.125	0.115	0	0.19	0.11
PCB 81	0.0003	0.9	0.35	0	2.7	0.29
		TCDD Equivalents (ng/kg)	TCDD Equivalents (ng/kg)	TCDD Equivalents (ng/kg)	TCDD Equivalents (ng/kg)	TCDD Equivalents (ng/kg)
PCB 105		0.00225	0.0021	0	0.00345	0.0021
PCB 114		0.00225	0.0021	0	0.00345	0.0021
PCB 118		0.0186	0.00165	0	0.057	0.0072
PCB 123		0.00225	0.0096	0	0.00345	0.0021
PCB 126		10.5	42	0	16	9.5
PCB 156		0.00225	0.0021	0	0.0093	0.0021
PCB 157		0.0024	0.00225	0	0.00375	0.00225
PCB 167		0.0222	0.0111	0	0.021	0.0054
PCB 169		3.75	3.45	0	5.7	3.3
PCB 189		0.0018	0.00165	0	0.0027	0.00165
PCB 77		0.0125	0.0115	0	0.019	0.011
PCB 81		0.27	0.105	0	0.81	0.087
ng/kg	Total TCDD TEQ from PCBs	14.59	45.60	0.00	22.63	12.92
ng/kg	Dioxin/Furan TEQ	6.11	3.1	9.16	8.69	1.82
	Total TCDD TEQ	**20.70**	**48.70**	**9.16**	**31.32**	**14.74**

This table converts dioxin-like PCBs to the equivalent 2,3,7,8 TCDD TEQ and adds that concentration to the dioxin/furan TEQ.

* Either the detected concentration is given or if congener is ND, then 1/2 the DL. Detections are highlighted.

FDEP commercial/industrial risk-based Soil Cleanup Target Level (SCTL) for 2,3,7,8 TCDD TEQ = 30 ng/kg (parts per trillion)

Table 8. Test Results for Dioxins and Furans in Sediment Collected from October 22 through October 25, 2019 in the Big Fishweir Creek (all units are on a dry weight basis).

	Percent Solids	2,3,7,8- (TCDD)		1,2,3,7,8- (PeCDD)		1,2,3,4,7,8- (HxCDD)		1,2,3,6,7,8- (HxCDD)		1,2,3,7,8,9- (HxCDD)		1,2,3,4,6,7,8- (HpCDD)		(OCDD)		2,3,7,8- (TCDF)		1,2,3,7,8- (PeCDF)		2,3,4,7,8- (PeCDF)		1,2,3,4,7,8- (HxCDF)		1,2,3,6,7,8- (HxCDF)		1,2,3,7,8,9- (HxCDF)	
Sample ID	%	ng/kg	Q	ng/kg	Q	ng/kg	Q	ng/kg	Q	ng/kg	Q	ng/kg	Q	ng/kg	Q	ng/kg	Q	ng/kg	Q	ng/kg	Q	ng/kg	Q	ng/kg	Q	ng/kg	Q
Zone A	59.3	0.22	U	0.83	J	4.48	---	4.16	J	2.42	J	102	---	595	---	0.61	J	0.32	J	6.06	---	1.25	JP	2.46	J	0.49	JK
Zone B Upstream	74.5	0.11	U	0.20	BJK	0.37	J	1.20	J	0.88	J	26.3	---	235	---	0.31	JK	0.19	BJK	5.03	---	0.75	J	1.82	J	0.39	BJ
Zone B Downstream	56.5	0.24	JK	0.82	J	1.52	J	4.61	---	2.82	J	103	---	890	---	1.15	---	0.82	J	11.7	---	2.43	J	5.11	---	1.04	J
Zone C	45.2	0.37	JK	0.78	J	1.29	J	4.44	J	3.00	J	101	---	901	---	1.25	K	0.82	J	11.1	---	2.34	JP	4.38	J	0.91	J
Zone D	71.6	0.12	U	0.40	J	0.54	JK	1.91	J	0.79	J	43.7	---	378	---	0.33	JK	0.28	JK	0.39	BJK	0.56	J	0.92	J	0.27	BJ
EPA Region IV HazMat Cleanup Screening Value	NV	NV		NV		NV		NV		NV		NV		NV		NV		NV		NV		NV		NV		NV	

	Percent Solids	2,3,4,6,7,8- (HxCDF)		1,2,3,4,6,7,8- (HpCDF)		1,2,3,4,7,8,9- (HpCDF)		(OCDF)		Total Tetra-Dioxins (TCDD)		Total Penta-dioxins (PeCDD)		Total Hexa-dioxins (HxCDD)		Total Hepta-dioxins (HpCDD)		Total Tetra-furans (TCDF)		Total Penta-furans (PeCDF)		Total Hexa-furans (HxCDF)		Total Hept-furans (HpCDF)		Total TCDD TEQ
Sample ID	%	ng/kg	Q	ng/kg	Q	ng/kg	Q	ng/kg	Q	ng/kg	Q	ng/kg	Q	ng/kg	Q	ng/kg	Q	ng/kg	Q	ng/kg	Q	ng/kg	Q	ng/kg	Q	ng/kg
Zone A	59.3	4.70	---	18.1	---	0.92	JK	30.4	---	0.22	U	18.3	---	118	---	293	---	16.0	---	80.3	---	66.8	---	49.9	---	**6.11**
Zone B Upstream	74.5	3.67	---	10.5	---	0.47	J	16.5	---	0.63	J	2.16	J	14.1	---	60.9	---	20.3	---	72.8	---	51.8	---	25.5	---	**3.10**
Zone B Downstream	56.5	10.0	---	30.3	---	1.98	J	237	---	2.38	---	5.69	---	40.6	---	223	---	45.6	---	166	---	141	---	76.6	---	**9.16**
Zone C	45.2	8.46	---	26.7	---	1.48	J	48.5	---	4.80	---	10.9	---	58.7	---	252	---	43.7	---	137	---	108	---	70.2	---	**8.69**
Zone D	71.6	1.24	J	8.55	---	0.51	J	21.2	---	0.12	U	2.49	J	14.1	---	107	---	1.49	---	11.0	---	17.6	---	24.8	---	1.82
EPA Region IV HazMat Cleanup Screening Value	NV	NV		NV		NV		NV		NV		NV		NV		NV		NV		NV		NV		NV		2.5

Notes:

1 - Q = Data qualifiers: U = The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL; J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.; B = The sample result is less than ten times the level detected in the method blank; K = Indicates an estimated maximum possible concentration for the associated compound; NV = No Values

2 - Dashes (---) indicated that no qualifiers exist.

3 - There are no Sediment Quality Assessment Guidelines for Dioxins and Furans.

4 - Total TCDD TEQ (Toxic Equivalency)

5 - The specific conductance in Big Fishweir Creek is indicative of a freshwater environment.

6 - **BOLDED** concentrations indicate an exceedance of one or more SQAGs values.

7 - EPA Region IV HazMat Cleanup Screening Value is from the 2015 Environmental Protection Agency's Region 4 Ecological Risk Assessment.

Table 9. Dioxins TEQ Calculations in Sediment Samples Collected from October 22 through October 25, 2019 from Big Fishweir Creek.

Dioxin/Furan Conversion Table

Site Name:	Big Fishweir Creek
Location:	Jacksonville FL
Facility ID No.:	

For Direct Exposure Soil Cleanup Target Levels

SCTL Type	Value	Units
Residential Direct Exposure SCTL	7	ng/kg
Industrial Direct Exposure SCTL	30	ng/kg
Alternative SCTL (Optional):	0.00004	mg/kg
Site Specific Background (Optional):	0.000015	mg/kg

Calculate TEQs using: ○ 1998 WHO TEFs ◉ 2005 WHO TEFs

(TEF = Toxic Equivalency Factor)

Concentration Units: ○ mg/kg ◉ ng/kg

	Soil Sample #	Zone A	Zone B Upstream	Zone B Downstream	Zone C	Zone D	
	Sample Date	10/24/2019	10/24/2019	10/24/2019	10/24/2019	10/24/2019	
	Location:						
	Depth (ft):						
Polychlorinated dibenzodioxins/TEFs		**Polychlorinated dibenzodioxins**					
Congener	WHO 2005 TEFs	Concentration (ng/kg)	Concentration (ng/kg)	Concentration (ng/kg)	Concentration (ng/kg)	Concentration (ng/kg)	Concentration (ng/kg)
2,3,7,8-TCDD	1	0.11	0.0535	0.242	0.372	0.061	
1,2,3,7,8-PeCDD	1	0.83	0.196	0.82	0.78	0.396	
1,2,3,4,7,8-HxCDD	0.1	4.48	0.372	1.52	1.29	0.538	
1,2,3,6,7,8-HxCDD	0.1	4.16	1.2	4.61	4.44	1.91	
1,2,3,7,8,9-HxCDD	0.1	2.42	0.876	2.82	3	0.788	
1,2,3,4,6,7,8-HpCDD	0.01	102	26.3	103	101	43.7	
OCDD	0.0003	595	235	890	901	378	
Polychlorinated dibenzofurans/TEFs		**Polychlorinated dibenzofurans**					
Congener	WHO 2005 TEFs	Concentration (ng/kg)	Concentration (ng/kg)	Concentration (ng/kg)	Concentration (ng/kg)	Concentration (ng/kg)	Concentration (ng/kg)
2,3,7,8-TCDF	0.1	0.608	0.308	1.15	1.25	0.328	
1,2,3,7,8-PeCDF	0.03	0.322	0.189	0.816	0.816	0.283	
2,3,4,7,8-PeCDF	0.3	6.06	5.03	11.7	11.1	0.393	
1,2,3,4,7,8-HxCDF	0.1	1.25	0.749	2.43	2.34	0.56	
1,2,3,6,7,8-HxCDF	0.1	2.46	1.82	5.11	4.38	0.919	
1,2,3,7,8,9-HxCDF	0.1	0.487	0.39	1.04	0.907	0.266	
2,3,4,6,7,8-HxCDF	0.1	4.7	3.67	10	8.46	1.24	
1,2,3,4,6,7,8-HpCDF	0.01	18.1	10.5	30.3	26.7	8.55	
1,2,3,4,7,8,9-HpCDF	0.01	0.923	0.473	1.98	1.48	0.51	
OCDF	0.0003	30.4	16.5	237	48.5	21.2	
Polychlorinated dibenzodioxin Equivalents/TEFs		**Polychlorinated dibenzodioxin Equivalents**					
Congener	WHO 2005 TEFs	2,3,7,8-TCDD Equivalents	2,3,7,8-TCDD Equivalents	2,3,7,8-TCDD Equivalents	2,3,7,8-TCDD Equivalents	2,3,7,8-TCDD Equivalents	2,3,7,8-TCDD Equivalents
2,3,7,8-TCDD	1	0	0	0	0	0	0
1,2,3,7,8-PeCDD	1	1	0	1	1	0	0
1,2,3,4,7,8-HxCDD	0.1	0	0	0	0	0	0
1,2,3,6,7,8-HxCDD	0.1	0	0	0	0	0	0
1,2,3,7,8,9-HxCDD	0.1	0	0	0	0	0	0
1,2,3,4,6,7,8-HpCDD	0.01	1	0	1	1	0	0
OCDD	0.0003	0	0	0	0	0	0
Polychlorinated dibenzofurans Equivalents/TEFs		**Polychlorinated dibenzofurans Equivalents**					
Congener	WHO 2005 TEFs	2,3,7,8-TCDD Equivalents	2,3,7,8-TCDD Equivalents	2,3,7,8-TCDD Equivalents	2,3,7,8-TCDD Equivalents	2,3,7,8-TCDD Equivalents	2,3,7,8-TCDD Equivalents
2,3,7,8-TCDF	0.1	0	0	0	0	0	0
1,2,3,7,8-PeCDF	0.03	0	0	0	0	0	0
2,3,4,7,8-PeCDF	0.3	2	2	4	3	0	0
1,2,3,4,7,8-HxCDF	0.1	0	0	0	0	0	0
1,2,3,6,7,8-HxCDF	0.1	0	0	1	0	0	0
1,2,3,7,8,9-HxCDF	0.1	0	0	0	0	0	0
2,3,4,6,7,8-HxCDF	0.1	0	0	1	1	0	0
1,2,3,4,6,7,8-HpCDF	0.01	0	0	0	0	0	0
1,2,3,4,7,8,9-HpCDF	0.01	0	0	0	0	0	0
OCDF	0.0003	0	0	0	0	0	0
Totals		**Totals**					
Total Dioxin Equivalents (ng/kg)=		**3**	**1**	**3**	**3**	**1**	**0**
Total Furan Equivalents (ng/kg)=		**3**	**2**	**6**	**5**	**1**	**0**
Total TEQs; Dioxins + Furans (ng/kg)=		**6**	**3**	**9**	**9**	**2**	**0**
		Comparisons to SCTLs					
Does This Sample Exceed:		**Zone A**	**Zone B Upstream**	**Zone B Downstream**	**Zone C**	**Zone D**	
The Residential Direct Exposure SCTL of 7 ng/kg?		**OK**	**OK**	**EXCEEDS**	**EXCEEDS**	**OK**	**OK**
The Industrial Direct Exposure SCTL of 30 ng/kg?		**OK**	**OK**	**OK**	**OK**	**OK**	**OK**
The Alternative SCTL of 0.00004 mg/kg?		**OK**	**OK**	**OK**	**OK**	**OK**	**OK**
The Site Specific Background of 0.000015 mg/kg?		**OK**	**OK**	**OK**	**OK**	**OK**	**OK**

Dioxin TEQ Calculator Instructions

Summary Criteria for Table Entries

Detection	**Concentration Reported**	**Data Qualifier**	**Enter**
Quantified with certainty		None	reported value
Estimated		J	reported (estimated) value
ND at MDL	MDL	U	1/2 reported value
≤ MDL	Estimated	T	reported (estimated) value
≥ MDL but < PQL	Estimated	I	reported (estimated) value
≥ MDL but < PQL	Not estimated	M	1/2 reported value
Estimated	Estimated	EMPC	reported (estimated) value
Reported	EDL	EDL	1/2 reported value

Instructions: Calculate 2,3,7,8-TCDD Equivalents only if at least one of the dioxin congeners is detected in the sample at a concentration equal to or higher than the Method Detection Limit (MDL), whether quantified with certainty (the concentration reported has no qualifier) or estimated (the concentration reported has a "J", "T" or "I" qualifier). Enter each congener concentration (in mg/kg) in the yellow boxes using the following criteria:

1. If quantified with certainty or estimated and has the "J" qualifier enter the reported value;
2. If not detected at the MDL (the concentration reported is the MDL followed by the "U" qualifier) enter 1/2 of the reported value;
3. If detected at a concentration lower than the MDL and the concentration is estimated (has the "T" qualifier) enter the estimated value;
4. If detected at a concentration equal to or higher than the MDL but lower than the Practical Quantitation Limit (PQL) and the concentration is estimated (has the "I" qualifier) enter the estimated value;
5. If detected at a concentration equal to or higher than the MDL but lower than the PQL and it is not estimated (the concentration reported is the PQL followed by the "M" qualifier) enter 1/2 of the reported value;
6. If estimated and reported with an "EMPC" (Estimated Maximum Possible Concentration) qualifier enter the estimated value;
7. If reported with an "EDL" (Estimated Detection Limit) qualifier enter 1/2 of the reported value (data is treated the same as "U" qualified data).
8. If the report only includes total concentrations for dioxin or furan congeners with the same degree of chlorination. These data cannot be used to estimate a 2,3,7,8-TCDD equivalent concentration. Please contact the Bureau of Waste Cleanup for guidance on handling such data.

Note: If dioxins are detected but no furans, then the furans TEQs can be assumed to be zero. Similarly, if furans are detected but no dioxins, then dioxin TEQs can be assumed to be zero.

For more information: see Section V.C.7 (p. 59) "Development of SCTLs for Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs)" in "Technical Report: Development of Cleanup Target Levels (CTLs) for Chapter 62-777", Final dated February 2005

Table 10. Test Results for Herbicides in Sediment Samples Collected from October 22 through October 25, 2019 from Big Fishweir Creek (all units are on a dry weight basis).

	Percent Solids	2,4,5-T		2,4,5-TP (Silvex)		2,4-D		Dicamba		Pentachlorophenol (PCP)	
Sample ID	%	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q
Zone A	59.3	6.1	U	5.8	U	9.5	U	6.2	U	8.4	U
Zone B Upstream	74.5	4.9	U	4.6	U	7.6	U	5.0	U	6.8	U
Zone B Downstream	56.5	6.5	U	6.1	U	10	U	6.5	U	8.9	U
Zone C	45.2	8.0	U	7.5	U	13	U	8.1	U	11	U
Zone D	71.6	5.1	U	4.8	U	7.8	U	5.1	U	7.0	U

Notes:

1 - Q = data qualifiers; U = not detected.

2 - No sediment guidelines exist for these herbicides.

3 - The specific conductance in Big Fishweir Creek is indicative of a freshwater environment.

Table 11. Test Results Compared to the FDEP Commercial/Industrial Risk Based Soil Cleanup Target Levels Collected from October 22 through October 25, 2019 from Big Fishweir Creek (all units are on a dry weight basis).

Sample ID	Percent Solids	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	Benzo(a)pyrene	Benzo(a)anthracene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Total Benzo(a)pyrene Equiv.	1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene
	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Zone A	59.3	0.60	14.1	0.11	3.49	30.6	0.019	0.10	0.02	0.168	281 J	222 U	267 U	211 U	300 U	245 U	0.4	0.300 U	0.256 U	0.344 U	0.245 U	0.178 U
Zone B Upstream	74.5	0.33	4.97	0.09	1.83	19.2	0.011	0.08	0.01	0.061	76.4	115	37.3 J	59.6	37.5 U	46.2 J	0.1	0.037 U	0.032 U	0.043 U	0.031 U	0.022 U
Zone B Downstream	56.5	1.48	11.3	0.28	5.92	63.7	0.036	0.30	0.06	0.307	481	509	312 U	247 J	351 U	286 U	0.6	0.351 U	0.299 U	0.403 U	0.286 U	0.208 U
Zone C	45.2	1.77	16.3	0.34	8.52	34.6	0.105	0.40	0.14	0.097	117	186	55.3	84.5	42.5 U	77.9	0.2	0.042 U	0.036 U	0.049 U	0.035 U	0.025 U
Zone D	71.6	0.26	2.93	0.09	1.86	15.3	0.009	0.08	0.01	0.060	73.5	108	33.8 U	52.7	38.1 U	50.4	0.1	0.038 U	0.032 U	0.044 U	0.031 U	0.023 U
FDEP Commercial/Industrial Risk Based SCTLs	---	12	130000	1700	470	1400	17	11000	8200	0.7	NV	NV	NV	NV	NV	NV	0.7	1800	2100	20000	20000	300000

Sample ID	Percent Solids	Benzo(g,h,i)perylene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene	PCB 110	PCB 118	PCB 126	PCB 128	PCB 138	PCB 141	PCB 149	PCB 151	PCB 153	PCB 156	PCB 158	PCB 166	PCB 167	PCB 170
	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Zone A	59.3	0.245 U	0.235	0.245 U	0.344 U	0.189 U	0.231	1.0	0.62	0.21 U	0.42 U	2.2	0.36 JP	1.4	0.45 J	1.9 P	0.15 U	0.21 U	0.17 U	0.74	0.86
Zone B Upstream	74.5	0.051	0.104	0.031 U	0.043 U	0.024 U	0.098	0.37	0.11 U	0.42 J	0.34 U	0.82 P	0.17 J	0.71	0.21 J	0.95 P	0.14 U	0.10 JP	0.17 U	0.37 J	0.44 U
Zone B Downstream	56.5	0.286 U	0.598	0.286 U	0.403 U	0.221 U	0.584	1.3	0.23 U	0.27 U	0.61 J	2.0	0.30 J	1.6	0.57 U	1.8 P	0.19 U	0.23 U	0.22 U	0.75 U	0.85 J
Zone C	45.2	0.092	0.189	0.035 U	0.049 U	0.042	0.193	3.1	1.9	0.32 U	0.86 J	3.9	0.50 J	5.0	1.0	5.6 P	0.31 J	0.49 U	0.31 JP	1.4 U	2.1
Zone D	71.6	0.056	0.112	0.031 U	0.044 U	0.030	0.104	0.26	0.24 J	0.19 U	0.14 J	0.31 JP	0.11 U	0.27 J	0.14 U	0.46 J	0.14 U	0.081 U	0.16 U	0.18 JP	0.18 JP
FDEP Commercial/Industrial Risk Based SCTLs	---	52000	59000	33000	300	36000	45000	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600

Sample ID	Percent Solids	PCB 174	PCB 177	PCB 18	PCB 180	PCB 183	PCB 187	PCB 194	PCB 203	PCB 206	PCB 209	PCB 33	PCB 37	PCB 44	PCB 49	PCB 5	PCB 52	PCB 60	PCB 70	PCB 95	Total PCBs	TRPH (FL PRO EPA 3546)
	%	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg	mg/kg
Zone A	59.3	0.76 U	0.21 JP	0.27 U	1.5	0.24 JP	0.54 J	0.22 U	0.28 J	0.17 U	0.27 U	0.39 JP	1.2	0.26 JP	0.50 JP	2.5	0.65	16	0.75 U	1.0	0.046	61.0 UQ
Zone B Upstream	74.5	0.64 U	0.19 U	0.26 U	0.74	0.17 U	0.47 J	0.21 U	0.15 U	0.17 U	0.26 U	0.30 U	0.44 U	0.20 U	0.16 J	0.96	0.23 U	3.7 P	0.17 U	0.41 J	0.019	1250 UQ
Zone B Downstream	56.5	0.77 JP	0.25 U	0.35 U	1.3	0.22 U	0.57 J	0.28 U	0.29 JP	0.22 U	0.35 U	0.41 U	1.9	0.66 J	0.78	4.2	0.90	18	1.1 P	1.5	0.056	138 JQ
Zone C	45.2	1.9	0.67 JP	0.74 JP	3.8	0.80 J	2.0	0.72 J	0.65 JP	0.55 J	0.58 J	0.49 U	0.86 U	1.3	2.3	15	2.6	5.8 P	1.8	4.3	0.088	68.6 JQ
Zone D	71.6	0.13 U	0.18 U	0.25 U	0.13 U	0.16 U	0.18 U	0.20 U	0.15 U	0.16 U	0.25 U	0.29 U	0.32 U	0.19 JP	0.15 U	0.58	0.22 U	2.8	0.16 U	0.17 U	0.012	40.3 JQ
Zone D Duplicate	71.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	13.9 JQ
FDEP Commercial/Industrial Risk Based SCTLs	---	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2.600	2700

Notes:

1 - U = Not detected; J = Estimated value; P = The GC or HPLC confirmation criteria was exceeded and the relative percent difference is greater than 40% between the two analytical results; Q = Analyzed outside of the recommended EPA holding time.

2 - The specific conductance in Big Fishweir Creek is indicative of a freshwater environment.

3 - **BOLDED** concentrations indicate an exceedance of one or more FDEP Industrial SCTL values.

4 - NV = No Individual Value - All carcinogenetic PAHs are converted to B(a)P equivalents, totaled, and compared to B(a)P

5 - Additional PCB congeners tested for but not detected in the sediment samples: 1, 101, 105, 114, 119, 123, 132, 157, 168, 169, 184, 189, 195, 201, 28, 31, 56, 66, 74, 77, 8, 81, 87, 90, 97, 9

6 - Detected PCB concentrations are totaled and compared to the Total PCBs Soil Cleanup Target Levels

7 - Benzo(a)pyrene Equivalents Conversions can be found on Table 5.

8 - Zone D Duplicate was a laboratory duplicate.

Table 12. Test Results for Metals in Elutriate Samples Collected from October 22 through October 25, 2019 from Big Fishweir Creek.

	Hardness (as $CaCO_3$)		Aluminum		Antimony		Arsenic		Barium		Beryllium		Boron		Cadmium		Calcium		Chromium		Cobalt		Copper		Iron		Lead		Magnesium	
Sample	mg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	mg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	mg/L	Q	µg/L	Q	mg/L	Q
Zone A	257	---	345	---	0.8	J	5.04	---	62.0	---	0.019	J	110	---	0.017	J	68.5	---	0.28	---	0.216	---	0.46	---	0.17	---	2.75	---	18.4	---
Zone D	218*	---	1340	---	0.8	J	13.3	---	48.1	---	0.007	U	103	---	0.004	J	44.9	---	0.22	---	0.058	---	0.26	---	**0.96**	---	0.46	---	23.1	---
Site Water	235	---	30	J	0.4	U	0.53	---	82.8	---	0.007	U	76	---	0.003	U	69.4	---	0.17	J	0.075	---	0.57	---	0.060	---	0.092	---	10.6	---
Class III Fresh Waters *	NV		NV		4300		≤ 50		NV		≤ 0.13 aa		NV		0.482		NV		163		NV		18.2		≤1.0		8.58		NV	
Class III Marine Waters	NV		≤ 1500		4300		≤ 50		NV		≤ 0.13 aa		NV		≤ 8.8		NV		NV		NV		≤ 3.7		≤0.3		≤ 8.5		NV	

	Manganese		Mercury		Molybdenum		Nickel		Potassium		Selenium		Silver		Sodium		Strontium		Thallium		Tin		Titanium		Uranium		Vanadium		Zinc	
Sample	mg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	mg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q
Zone A	0.086	---	0.012	---	8.6	---	0.88	---	7170	---	0.4	U	0.006	J	115	---	365	---	0.008	U	10.9	---	13.7		3.81	---	3.0	J	2.74	---
Zone D	0.024	---	0.012	---	11.7	---	0.72	---	7720	---	0.4	U	0.004	U	63.8	---	454	---	0.008	U	9.0	---	30.2		2.30	---	3.9	J	0.94	---
Site Water	0.028	---	0.001	---	1.4	J	0.91	---	3650	---	0.4	U	0.004	U	38.6	---	485	---	0.008	U	6.5	---	2.1		0.57	---	1.0	J	3.05	---
Class III Fresh Waters *	NV		≤ 0.012		NV		101		NV		≤ 5.0		≤ 0.07		NV		NV		≤ 6.3		NV		NV		NV		NV		232	
Class III Marine Waters	NV		≤ 0.025		NV		≤ 8.3		NV		≤ 71		≤ 2.3		NV		NV		≤ 6.3		NV		NV		NV		NV		≤ 86	

Notes:

1 - Q = qualifiers, U = not detected, J = the result was an estimated value (see case narrative), NV = No Values

2 - Dashes (---) indicated that no qualifiers exist.

3 - aa = annual average

4 - **Bolded** concentrations indicate an exceedance of one or more guidance concentrations.

5 - Class III Freshwater and Marine waters Guidance Concentrations are from DEP F.A.C. Chapter 62-302.400.

Hardness based metals criteria calculations: Cd < e(0.7409[lnH]-4.719); Cu < e(0.8545[lnH]-1.702); Pb < e(1.273 [lnH] - 4.705); Ni < e(0.846[lnH]+0.0584); Zn < e(0.8473[lnH]+0.884)

H = Hardness in mg/L

* Lowest hardness value used in the hardness based metals calculation

Table 13. Test Results for Pesticides in Elutriate Samples Collected from October 22 through October 25, 2019 from Big Fishweir Creek.

	Aldrin		alpha-BHC		beta-BHC		delta-BHC		gamma-BHC (Lindane)		Chlordane		alpha-Chlordane		trans-Chlordane		4,4'-DDD		4,4'-DDE		4,4'-DDT	
Sample	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q
Zone A	0.20	U	0.19	U	1.1	---	0.20	U	0.22	U	**20**	P	0.57	U	1.2	---	0.71	U	0.68	P	0.64	U
Zone D	0.48	U	0.19	U	0.47	U	0.20	U	1.2	U	4.0	U	0.41	U	0.41	U	0.71	U	2.0	P	1.6	Ui
Site Water	0.38	J	0.19	U	0.47	U	0.20	U	0.39	J	13	Ui	0.53	U	0.35	U	0.28	U	0.48	U	0.41	U
Class III Fresh Waters	≤ 3000		NV		≤ 46 aa		NV		≤ 950		4.3 max		NV		NV		NV		NV		1.0	
Class III Marine Waters	≤ 1300		NV		≤ 46 aa		NV		≤ 160		4.0 max		NV		NV		NV		NV		1.0	

	Dieldrin		Endosulfan I		Endosulfan II		Endosulfan Sulfate		Endrin		Endrin Aldehyde		Endrin Ketone		Heptachlor		Heptachlor Epoxide		Methoxychlor		Toxaphene	
Sample	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q
Zone A	0.29	U	0.15	U	0.46	U	0.84	U	0.62	U	0.22	U	0.28	U	4.0	Ui	0.69	U	0.22	U	19	U
Zone D	0.23	U	1.1	---	0.82	U	1.1	U	0.58	U	0.22	U	0.28	U	490	Ui	0.69	U	0.22	U	19	U
Site Water	0.23	U	0.87	P	0.89	U	0.84	U	0.18	U	0.59	---	0.28	U	6.8	Ui	0.69	U	0.22	U	19	U
Class III Fresh Waters	1.9 max		≤ 56.0		NV		NV		≤ 2.3		NV		NV		≤ 3.8		NV		≤ 30		≤ 0.2	
Class III Marine Waters	1.9 max		≤ 8.7		NV		NV		≤ 2.3		NV		NV		≤ 3.6		NV		≤ 30		≤ 0.2	

Notes:

1 - Q = qualifiers, U = not detected, J = the result was an estimated value, P = the GC or HPLC confirmation criteria was exceeded and the relative percent difference is greater than 40% between the two analytical results, i = The MRL/MDL has been elevated due to a chromatographic interference, NV = No Values

2 - Dashes (---) indicated that no qualifiers exist.

3 - aa = annual average

4 - **Bolded** concentrations indicate an exceedance of one or more guidance concentrations.

5 - Class III Freshwater and Marine waters Guidance Concentrations are from DEP F.A.C. Chapter 62-302.400.

Table 14. Test Results for PCBs in Elutriate Samples Collected from October 22 through October 25, 2019 from Big Fishweir Creek.

	PCB 1		PCB 101		PCB 105		PCB 110		PCB 114		PCB 118		PCB 119		PCB 123		PCB 126		PCB 128		PCB 138		PCB 132		PCB 141		PCB 149		PCB 151		PCB 153		PCB 156		PCB 157		PCB 158		PCB 166	
Sample	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q
Zone A	39	U	1.9	U	1.2	U	2.4	U	0.88	U	1.1	U	1.5	U	2.1	U	2.6	U	1.1	U	1.6	U	3.0	U	1.7	U	1.4	U	1.2	U	1.2	U	1.9	U	1.9	U	1.5	U	1.7	U
Zone D	39	U	1.9	U	1.2	U	2.4	U	0.88	U	1.1	U	1.5	U	2.1	U	2.6	U	1.1	U	1.6	U	3.0	U	1.7	U	1.4	U	1.2	U	1.2	U	1.9	U	1.9	U	1.5	U	1.7	U
Site Water	39	U	1.9	U	1.2	U	2.4	U	0.88	U	1.1	U	1.5	U	2.1	U	2.6	U	1.1	U	1.6	U	3.0	U	1.7	U	1.4	U	1.2	U	1.2	U	1.9	U	1.9	U	1.5	U	1.7	U

	PCB 167		PCB 168		PCB 169		PCB 170		PCB 174		PCB 177		PCB 18		PCB 180		PCB 183		PCB 184		PCB 187		PCB 189		PCB 194		PCB 195		PCB 201		PCB 203		PCB 206		PCB 28		PCB 31		PCB 33	
Sample	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q
Zone A	2.8	U	1.4	U	1.8	U	1.6	U	1.5	U	1.8	U	2.0	U	2.9	U	1.5	U	1.3	U	1.4	U	1.8	U	1.2	U	1.8	U	1.8	U	1.8	U	2.3	U	1.6	U	1.4	U	1.7	U
Zone D	2.8	U	1.4	U	1.8	U	1.6	U	1.5	U	1.8	U	2.0	U	2.9	U	1.5	U	1.3	U	1.4	U	1.8	U	1.2	U	1.8	U	1.8	U	1.8	U	2.3	U	1.6	U	1.3	U	1.7	U
Site Water	2.8	U	1.4	U	1.8	U	1.6	U	1.5	U	1.8	U	2.0	U	2.9	U	1.5	U	1.3	U	1.4	U	1.8	U	1.2	U	1.8	U	1.8	U	1.8	U	2.3	U	1.6	U	0.96	U	1.7	U

	PCB 37		PCB 44		PCB 49		PCB 5		PCB 52		PCB 56		PCB 60		PCB 66		PCB 70		PCB 74		PCB 77		PCB 8		PCB 81		PCB 87		PCB 90		PCB 95		PCB 97		PCB 99		PCB 209	
Sample	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q	ng/L	Q
Zone A	1.9	U	3.3	U	1.4	U	1.8	U	1.4	U	2.7	U	0.96	U	4.2	U	1.5	U	1.6	U	1.9	U	1.8	U	1.8	U	1.3	U	1.3	U	1.2	U	2.3	U	1.8	U	2.8	U
Zone D	1.9	U	3.3	U	1.4	U	4.7	J	1.4	U	2.7	U	1.1	U	4.2	U	1.5	U	1.6	U	1.9	U	6.5	U	1.8	U	1.3	U	1.3	U	1.2	U	2.3	U	1.8	U	2.8	U
Site Water	1.9	U	3.3	U	1.4	U	1.8	U	1.4	U	2.7	U	0.96	U	4.2	U	1.5	U	1.6	U	1.9	U	1.6	U	1.8	U	1.3	U	1.3	U	1.2	U	2.3	U	1.8	U	2.8	U

F.A.C. Class III Surface Water Standards:	Freshwater (annual average): 0.045 ng/L Marine (annual average): 0.045 ng/L	Freshwater (max.): 14 ng/L Marine (max.): 30 ng/L	

Notes:

1 - Q = qualifier, U = not detected, J = the result is an estimated value.

Table 15. Test Results for PAHs in Elutriate Samples Collected from October 22 through October 25, 2019 from Big Fishweir Creek.

	1-Methylnaphthalene		2-Methylnaphthalene		Acenaphthene		Acenaphthylene		Anthracene		Benz(a)anthracene		Benzo(a)pyrene		Benzo(b)fluoranthene		Benzo(g,h,i)perylene	
Sample	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q
Zone A	0.044	U	0.044	U	0.041	U	0.025	U	0.038	U	0.035	U	0.031	U	0.025	U	0.039	U
Zone D	0.044	U	0.044	U	0.041	U	0.025	U	0.038	U	**0.063**	J	0.031	U	**0.052**	J	0.039	U
Site Water	0.044	U	0.044	U	0.041	U	0.025	U	0.038	U	0.035	U	0.031	U	0.025	U	0.039	U
Class III Fresh Waters	NV		NV		≤ 2700		≤ 0.031 aa		≤ 110000		≤ 0.031 aa		≤ 0.031 aa		≤ 0.031 aa		≤ 0.031 aa	
Class III Marine Waters	NV		NV		≤ 2700		≤ 0.031 aa		≤ 110000		≤ 0.031 aa		≤ 0.031 aa		≤ 0.031 aa		≤ 0.031 aa	

	Benzo(k)fluoranthene		Chrysene		Dibenzo(a,h)anthracene		Fluoranthene		Fluorene		Indeno(1,2,3-cd)pyrene		Naphthalene		Phenanthrene		Pyrene	
Sample	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q
Zone A	0.035	U	0.024	U	0.036	U	0.039	U	0.047	U	0.040	U	0.039	U	0.035	U	0.031	U
Zone D	0.035	U	0.024	U	0.036	U	0.045	J	0.047	U	0.040	U	0.039	U	0.035	U	0.051	J
Site Water	0.035	U	0.024	U	0.036	U	0.039	U	0.047	U	0.040	U	0.039	U	0.035	U	0.031	U
Class III Fresh Waters	≤ 0.031 aa		≤ 0.031 aa		≤ 0.031 aa		≤ 370		≤ 14000		≤ 0.031 aa		NV		≤ 0.031 aa		≤ 11000	
Class III Marine Waters	≤ 0.031 aa		≤ 0.031 aa		≤ 0.031 aa		≤ 370		≤ 14000		≤ 0.031 aa		NV		≤ 0.031 aa		≤ 11000	

Notes:

1 - Q = qualifier, U = not detected, J = the result is an estimated value, NV = No Value

2 - Dashes (---) indicated that no qualifiers exist.

3 - **Bolded** concentrations indicate an exceedance of one or more guidance concentrations.

4 - aa = annual average

5 - Class III Freshwater and Marine waters Guidance Concentrations are from DEP F.A.C. Chapter 62-302.400.

Table 16. Test Results for Herbicides in Elutriate Samples Collected from October 22 through October 25, 2019 from Big Fishweir Creek.

	2,4,5-T		2,4,5-TP		2,4-D		Dinoseb		Dicamba		Pentachlorophenol (PCP)	
Sample	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q
Zone A	0.21	U	0.19	U	0.31	U	0.17	U	0.20	U	0.26	U
Zone D	0.21	U	0.19	U	0.31	U	0.17	U	0.20	U	0.26	U
Site Water	0.21	U	0.19	U	0.31	U	0.17	U	0.20	U	0.26	U
EPA Class III Fresh Waters	NV		NV		NV		NV		NV		≤ 30 max	
Class III Marine Waters	NV		NV		NV		NV		NV		≤ 7.9	

Notes:

1 - Q = qualifier, U = not detected, J = the result is an estimated value, NV = No Values

2 - Dashes (---) indicated that no qualifiers exist.

3 - **Bolded** concentrations indicate an exceedance of one or more guidance concentrations.

4 - Class III Freshwater and Marine waters Guidance Concentrations are from DEP F.A.C. Chapter 62-302.400.

Table 17. Test Results for Dioxins and Furans in Elutriates Collected from October 22 through October 25, 2019 in the Big Fishweir Creek.

	2,3,7,8- (TCDD)		1,2,3,7,8- (PeCDD)		1,2,3,4,7,8- (HxCDD)		1,2,3,6,7,8- (HxCDD)		1,2,3,7,8,9- (HxCDD)		1,2,3,4,6,7,8- (HpCDD)		(OCDD)		2,3,7,8- (TCDF)		1,2,3,7,8- (PeCDF)		2,3,4,7,8- (PeCDF)		1,2,3,4,7,8- (HxCDF)		1,2,3,6,7,8- (HxCDF)		1,2,3,7,8,9- (HxCDF)	
Sample ID	pg/L	Q	pg/L	Q	pg/L	Q	pg/L	Q	pg/L	Q	pg/L	Q	pg/L	Q	pg/L	Q	pg/L	Q	pg/L	Q	pg/L	Q	pg/L	Q	pg/L	Q
Zone A	0.493	U	1.06	BJ	0.468	BJ	0.656	BJK	0.609	BJK	17.8	J	195	---	0.215	U	0.501	U	1.32	J	1.05	BJ	0.704	BJK	0.610	BJ
Zone D	0.490	U	0.716	U	1.13	BJ	2.18	BJ	1.77	BJ	67.7	---	960	---	0.615	JK	0.722	BJK	1.46	JK	1.97	BJK	1.75	BJ	0.581	BJK
Site Water	0.518	U	0.626	BJ	0.668	BJ	0.767	BJ	0.914	BJ	9.14	J	91.5	---	0.186	U	0.555	BJK	0.676	J	0.583	BJ	0.471	BJK	0.757	BJ
EPA Region 4 Surface Fresh Water Screening Values for Hazardous Waste Sites	*chronic* (0.0031 pg/L or 3.10E-09 µg/L)		NV		NV		NV		NV		NV		NV		NV		NV		NV		NV		NV		NV	

	2,3,4,6,7,8- (HxCDF)		1,2,3,4,6,7,8- (HpCDF)		1,2,3,4,7,8,9- (HpCDF)		(OCDF)		Total Tetra-Dioxins (TCDD)		Total Penta-dioxins (PeCDD)		Total Hexa-dioxins (HxCDD)		Total Hepta-dioxins (HpCDD)		Total Tetra-furans (TCDF)		Total Penta-furans (PeCDF)		Total Hexa-furans (HxCDF)		Total Hept-furans (HpCDF)		Total TCDD TEQ (2005 WHO TEF Adjusted Concentration)
Sample ID	pg/L	Q	pg/L	Q	pg/L	Q	pg/L	Q	pg/L	Q	pg/L	Q	pg/L	Q	pg/L	Q	pg/L	Q	pg/L	Q	pg/L	Q	pg/L	Q	pg/L
Zone A	0.971	BJK	5.28	J	0.494	BJ	14.6	J	0.493	U	1.06	J	3.50	J	42.0	---	4.88	J	25.9	---	13.8	J	15.0	J	2.26
Zone D	2.51	BJK	26.6	---	2.82	BJ	224	---	0.490	U	0.716	U	22.2	J	165	---	0.151	U	57.6	---	30.2	---	60.2	---	3.04
Site Water	0.606	BJ	0.976	BJK	0.537	BJK	5.32	BJ	0.518	U	0.626	J	3.44	J	24.4	---	0.186	U	0.676	J	1.95	J	2.36	J	1.46
EPA Region 4 Surface Fresh Water Screening Values for Hazardous Waste Sites	NV		NV		NV		NV		NV		NV		NV		NV		NV		NV		NV		NV		*acute* (3000 pg/L or 0.003 µg/L)

Notes:

1 - Q = Data qualifiers: U = The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL; J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.; B = The sample result is less than ten times the level detected in the method blank; K = Indicates an estimated maximum possible concentration for the associated compound, NV = No Values

2 - Dashes (---) indicated that no qualifiers exist.

3 - There are no Sediment Quality Assessment Guidelines for Dioxins and Furans.

4 - Total TCDD (Tetrachlorodibenzo-p-dioxin) TEQ (Toxic Equivalency)

5 - **BOLDED** concentrations indicate an exceedance of one or more SQAGs values.

6 - EPA Region IV HazMat Cleanup Screening Value is from the 2015 Environmental Protection Agency's Region 4 Ecological Risk Assessment.

Table 18. Test Results for Phthalate Compounds in Elutriate Samples Collected from October 22 through October 25, 2019 from Big Fishweir Creek.

	Diethyl Phthalate		Dimethyl Phthalate		Di-n-butyl Phthalate		Di-n-octyl Phthalate		Bis(2-ethylhexyl) Phthalate		Butyl Benzyl Phthalate		Total Phthalate Esters
Sample	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L
Zone A	1.70	U	1.30	U	1.60	U	1.20	U	1.50	U	0.86	U	3.0 U
Zone D	4.93	---	1.30	U	1.60	U	1.20	U	3.00	J	0.86	U	**7.93**
Site Water	1.70	U	1.30	U	1.60	U	1.20	U	1.50	U	0.86	U	3.0 U
EPA Class III Fresh Waters	NV		NV		NV		NV		NV		NV		≤3.0
Class III Marine Waters	NV		NV		NV		NV		NV		NV		NV

Notes:

1 - Q = qualifier, U = not detected, J = the result is an estimated value, NV = No Value

2 - Dashes (---) indicated that no qualifiers exist.

3 - **Bolded** concentrations indicate an exceedance of one or more guidance concentrations.

4 - Class III Freshwater and Marine waters Guidance Concentrations are from DEP F.A.C. Chapter 62-302.400.

5 - The vibracore liner was composed of a transparent polycarbonate material.

Table 19. Test Results for TCLP in Sediment Samples Collected from October 22 through October 25, 2019 from Big Fishweir Creek.

	Arsenic (TCLP)		Barium (TCLP)		Cadmium (TCLP)		Chlordane (TCLP)		Chromium (TCLP)		o-Cresol (TCLP)		m-Cresol (TCLP)		p-Cresol (TCLP)		2,4-Dinitrotoluene (TCLP)	
Sample ID	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q
Zone C	0.02	U	0.09	J	0.002	U	0.0026	U	0.006	U	0.013	U	0.010	U	0.010	U	0.013	U
Zone D	0.02	J	0.13	---	0.002	U	0.0026	U	0.006	U	0.013	U	0.010	U	0.010	U	0.013	U
TCLP Regulatory Level mg/L	5		100		1		0.03		5		200		200		200		0.13	

	Endrin (TCLP)		Heptachlor (TCLP)		Heptachlor Epoxide (TCLP)		Hexachlorobenzene (TCLP)		Hexachloro-1,3-butadiene (TCLP)		Hexachloroethane (TCLP)		Lead (TCLP)		gamma-BHC (Lindane) (TCLP)		Mercury (TCLP)	
Sample ID	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q
Zone C	0.00009	U	0.00015	U	0.00010	U	0.017	U	0.012	U	0.0081	U	0.04	J	0.00013	U	0.0010	U
Zone D	0.00009	U	0.00015	U	0.00010	U	0.017	U	0.012	U	0.0081	U	0.006	U	0.00013	U	0.0010	U
TCLP Regulatory Level mg/L	0.02		0.008		0.008		0.13		0.5		3		5		0.4		0.2	

	Methoxychlor (TCLP)		Nitrobenzene (TCLP)		Pentachlorophenol (PCP; TCLP)		Pyridine (TCLP)		Selenium (TCLP)		Silver (TCLP)		Toxaphene (TCLP)		2,4,5-Trichlorophenol (TCLP)		2,4,6-Trichlorophenol (TCLP)	
Sample ID	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q
Zone C	0.00009	U	0.021	U	0.011	U	0.011	U	0.04	U	0.008	U	0.00256	U	0.013	U	0.0089	U
Zone D	0.00009	U	0.021	U	0.011	U	0.011	U	0.04	U	0.008	U	0.00256	U	0.013	U	0.0089	U
TCLP Regulatory Level mg/L	10		2		100		5		1		5		0.5		400		2	

Notes:

1 - Q = data qualifiers: U = not detected; J = Estimated value between the two analytical results.

FIGURES

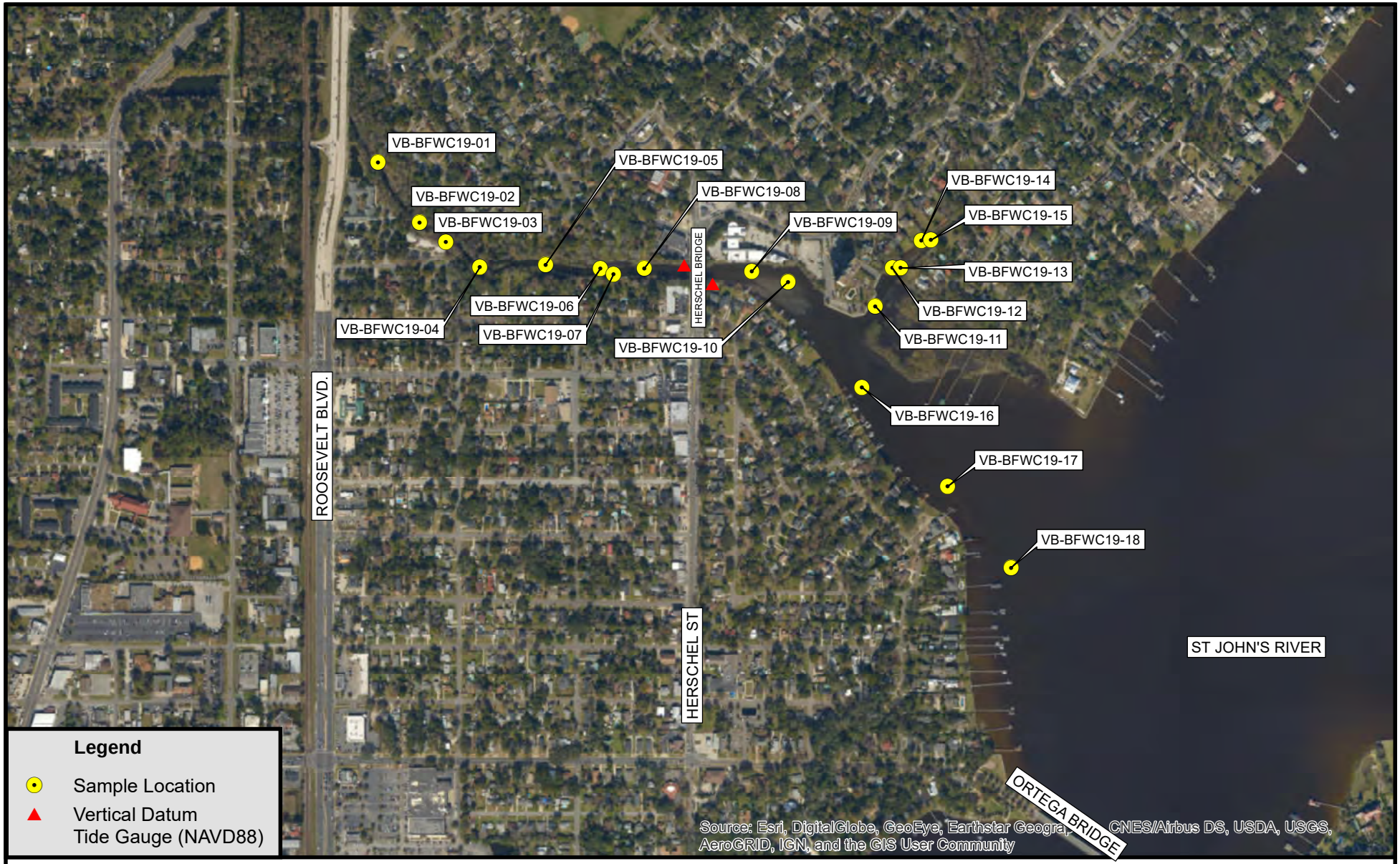

Figure 1.
2019 Sampling Locations
Big Fishweir Creek
Jacksonville, Florida

0 400 800 1,600 Feet

N

water & air RESEARCH, INC.

Source: Water & Air Research, Inc., 2020.

J:\5805 - ACOE\BFC\19-5805-01 Big Fishweir Creek\Figures\19-5805-01 Figure 1.mxd, 2/3/2020 4:35:34 PM

Figure 2. Tumbler to Generate Elutriate Samples

Figure 3. Polycarbonate Vibracore Sleeve

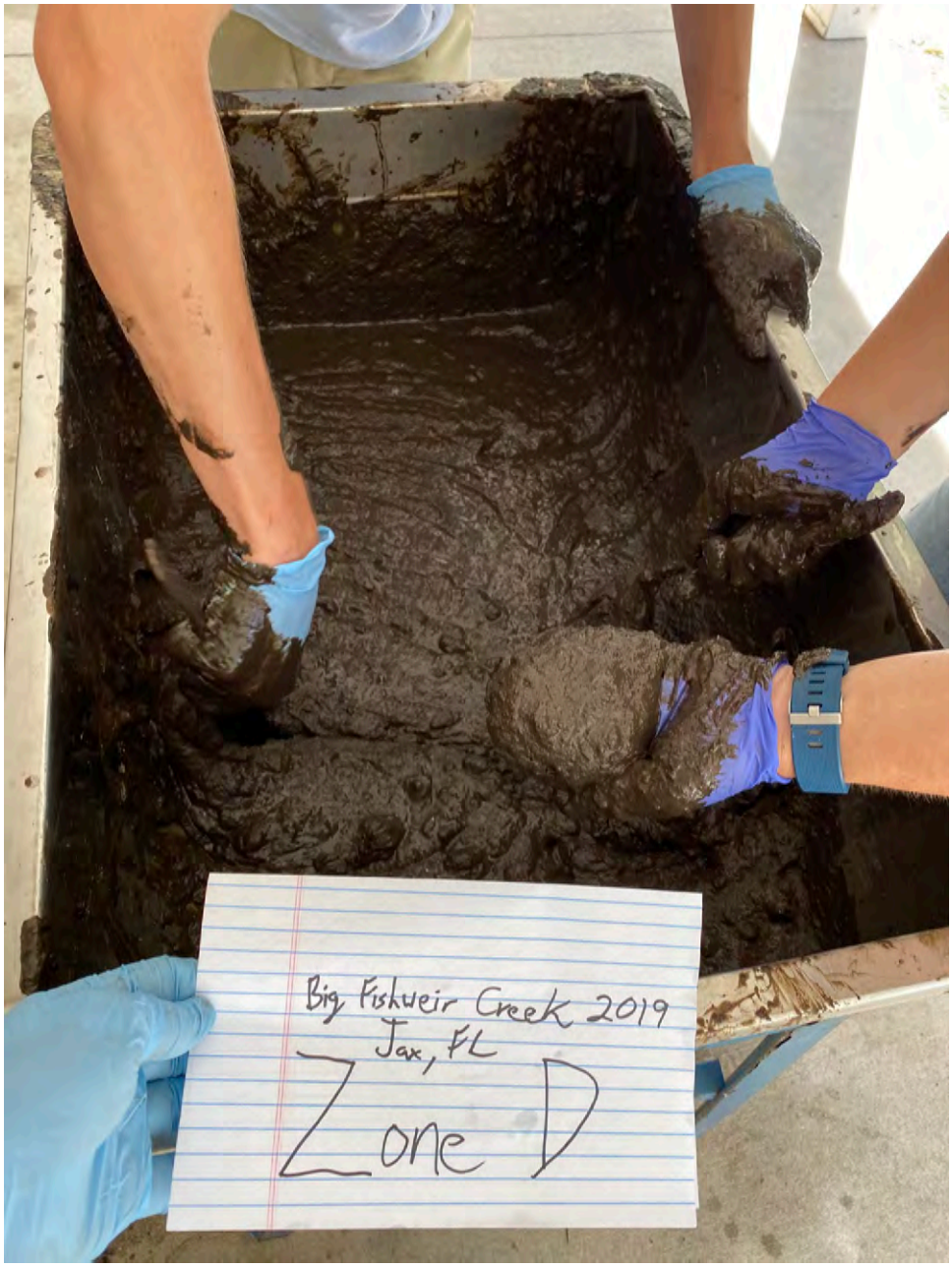

Figure 4. Compositing and Homogenizing Sediments

Figure 5. Vibracore Stainless Steel Core Catcher Decontamination

Figure 6. Amdrill's Larger Vibracoring Vessel

Figure 7. Amdrill's Smaller Vibracoring Vessel

Figure 8. Vibracoring in Zone A

Figure 9. Installation of Tide Gauge NAVD88

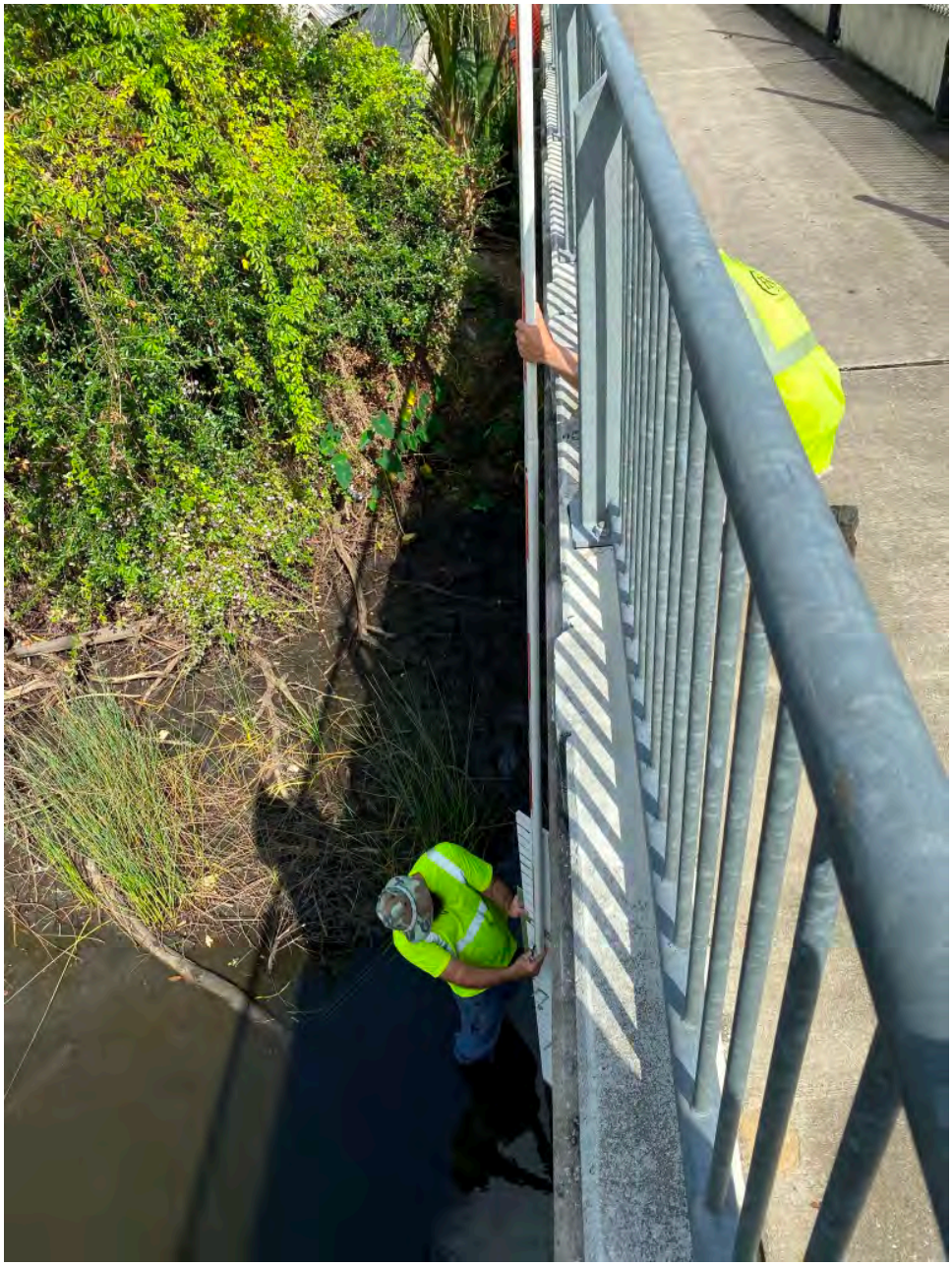

Figure 10. Installation of Tide Gauge NAVD88

Figure 11. Installed Tide Gauge

Figure 12. Benchmark for Tide Gauge Installation

Figure 13. Wood Encountered When Vibracoring

Figure 14. Vibracored Geotech Samples

Figure 15. Collected Core for Chemistry

Figure 16. Collected Core for Chemistry Chilled After Sampling

Electronic Version Only

APPENDIX A

QUALITY ASSURANCE PROJECT PLAN

Big Fishweir Creek Sediment Core Collection and Chemical Analysis

Quality Assurance Project Plan Including Sampling Plan

Prepared for:

Jacksonville Corps of Engineers
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October 18, 2019

Revision 0

A1. Title and Approval Sheet

(For Big Fishweir Creek Chemical Contaminants in Sediments)

Zoe Kulakowski 10-18-2019
Zoe Kulakowski Date
Contracting Officer Representative
U.S. Army Corps of Engineers
Jacksonville District

Troy Mayhew 10/18/19
Troy Mayhew Date
Project Geologist
U.S. Army Corps of Engineers
Jacksonville District

Jayasree Nayar Date
Chemist
U.S. Army Corps of Engineers
Jacksonville District

10/18/19
Bryan Cotter Date
Project Manager/Field Team Leader
Water & Air Research, Inc.

Charles R. Fellows 10/18/19
Charles Fellows Date
Quality Assurance Officer
Water & Air Research, Inc.

10.21.2019.
Mandy Sullivan Date
Laboratory Project Manager
ALS Global

10/21/19
Eric Smith Date
Laboratory QA Officer
ALS Global

Adam Benson Date
Amdrill Inc.
Vibracore Field Team Leader

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List of Acronyms

ALS	ALS Global
CCV	Continuing Calibration Verification
COC	Chain-of-Custody
COE	Corps of Engineers, Jacksonville District
COR	Contracting Officer Representative
DGPS	Differentially corrected Global Positioning System
EPA	Environmental Protection Agency
FDEP	Florida Department of Environmental Protection
g	gram
IDOC	Initial Demonstration of Capability
ITM	Inland Testing Manual - Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S.
L	liter
LCS	Laboratory Control Samples
LIMS	Laboratory Information Management System
mg/L	milligram per liter (ppm)
µg/L	microgram per liter (ppb)
ng/L	nanogram per liter (ppt)
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NELAC	National Environmental Laboratory Accreditation Conference
NELAP	National Environmental Laboratory Accreditation Program
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
ppb	parts per billion
ppm	parts per million
ppt	parts per trillion
PQL	Practical Quantitation Limit
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
SOP	Standard Operating Procedure
SQAG	Sediment Quality Assessment Guidelines
SRM	Standard Reference Material

A3. Distribution List

This list identifies all key individuals who will receive a copy of the approved QAPP, as well as subsequent revisions.

Name	Project Title	Organization	Telephone	Email
Jason Harrah	Project Manager	U.S. Army Corps of Engineers	(904) 232-1381	jason.s.harrah@usace.army.mil
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Mandy Sullivan	Laboratory Project Manager	ALS Environmental Laboratories	(904) 394-4406	mandy.sullivan@alsglobal.com
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Adam Benson	Vibracore Field Team Leader	Amdrill Inc.	(407) 298-7777	abdriller@earthlink.net

A4. Project/Task Organization

The U.S. Army Corps of Engineers, Jacksonville District (COE) is responsible for the design of this project. The COE developed a sample scope of work to meet the project objectives. The scope of work was provided to qualified contractors with a request for proposal per the COE's contracting policies. The proposal selected for the project was submitted by Water & Air Research, Inc. (Water & Air). The contract with Water & Air will be managed by Zoe Kulakowski, COE Contracting Officer Representative (COR).

Bryan F. Cotter will be the Water & Air Research, Inc (Water & Air) Project Manager. Mr. Cotter will be responsible for coordinating all project tasks among Water & Air personnel and subcontractors, and he has the overall responsibility for assuring sampling and data quality. He will coordinate all contractual agreements with the COE and the Water & Air subcontractors, and he will ensure that all Water & Air deliverables are sent to the COE in a timely manner. Mr. Cotter will ensure that any appropriate corrective actions are implemented during sample collection, sample analysis, and data assessment. Mr. Cotter will also be the Water & Air Field Team Leader. He will ensure that procedures described in the QAPP are followed and any deviation from them is documented and discussed with representatives of the COE at the earliest possible time. He will oversee and document any needed corrective actions. Mr. Cotter will be responsible for the post-collection handling and shipping of the samples to the analytical laboratory, i.e., ALS, Jacksonville, Florida.

Charles R. Fellows will be the Water & Air Quality Assurance Officer. He will ensure that the data quality objectives of the project are met. Mr. Fellows will be responsible for monitoring the quality of all sampling activities, field data collection, and laboratory reporting that occurs during the project. Mr. Fellows will inform the Water & Air Project Manager of any needed corrective actions. Mr. Fellows has been tasked to develop and maintain this Quality Assurance Project Plan (QAPP). If revisions are deemed necessary, Mr. Fellows and/or Bryan Cotter will update the QAPP and redistribute to the individuals listed on Section A3 of this document.

Adam Benson will be the Vibracoring Field Team Leader for this project. Mr. Benson will be responsible for mobilizing the field sampling equipment, such as the vessels and vibracore, and he will be responsible for the collection of the sediment cores.

Mandy Sullivan is the laboratory Project Manager for ALS Environmental (ALS). Ms. Sullivan will have the overall responsibility for all laboratory specific data quality and data reporting. ALS will be a sub-contractor under Water & Air.

The ALS Quality Assurance Officer will be Eric Smith. Mr. Smith will be relied upon by the ALS Project Manager to review the quality of all data produced in the laboratory before it is reported. He will inform the Project Manager and Laboratory Manager of any needed corrective actions. Mr. Smith may be asked by the Project Manager to review sample-testing activities within the analytical laboratories. He will be responsible for all laboratory quality control data as well as the laboratory related criteria included in this QAPP and per NELAC criteria.

The principal data user and decision maker for this project is the US Army Corps of Engineers, Jacksonville District. Figure 1 provides an organizational chart showing the relationships among all project participants.

A5. Problem Definition/Background

Water & Air Research, Inc. (Water & Air), teaming with subcontractors Amdrill Inc. (Amdrill), and ALS Global Laboratories (ALS) has been tasked to collect and analyze sediment vibracore samples, along with generating and analyzing elutriate and TCLP samples, to support future dredging activities within Big Fishweir Creek to comply with Section 404 of the Clean Water Act. Chemical and geotechnical vibracore samples will be collected at preselected locations (Table 3) within the creek and delivered (respectively) to ALS Laboratories and to the US Army Corps of Engineers' geotechnical warehouse, both of which are in Jacksonville, FL.

The sediments for chemistry will be analyzed for pollutants and the data will be compared to the Florida Department of Environmental Protection's (FDEP) Sediment Quality Assessment Guidelines (SQAG), and the elutriate results will be compared to the FDEP's Class III Fresh and Saltwater Criteria. TCLP will be run on select sediment samples to determine if they are eligible for landfill disposal, if warranted.

A6. Project/Task Description

General Project Overview

This Quality Assurance Project Plan (QAPP) presents the field sampling methodology and sampling equipment, analytical methodology, personnel performing the sampling, QA/QC measures, and sample tracking and reporting necessary for Water & Air to accomplish the requested task of evaluating creek sediments collected within the Big Fishweir Creek. The current plan is to collect vibracore samples from 18 locations along Big Fishweir Creek to project depths listed in Table 1. At 13 locations, two separate vibracores will be collected within five feet of each other (i.e. core names ending in GG and GE). Samples will be collected from Amdrill's vibracore-equipped vessel. DGPS, along with verified tide staff gauges, will be used to determine sampling locations and appropriate vertical datum for sampling depth (referenced to NAVD88).

ALS will analyze the five sediment composite samples, two elutriate samples, and one site-water background sample. Water & Air will process the sediment composites and generate the elutriate samples, and ALS will perform the TCLP extraction procedure before sample analysis.

Zones -A, -B (upstream), -B (downstream), -C and -D sediment composites will be analyzed for the compounds listed in the SQAGs, including PCB congeners, herbicides, and dioxins and furans (to be reported as 2,3,7,8 TCDD Toxic equivalents), and phthalates (Tables 4 through 6).

Elutriates will be generated from Zones A and D composite samples (standard elutriate test per the ITM) and will be analyzed along with site water for the compounds listed on Tables 7 through 9 and compared to the Class III Fresh and Saltwater criteria (whichever is lower). The contaminates of concern are metals, PAH compounds, phthalates, PCB

congeners, organochlorine pesticides, herbicides, dioxins & furans (to be reported as 2,3,7,8 TCDD Toxic equivalents) and hardness. Temperature, pH, specific conductance, and dissolved oxygen measurements will be made in the lower half of the water column at selected locations to determine whether conditions are predominantly fresh of marine water.

TCLP (USEPA Method 1311) will be performed on Zones C and D composite samples and will be analyzed for the same metals prescribed for the elutriates including mercury, organochlorine pesticides, and PAHs.

Please note that no field duplicate or split sample was requested in the RFQ and none are planned to be collected at this time.

The vibracore drilling apparatus will use a continuous 10-foot by 3 or 3.5-inch diameter steel core barrel with a steel cutting head, clear plastic liners and core catcher. Sampling will be continuous unless refusal is encountered. Refusal will be defined as no additional penetration of the vibracore with two minutes of additional effort applied to penetrate through the resistant layer at maximum vibration. If refusal is not due to rock, two attempts will be made to reach a depth of eighty percent penetration. The Corps technical point of contact, the Contract Officer Representative (COR), will be contacted immediately while still on site if an 85% maximum recovery is not attainable. Site water will be collected from Zone A within Big Fishweir Creek.

Table 1. Big Fishweir Creek Sample IDs and Sample Count

Sample ID	Project Depth NAVD88	Geotech Cores	Cores for Chemistry	Sed. Chem. Analysis *	Std.Elut. Chem. Analysis **	TCLP Chem. Analysis ***	Action
VB-BFWC19-01GG		X					Delivered to COE
VB-BFWC19-02GG		X					Delivered to COE
VB-BFWC19-04GG		X					Delivered to COE
VB-BFWC19-05GG		X					Delivered to COE
VB-BFWC19-06GG		X					Delivered to COE
VB-BFWC19-09GG		X					Delivered to COE
VB-BFWC19-10GG		X					Delivered to COE
VB-BFWC19-11GG		X					Delivered to COE
VB-BFWC19-13GG		X					Delivered to COE
VB-BFWC19-15GG		X					Delivered to COE
VB-BFWC19-16GG		X					Delivered to COE
VB-BFWC19-17GG		X					Delivered to COE
VB-BFWC19-18GG		X					Delivered to COE
VB-BFWC19-03GS		X					Delivered to COE
VB-BFWC19-07GS		X					Delivered to COE
VB-BFWC19-08GS		X					Delivered to COE
VB-BFWC19-12GS		X					Delivered to COE
VB-BFWC19-14GS		X					Delivered to COE
VB-BFWC19-01GE			X				Cores for compositing
VB-BFWC19-02GE			X				Cores for compositing
VB-BFWC19-04GE			X				Cores for compositing
VB-BFWC19-05GE			X				Cores for compositing
VB-BFWC19-06GE			X				Cores for compositing
VB-BFWC19-09GE			X				Cores for compositing
VB-BFWC19-10GE			X				Cores for compositing
VB-BFWC19-11GE			X				Cores for compositing
VB-BFWC19-13GE			X				Cores for compositing
VB-BFWC19-15GE			X				Cores for compositing
VB-BFWC19-16GE			X				Cores for compositing
VB-BFWC19-17GE			X				Cores for compositing
VB-BFWC19-18GE			X				Cores for compositing
VB-BFWC-Zone A Composite	-5 feet			X	X		Chem. Cores: 1, 2, 4
VB-BFWC-Zone B Upstream Comp.	-6 feet			X			Chem. Cores: 5 & 6
VB-BFWC-Zone B Downstream Comp.	-6 feet			X			Chem. Cores: 9 & 10
VB-BFWC-Zone C Composite	-4.5 feet			X		X	Chem. Cores: 11, 13, 15
VB-BFWC-Zone D Composite	-8 feet			X	X	X	Chem. Cores: 16, 17, 18
BFWC-Sitewater from Zone A	1' below water surface				X		Elutriate sitewater and elutriate sitewater chemical analysis

Analytes included in this study are identified in Tables 4 through 9 along with the analytical method number with which they will be tested, and their method detection limits.

Field activities will include recording data and collecting information such as sampling

location (WAAS-corrected latitude and longitude), water depth, length of core, describing sediment from each location, and in-situ water column measurements (temperature, pH, specific conductance, dissolved oxygen). The YSI-Pro multimeter will be calibrated daily in the morning and will be verified at the end of each day (per FDEP SOP FS1000 and by manufacture specifications). Other activities include homogenizing collected composite sediments (per specific zone) using stainless steel containers and utensils before placing them in laboratory-supplied sample containers before shipment to the laboratory for analysis.

Equipment required to perform the sampling also includes various sampling vessels equipped with a vibracore. Sampling is expected to be performed over five days.

Sediment sample preparation for shipment may occur in the field or back at Water & Air's facility, utilizing methods identified in Section B1.

Laboratory instruments required for this project are identified in each EPA analysis method number. A list of ALS's laboratory equipment is available upon request. ALS laboratory is NELAP accredited and certified in the State of Florida for the analyses in this project. Quality assurance procedures and quality control metrics are specified in ALS's Quality Assurance Manual (QAM).

ALS's turn-around time is expected to be 15 business days from the sample receipt date, and a general work schedule and data deliverable timeline is presented on Table 2.

The personnel performing field work are individuals with at least a Bachelor of Science degree and/or over five years of experience performing similar environmental field efforts. These field team members will follow current Florida Department of Environmental Protection (FDEP) Standard Operating Procedures for Field Activities (SOPs) as well as "Sediment Sampling" (USEPA, Document Number SESDPROC-200-R3, August 21, 2014).

Key individuals listed on the *Distribution List* will receive updated revisions of this QAPP document when any substantive change is needed. A substantive change will be based on a decision made by the COE (COR) and the Water & Air Project Manager. Any significant changes to this QAPP will be submitted to the COE for approval.

Sediment data will be tabulated and compared to the Numerical Sediment Quality Assessment Guidelines for Florida Inland Waters. SQAG criteria will be presented on tables for comparison with sample data, and sample data that were found to exceed applicable standards or criteria will be presented in **bold** font to assist the reader in identifying such data.

Project reports and records will include:

- this QAPP which describes the critical information needed to collect and analyze sediment samples and the quality control metrics and quality assurance procedures used throughout the project;
- field data sheets which will document data and information related to sampling and sample processing, handling, and transport;
- chain-of-custody forms to document sample possession and transfer of information between the field team and the laboratory personnel;

- laboratory analytical reports which includes data quality assessment; and
- final report which provides all the field and analytical data and interpretation regarding how these data address the stated problem and project objectives.

Table 2. Schedule of Activities and Deliverables

Schedule of Activities and Deliverables	Date
Date Awarded	September 20, 2019
Kickoff Meeting	October 3, 2019
Draft HASP Emailed to USACE	October 4, 2019
Draft QAPP to the USACE	October 11, 2019
Proposed equipment mobilization and sampling to begin	October 21, 2019
Proposed date for submitting sediment samples to ALS	October 28, 2019
Proposed date for submitting elutriate samples to ALS	October 31, 2019
Water & Air to receive sediment laboratory report	November 21, 2019
Water & Air to receive elutriate and TCLP laboratory report	November 26, 2019
Draft Technical Report to the USACE	December 13, 2019
USACE to submit draft report comments to W&A	December 20, 2019
Water & Air to submit the Final report to the USACE	January 7, 2019

Figure 1. Big Fishweir Project Organizational Chart

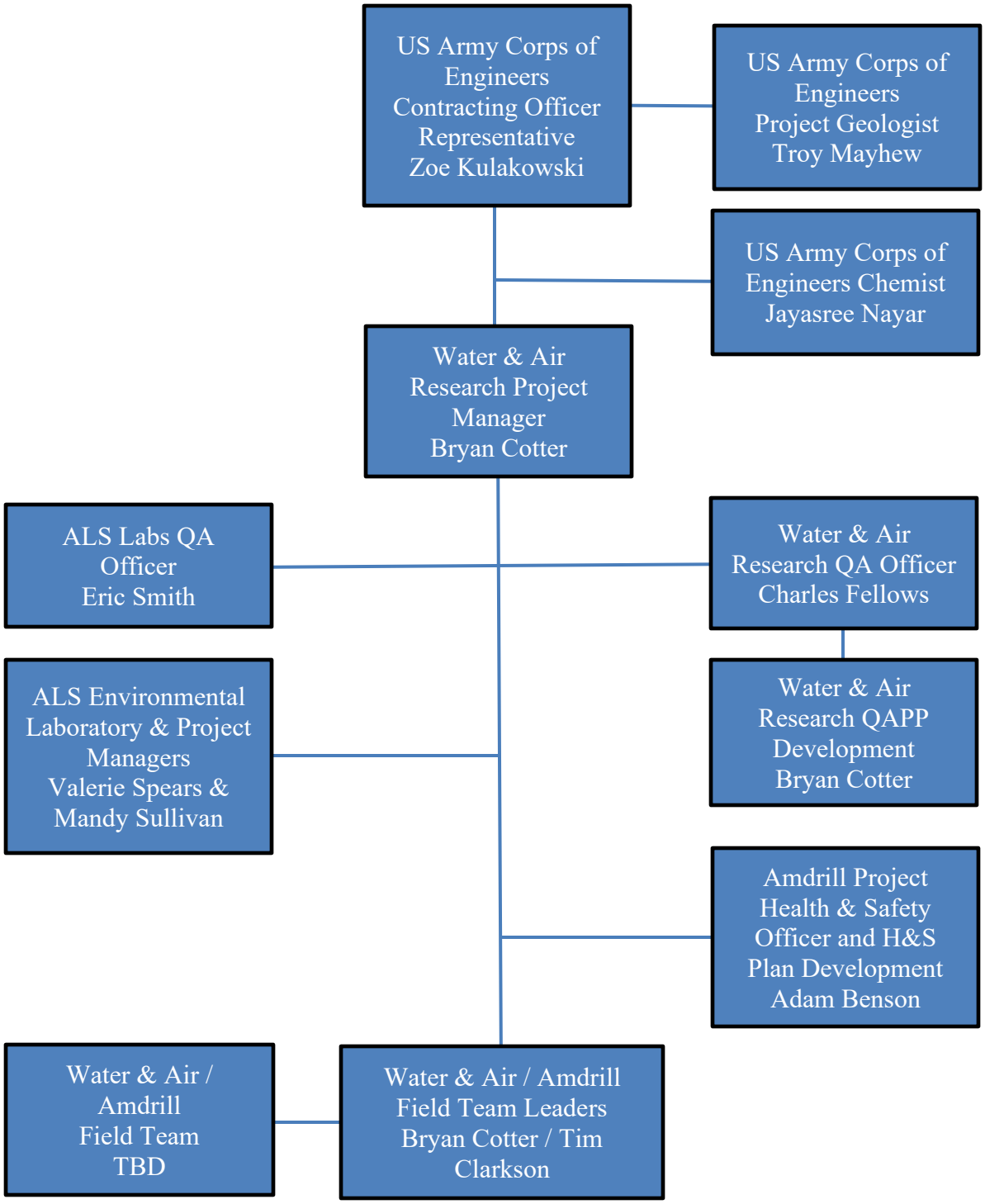

Figure 2. Big Fishweir Creek Proposed Sediment Sampling Locations Zone A

Figure 3. Big Fishweir Creek Proposed Sediment Sampling Locations Zone B (Upstream Herschel Street Bridge)

Figure 4. Big Fishweir Creek Proposed Sediment Sampling Locations Zone B (Downstream Herschel Street Bridge)

Figure 5. **Big Fishweir Creek Proposed Sediment Sampling Locations Zone C**

Figure 6. Big Fishweir Creek Proposed Sediment Sampling Locations Zone D

Table 3. Target Sample Collection Coordinates

Boring Designation	x	y	Latitude	Longitude
VB-BFWC19-01GG	429145.88	2166730.77	30.2916972	-81.7193055
VB-BFWC19-01GE				
VB-BFWC19-02GG	429394.53	2166398.82	30.2907889	-81.7185111
VB-BFWC19-02GE				
VB-BFWC19-03GS	429547.3	2166293.79	30.2905028	-81.718025
VB-BFWC19-04GG	429740.99	2166143.04	30.2900917	-81.7174083
VB-BFWC19-04GE				
VB-BFWC19-05GG	430125.97	2166154.76	30.2901306	-81.7161889
VB-BFWC19-05GE				
VB-BFWC19-06GG	430438.79	2166125.51	30.2900556	-81.7151972
VB-BFWC19-06GE				
VB-BFWC19-07GS	430518.37	2166093.69	30.2899694	-81.7149445
VB-BFWC19-08GS	430696.74	2166154.2	30.2901389	-81.7143805
VB-BFWC19-09GG	431323.37	2166112.88	30.2900361	-81.7123944
VB-BFWC19-09GE				
VB-BFWC19-10GG	431539.59	2166057.98	30.2898889	-81.7117083
VB-BFWC19-10GE				
VB-BFWC19-11GG	432040.23	2165918.45	30.2895139	-81.7101194
VB-BFWC19-11GE				
VB-BFWC19-12GS	432130.06	2166122.98	30.2900778	-81.7098389
VB-BFWC19-13GG	432177.47	2166132.79	30.2901056	-81.7096889
VB-BFWC19-13GE				
VB-BFWC19-14GS	432309.12	2166295.64	30.2905556	-81.709275
VB-BFWC19-15GG	432362.7	2166311.47	30.2906	-81.7091056
VB-BFWC19-15GE				
VB-BFWC19-16GG	431982.89	2165441.95	30.2882028	-81.7102917
VB-BFWC19-16GE				
VB-BFWC19-17GG	432457.16	2164869.17	30.2866361	-81.7087778
VB-BFWC19-17GE				
VB-BFWC19-18GG	432822.36	2164377.9	30.2852917	-81.7076111
VB-BFWC19-18GE				

NAD88

A7. Objectives and Criteria for Measurement Data

The project objectives include:

- Identify and quantify sediment pollutants which may impact dredged sediment placement/disposal and surface water quality.

Sampling locations will be documented in decimal degrees to five decimal places using Global Position System (GPS) receivers with WAAS-correction and the WGS 84 datum.

Zone composite cores for chemistry will be extruded into pre-cleaned stainless-steel mixing vats and thoroughly homogenized and transferred into laboratory bottles.

Qualitative descriptions of the sediments will be made on site.

No field duplicate samples will be submitted to the laboratory for analysis.

Laboratory data quality objectives are presented on Tables 4 through 9. These tables identify the analytical methods that will be used for this study and the anticipated target detection limits to which measurements will be made. Accuracy and precision statistics will be developed from data gathered from comparative measurements made on laboratory duplicate, matrix spike and laboratory reference samples. The contracted laboratory for this study is certified to perform the analyses as designed within this study. The laboratory Quality Assurance Manual is available upon request. Certification to perform the analysis and report sample results requires adherence to guidelines set forth in EPA 823-B-00-007, Section 8, Laboratory Procedures, and Quality Assurance and Quality Control Considerations. Detection and quantitation limits for this study shall be reported as follows:

- No observed response ("zero" concentration) shall be reported as not detected (ND) with the MDL noted.
- Concentrations between the MDL and Practical Quantitation Limit (PQL) shall be reported with the qualification that they are below the quantitation limit.
- A datum reported below the method detection limit, including a datum reported as not detected (i.e., ND, no observed response) shall be assigned 'ND'.
- A datum reported at or above the PQL should be used as reported.

Table 4. Metals, PAHs, Pesticides, Herbicides in Sediments - Analytical Method, Target Detection Limits, and Related Guidance Concentrations

Analytes	Method	Units	SQAGs TELs (use lowest criteria)	ALS MDLs
Metals			**Fresh / Marine**	
Arsenic	EPA 6010D	mg/kg	9.8 / 7.24	0.0836
Cadmium	EPA 6010D	mg/kg	1.0 / 0.68	0.00674
Chromium	EPA 6020B	mg/kg	43 / 52.3	0.031
Copper	EPA 6010D	mg/kg	32 / 18.7	0.0222
Lead	EPA 6010D	mg/kg	36 / 30.2	0.0778
Mercury	EPA 7471B	mg/kg	0.18 / 0.13	0.0011
Nickel	EPA 6020B	mg/kg	23 / 15.9	0.072
Silver	EPA 6020B	mg/kg	1.0 / 0.73	0.009
Zinc	EPA 6020B	mg/kg	120 / 124	0.308
Aluminum	EPA 6020B	mg/kg	NG	1.256
Antimony	EPA 6020B	mg/kg	NG	0.006
Barium	EPA 6020B	mg/kg	20	0.013
Beryllium	EPA 6020B	mg/kg	NG	0.0236
Boron	EPA 6020B	mg/kg	NG	0.7832
Calcium	EPA 6010D	mg/kg	NG	0.43
Cobalt	EPA 6020B	mg/kg	50	0.006
Iron	EPA 6020B	mg/kg	NG	0.1554
Magnesium	EPA 6010D	mg/kg	NG	1.13
Manganese	EPA 6020B	mg/kg	NG	0.1510
Molybdenum	EPA 6020B	mg/kg	NG	0.059
Potassium	EPA 6010D	mg/kg	NG	2.21
Selenium	EPA 6010D	mg/kg	NG	0.145
Sodium	EPA 6010D	mg/kg	NG	1.62
Strontium	EPA 6020B	mg/kg	NG	0.0687
Thallium	EPA 6020B	mg/kg	NG	0.0062
Tin	EPA 6020B	mg/kg	NG	0.0287
Titanium	EPA 6020B	mg/kg	NG	0.412
Vanadium	EPA 6020B	mg/kg	NG	0.0709

Table 4 (cont.) Metals, PAHs, Pesticides, Herbicides in Sediments - Analytical Method, Target Detection Limits, and Related Guidance Concentrations

PAHs	Method	Units	SQAG TELs	ALS MDLs
Acenaphthene	EPA 8270D/ESIM	µg/kg	6.7	3.1
Acenaphthylene	EPA 8270D/ESIM	µg/kg	5.9	2.2
Anthracene	EPA 8270D/ESIM	µg/kg	57 / 46.9	1.6
Fluorene	EPA 8270D/ESIM	µg/kg	77 / 21.2	2.2
Naphthalene	EPA 8270D/ESIM	µg/kg	180 / 34.6	3.1
2-Methylnaphthalene	EPA 8270D/ESIM	µg/kg	20.2	2.3
Phenanthrene	EPA 8270D/ESIM	µg/kg	200 / 86.7	1.7
Total Low Molecular Weight PAHs	Calculation	µg/kg	312	---
Benz(a)anthracene	EPA 8270D/ESIM	µg/kg	110 / 74.8	1.9
Benzo(a)pyrene	EPA 8270D/ESIM	µg/kg	150 / 88.8	1.0
Chrysene	EPA 8270D/ESIM	µg/kg	170 / 108	1.9
Dibenzo(a,h)anthracene	EPA 8270D/ESIM	µg/kg	33 / 6.22	2.7
Fluoranthene	EPA 8270D/ESIM	µg/kg	420 / 113	2.0
Pyrene	EPA 8270D/ESIM	µg/kg	200 / 153	2.0
Total High Molecular Weight PAHs	Calculation	µg/kg	655	---
Total PAHs	Calculation	µg/kg	1,600 / 1,684	---
1-Methylnaphthalene	EPA 8270D/ESIM	µg/kg	NG	2.7
Benzo(b)fluoranthene	EPA 8270D/ESIM	µg/kg	NG	2.0
Benzo(g h i)perylene	EPA 8270D/ESIM	µg/kg	NG	2.2
Benzo(k)fluoranthene	EPA 8270D/ESIM	µg/kg	NG	2.4
Indeno(1,2,3-cd)pyrene	EPA 8270D/ESIM	µg/kg	NG	2.2
Pentachlorophenol (PCP)	EPA 8270D/ESIM	µg/kg	NG	2.1
Bis(2-ethylhexyl)phthalate	EPA 8270SIM	µg/kg	180 / 182	5.95
PCBs	**Method**	**Units**	**SQAG TELs**	**ALS MDLs**
Total PCBs	8082A Cong	µg/kg	60 / 21.6	0.073 - 2.1 #

Pesticides	Method	Units	SQAG TELs	ALS MDLs
Chlordane (tech.)	EPA 8081 A/B	µg/kg	3.2 / 2.26	**3.10**
Dieldrin	EPA 8081 A/B	µg/kg	1.9 / 0.72	0.083
Lindane (gamma-BHC)	EPA 8081 A/B	µg/kg	2.4 / 0.32	0.051
4 4`-DDD	EPA 8081 A/B	µg/kg	4.9 / 1.22	0.10
4 4`-DDE	EPA 8081 A/B	µg/kg	3.2 / 2.07	0.085
4 4`-DDT	EPA 8081 A/B	µg/kg	4.2 / 1.19	0.078
Total DDT	EPA 8081 A/B	µg/kg	5.3 / 3.89	---
Aldrin	EPA 8081 A/B	µg/kg	NG	0.056
Endosulfan I	EPA 8081 A/B	µg/kg	NG	0.060
Endosulfan II	EPA 8081 A/B	µg/kg	NG	0.091

Table 4 (cont.) Metals, PAHs, Pesticides, Herbicides in Sediments - Analytical Method, Target Detection Limits, and Related Guidance Concentrations

Pesticides	Method	Units	SQAG TELs	ALS MDLs
Endosulfan sulfate	EPA 8081 A/B	µg/kg	NG	0.051
Endrin	EPA 8081 A/B	µg/kg	2.2	0.057
Endrin aldehyde	EPA 8081 A/B	µg/kg	NG	0.061
Endrin ketone	EPA 8081 A/B	µg/kg	NG	0.076
Heptachlor	EPA 8081 A/B	µg/kg	NG	0.055
Heptachlor Epoxide	EPA 8081 A/B	µg/kg	2.5	0.23
Methoxychlor	EPA 8081 A/B	µg/kg	NG	0.15
Toxaphene	EPA 8081 A/B	µg/kg	0.10	**14**
alpha-BHC	EPA 8081 A/B	µg/kg	NG	0.064
alpha-Chlordane	EPA 8081 A/B	µg/kg	NG	0.063
beta-BHC	EPA 8081 A/B	µg/kg	NG	0.18
delta-BHC	EPA 8081 A/B	µg/kg	NG	0.070
gamma-Chlordane	EPA 8081 A/B	µg/kg	NG	0.072

Herbicides	Method	Units	SQAG TELs	ALS MDLs
2,4,5-T	EPA 8151A	µg/kg	NG	5
2,4,5-TP (Silvex)	EPA 8151A	µg/kg	NG	4.5
2,4-D	EPA 8151A	µg/kg	NG	6.5
Dicamba	EPA 8151A	µg/kg	NG	3.1
Pentachlorophenol	EPA 8151A	µg/kg	NG	6.3

Table 5. PCB Congeners in Sediments - Analytical Method, Target Detection Limits, and Related Guidance Concentrations

PCB Congeners	Method	Units	SQAG TELs	ALS MDLs
PCB 1 (2-Chlorobiphenyl)	8082A Cong	µg/kg	NG	2.1
PCB 101 (2,2',4,5,5'-Pentachlorobiphenyl)	8082A Cong	µg/kg	NG	0.26
PCB 105 (2,3,3',4,4'-Pentachlorobiphenyl)	8082A Cong	µg/kg	NG	0.12
PCB 110 (2,3,3',4',6-Pentachlorobiphenyl)	8082A Cong	µg/kg	NG	0.16
PCB 114 (2,3,4,4',5-Pentachlorobiphenyl)	8082A Cong	µg/kg	NG	0.12
PCB 118 (2,3',4,4',5-Pentachlorobiphenyl)	8082A Cong	µg/kg	NG	0.095
PCB 119 (2,3',4,4',6-Pentachlorobiphenyl)	8082A Cong	µg/kg	NG	0.16
PCB 123 (2',3,4,4',5-Pentachlorobiphenyl)	8082A Cong	µg/kg	NG	0.12
PCB 126 (3,3',4,4',5-Pentachlorobiphenyl)	8082A Cong	µg/kg	NG	0.17
PCB 128 (2,2',3,3',4,4'-Hexachlorobiphenyl)	8082A Cong	µg/kg	NG	0.09
PCB 132 (2,2',3,3',4,6'-Hexachlorobiphenyl)	8082A Cong	µg/kg	NG	0.12
PCB 138 (2,2',3,4,4',5'-Hexachlorobiphenyl)	8082A Cong	µg/kg	NG	0.18
PCB 141 (2,2',3,4,5,5'-Hexachlorobiphenyl)	8082A Cong	µg/kg	NG	0.096
PCB 149 (2,2',3,4',5',6-Hexachlorobiphenyl)	8082A Cong	µg/kg	NG	0.14
PCB 151 (2,2',3,5,5',6-Hexachlorobiphenyl)	8082A Cong	µg/kg	NG	0.12
PCB 153 (2,2',4,4',5,5'-Hexachlorobiphenyl)	8082A Cong	µg/kg	NG	0.13
PCB 156 (2,3,3',4,4',5-Hexachlorobiphenyl)	8082A Cong	µg/kg	NG	0.12
PCB 157 (2,3,3',4,4',5'-Hexachlorobiphenyl)	8082A Cong	µg/kg	NG	0.13
PCB 158 (2,3,3',4,4',6-Hexachlorobiphenyl)	8082A Cong	µg/kg	NG	0.073
PCB 166 (2,3,4,4',5,6-Hexachlorobiphenyl)	8082A Cong	µg/kg	NG	0.14
PCB 167 (2,3',4,4',5,5'-Hexachlorobiphenyl)	8082A Cong	µg/kg	NG	0.16
PCB 168 (2,3',4,4',5',6-Hexachlorobiphenyl)	8082A Cong	µg/kg	NG	0.14
PCB 169 (3,3',4,4',5,5'-Hexachlorobiphenyl)	8082A Cong	µg/kg	NG	0.2
PCB 170 (2,2',3,3',4,4',5-Heptachlorobiphenyl)	8082A Cong	µg/kg	NG	0.14
PCB 174 (2,2',3,3',4,5,6'-Heptachlorobiphenyl)	8082A Cong	µg/kg	NG	0.11
PCB 177 (2,2',3,3',4',5,6-Heptachlorobiphenyl)	8082A Cong	µg/kg	NG	0.16
PCB 18 (2,2',5-Trichlorobiphenyl)	8082A Cong	µg/kg	NG	0.22
PCB 180 (2,2',3,4,4',5,5'-Heptachlorobiphenyl)	8082A Cong	µg/kg	NG	0.11
PCB 183 (2,2',3,4,4',5',6-Heptachlorobiphenyl)	8082A Cong	µg/kg	NG	0.14
PCB 184 (2,2',3,4,4',6,6'-Heptachlorobiphenyl)	8082A Cong	µg/kg	NG	0.15
PCB 187 (2,2',3,4',5,5',6-Heptachlorobiphenyl)	8082A Cong	µg/kg	NG	0.16
PCB 189 (2,3,3',4,4',5,5'-Heptachlorobiphenyl)	8082A Cong	µg/kg	NG	0.095
PCB 194 (2,2',3,3',4,4',5,5'-Octachlorobiphenyl)	8082A Cong	µg/kg	NG	0.18
PCB 195 (2,2',3,3',4,4',5,6-Octachlorobiphenyl)	8082A Cong	µg/kg	NG	0.11
PCB 201 (2,2',3,3',4,5',6,6'-Octachlorobiphenyl)	8082A Cong	µg/kg	NG	0.16
PCB 203 (2,2',3,4,4',5,5',6-Octachlorobiphenyl)	8082A Cong	µg/kg	NG	0.13
PCB 206 (2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl)	8082A Cong	µg/kg	NG	0.14
PCB 209 (Decachlorobiphenyl)	8082A Cong	µg/kg	NG	0.22
PCB 28 (2,4,4'-Trichlorobiphenyl)	8082A Cong	µg/kg	NG	0.22

Table 5 (cont.) PCB Congeners in Sediments - Analytical Method, Target Detection Limits, and Related Guidance Concentrations

PCB Congeners	Method	Units	SQAG TELs	ALS MDLs
PCB 31 (2,4',5-Trichlorobiphenyl)	8082A Cong	µg/kg	NG	0.098
PCB 33 (2',3,4-Trichlorobiphenyl)	8082A Cong	µg/kg	NG	0.26
PCB 37 (3,4,4'-Trichlorobiphenyl)	8082A Cong	µg/kg	NG	0.17
PCB 44 (2,2',3,5'-Tetrachlorobiphenyl)	8082A Cong	µg/kg	NG	0.17
PCB 49 (2,2',4,5'-Tetrachlorobiphenyl)	8082A Cong	µg/kg	NG	0.13
PCB 5 (2,3-Dichlorobiphenyl)	8082A Cong	µg/kg	NG	0.092
PCB 52 (2,2',5,5'-Tetrachlorobiphenyl)	8082A Cong	µg/kg	NG	0.2
PCB 56 (2,3,3',4'-Tetrachlorobiphenyl)	8082A Cong	µg/kg	NG	0.12
PCB 60 (2,3,4,4'-Tetrachlorobiphenyl)	8082A Cong	µg/kg	NG	0.13
PCB 66 (2,3',4,4'-Tetrachlorobiphenyl)	8082A Cong	µg/kg	NG	0.19
PCB 70 (2,3',4',5-Tetrachlorobiphenyl)	8082A Cong	µg/kg	NG	0.14
PCB 74 (2,4,4',5-Tetrachlorobiphenyl)	8082A Cong	µg/kg	NG	0.18
PCB 77 (3,3',4,4'-Tetrachlorobiphenyl)	8082A Cong	µg/kg	NG	0.2
PCB 8 (2,4'-Dichlorobiphenyl)	8082A Cong	µg/kg	NG	0.29
PCB 81 (3,4,4',5-Tetrachlorobiphenyl)	8082A Cong	µg/kg	NG	0.18
PCB 87 (2,2',3,4,5'-Pentachlorobiphenyl)	8082A Cong	µg/kg	NG	0.11
PCB 90 (2,2',3,4',5-Pentachlorobiphenyl)	8082A Cong	µg/kg	NG	0.18
PCB 95 (2,2',3,5',6-Pentachlorobiphenyl)	8082A Cong	µg/kg	NG	0.14
PCB 97 (2,2',3',4,5-Pentachlorobiphenyl)	8082A Cong	µg/kg	NG	0.093
PCB 99 (2,2',4,4',5-Pentachlorobiphenyl)	8082A Cong	µg/kg	NG	0.28
Total PCBs (Sum of PCB Congeners)	8082A Cong	µg/kg	21.6	---

Table 6. Dioxins and Furans in Sediments - Analytical Method, Target Detection Limits, and Related Guidance Concentrations

Dioxins and Furans	Method	Units	SQAG TELs	EPA Region IV HazMat Cleanup Screening Value	ALS PQLs
2378-TCDD	EPA 1613B	ng/kg	NG	---	0.5
12378-PeCDD	EPA 1613B	ng/kg	NG	---	2.5
123478-HxCDD	EPA 1613B	ng/kg	NG	---	2.5
123678-HxCDD	EPA 1613B	ng/kg	NG	---	2.5
123789-HxCDD	EPA 1613B	ng/kg	NG	---	2.5
1234678-HpCDD	EPA 1613B	ng/kg	NG	---	2.5
OCDD	EPA 1613B	ng/kg	NG	---	5
2378-TCDF	EPA 1613B	ng/kg	NG	---	0.5
12378-PeCDF	EPA 1613B	ng/kg	NG	---	2.5
23478-PeCDF	EPA 1613B	ng/kg	NG	---	2.5
123478-HxCDF	EPA 1613B	ng/kg	NG	---	2.5
123678-HxCDF	EPA 1613B	ng/kg	NG	---	2.5
123789-HxCDF	EPA 1613B	ng/kg	NG	---	2.5
234678-HxCDF	EPA 1613B	ng/kg	NG	---	2.5
1234678-HpCDF	EPA 1613B	ng/kg	NG	---	2.5
1234789-HpCDF	EPA 1613B	ng/kg	NG	---	2.5
OCDF	EPA 1613B	ng/kg	NG	---	5
Total TCDD	EPA 1613B	ng/kg	NG	---	0.5
Total PeCDD	EPA 1613B	ng/kg	NG	---	2.5
Total HxCDD	EPA 1613B	ng/kg	NG	---	2.5
Total HpCDD	EPA 1613B	ng/kg	NG	---	2.5
Total TCDF	EPA 1613B	ng/kg	NG	---	0.5
Total PeCDF	EPA 1613B	ng/kg	NG	---	2.5
Total HxCDF	EPA 1613B	ng/kg	NG	---	2.5
Total HpCDF	EPA 1613B	ng/kg	NG	---	2.5
Total TCDD Equivalents	EPA 1613B	ng/kg	NG	2.5	---

Note (sediments):

ALS Environmental Laboratories
MDL - (ALS's) Laboratory Method Detection Limits
NG - No SQAG Guidance
PQL - Practical Quantitation Limit
SQAG - Sediment Quality Assessment Guidelines
TEL - Threshold Effects Level Equivalents
Based on PCB Congener analysis

Table 7. Metals, PAHs, Pesticides, Herbicides in Elutriates & TCLP* - Analytical Method, Target Detection Limits, and Related Guidance Concentrations

Analytes	Method	Units	Class III Fresh Waters	Class III Marine Waters	ALS MDLs
Metals					
Aluminum	EPA 6020B	mg/L	NG	≤ 1.5	0.00397
Antimony	EPA 6020A ***	µg/L	≤ 4,300	≤ 4,300	0.0784
Arsenic	200.8/RP	µg/L	≤ 50	≤ 50	0.06
Barium	EPA 6020B	µg/L	NG	NG	0.110
Beryllium	200.8/RP	µg/L	≤ 0.13 ann avg	≤ 0.13 ann avg	0.007
Boron	EPA 6020B	µg/L	NG	NG	2.261
Cadmium	200.8/RP	µg/L	hardness calc	≤ 8.8	0.003
Calcium	EPA 6010	mg/L	NG	NG	0.0083
Chromium	200.8/RP	µg/L	hardness calc	NG	0.02
Cobalt	EPA 6020B	µg/L	NG	NG	0.073
Copper	200.8/RP	µg/L	hardness calc	≤ 3.7	0.02
Iron	EPA 6020B	mg/L	≤ 1.0	≤ 0.3	0.00246
Lead	200.8/RP	µg/L	hardness calc	≤ 8.5	0.0493
Magnesium	EPA 6010	mg/L	NG	NG	0.0474
Manganese	EPA 6020B	mg/L	NG	NG	0.000429
Mercury	EPA 1631E	µg/L	≤ 0.012	≤ 0.025	0.00006
Molybdenum	EPA 6020B	µg/L	NG	NG	0.136
Nickel	200.8/RP	µg/L	hardness calc	≤ 0.83	0.03
Potassium	EPA 6010	µg/L	NG	NG	41.3
Selenium	EPA 6020B	µg/L	≤ 5.0	≤ 71	0.176
Silver	200.8/RP	µg/L	≤ 0.07	**	0.004
Sodium	EPA 6010	µg/L	NG	NG	66.48
Strontium	EPA 6020B	µg/L	NG	NG	0.0306
Thallium	200.8/RP	µg/L	≤ 6.3	≤ 6.3	0.008
Tin	EPA 6020B	µg/L	NG	NG	0.387
Titanium	EPA 6020B	µg/L	NG	NG	0.535
Uranium	EPA 6020B	µg/L	NG	NG	0.082
Vanadium	EPA 6020B	µg/L	NG	NG	0.146
Zinc	200.8/RP	µg/L	hardness calc	≤ 86	0.2
Hardness	Calculation	mg/L	Calculation	---	0.5

Table 7 (cont). Metals, PAHs, Pesticides, Herbicides in Elutriates & TCLP* - Analytical Method, Target Detection Limits, and Related Guidance Concentrations

PAHs	Method	Units	Class III Fresh Waters	Class III Salt Waters	ALS MDLs
1-Methylnaphthalene	8270DSIM	µg/L	NG	NG	0.044
2-Methylnaphthalene	8270DSIM	µg/L	NG	NG	0.044
Acenaphthene	8270DSIM	µg/L	≤ 2,700	≤ 2,700	0.041
Acenaphthylene	8270DSIM	µg/L	≤ 0.031 ann avg	≤ 0.031 ann avg	0.025
Anthracene	8270DSIM	µg/L	≤ 110,000	≤ 110,000	0.038
Benz(a)anthracene	8270DSIM	µg/L	≤ 0.031 ann avg	≤ 0.031 ann avg	0.035
Benzo(a)pyrene	8270DSIM	µg/L	≤ 0.031 ann avg	≤ 0.031 ann avg	0.031
Benzo(b)fluoranthene	8270DSIM	µg/L	≤ 0.031 ann avg	≤ 0.031 ann avg	0.025
Benzo(g h i)perylene	8270DSIM	µg/L	≤ 0.031 ann avg	≤ 0.031 ann avg	0.039
Benzo(k)fluoranthene	8270DSIM	µg/L	≤ 0.031 ann avg	≤ 0.031 ann avg	0.035
Chrysene	8270DSIM	µg/L	≤ 0.031 ann avg	≤ 0.031 ann avg	0.024
Dibenzo(a,h)anthracene	8270DSIM	µg/L	≤ 0.031 ann avg	≤ 0.031 ann avg	0.036
Fluoranthene	8270DSIM	µg/L	≤ 370	≤ 370	0.039
Fluorene	8270DSIM	µg/L	≤ 14,000	≤ 14,000	0.047
Indeno(1,2,3-cd)pyrene	8270DSIM	µg/L	≤ 0.031 ann avg	≤ 0.031 ann avg	0.040
Naphthalene	8270DSIM	µg/L	NG	NG	0.039
Pentachlorophenol (PCP)	8270DSIM	µg/L	NG	NG	0.039
Phenanthrene	8270DSIM	µg/L	≤ 0.031 ann avg	≤ 0.031 ann avg	0.035
Pyrene	8270DSIM	µg/L	≤ 11,000	≤ 11,000	0.031
Bis(2-ethylhexyl)phthalate	EPA 8270SIM	µg/L	≤ 3	NG	0.341

Pesticides	Method	Units	Class III Fresh Waters	Class III Salt Waters	ALS MDLs
4 4`-DDD	8081A/B	µg/L	NG	NG	0.00057
4 4`-DDE	8081A/B	µg/L	NG	NG	0.00046
4 4`-DDT	8081A/B	µg/L	0.001	0.001	0.00075
DDT	8081A/B	µg/L	≤ 0.001 max	≤ 0.001 max	---
Aldrin	8081A/B	µg/L	≤ 3.0	≤ 1.3	0.00077
Chlordane (tech.)	8081A/B	µg/L	0.0043 max	0.004 max	0.0038
Dieldrin	8081A/B	µg/L	0.0019 max	0.0019 max	0.00044
Endosulfan I	8081A/B	µg/L	≤ 0.056	≤ 0.0087	0.00036
Endosulfan II	8081A/B	µg/L	NG	NG	0.00034
Endosulfan sulfate	8081A/B	µg/L	NG	NG	0.00047
Endrin	8081A/B	µg/L	≤ 0.0023	≤ 0.0023	0.00042
Endrin aldehyde	8081A/B	µg/L	NG	NG	0.00047
Endrin ketone	8081A/B	µg/L	NG	NG	0.00070

Table 7 (cont). Metals, PAHs, Pesticides, Herbicides in Elutriates & TCLP* - Analytical Method, Target Detection Limits, and Related Guidance Concentrations

Pesticides	Method	Units	Class III Fresh Waters	Class III Salt Waters	ALS MDLs
Heptachlor	8081A/B	µg/L	≤ 0.0038	≤ 0.0036	0.00061
Heptachlor Epoxide	8081A/B	µg/L	NG	NG	0.00029
Methoxychlor	8081A/B	µg/L	≤ 0.03	≤ 0.03	0.00085
Toxaphene	8081A/B	µg/L	≤ 0.0002	≤ 0.0002	**0.049**
alpha-BHC	8081A/B	µg/L	NG	NG	0.00025
alpha-Chlordane	8081A/B	µg/L	NG	NG	0.00036
beta-BHC	8081A/B	µg/L	≤ 0.046 ann avg	≤ 0.046 ann avg	0.00017
delta-BHC	8081A/B	µg/L	NG	NG	0.00027
gamma-BHC (Lindane)	8081A/B	µg/L	≤ 0.95	≤ 0.16	0.0006
gamma-Chlordane	8081A/B	µg/L	NG	NG	0.00054

Herbicides	Method	Units	EPA Class III Fresh Waters	Class III Salt Waters	ALS MDLs
2,4,5-T	EPA 8151A	µg/L	NG	NG	0.12
2,4,5-TP (Silvex)	EPA 8151A	µg/L	NG	NG	0.12
2,4-D	EPA 8151A	µg/L	NG	NG	0.18
Dicamba	EPA 8151A	µg/L	NG	NG	0.14
Dinoseb	EPA 8151A	µg/L	NG	NG	0.26
Pentachlorophenol	EPA 8151A	µg/L	≤ 30 max; e(1.005[pH]-5.29)	≤ 7.9	0.23

Table 8. PCB Congeners Elutriates - Analytical Method, Target Detection Limits, and Related Guidance Concentrations

PCB Congeners	Method	Units	Class III Fresh Waters	Class III Salt Waters	ALS MDLs
PCB 1 (2-Chlorobiphenyl)	8082A Cong	ng/L	NG	NG	39
PCB 101 (2,2',4,5,5'-Pentachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.9
PCB 105 (2,3,3',4,4'-Pentachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.2
PCB 110 (2,3,3',4',6-Pentachlorobiphenyl)	8082A Cong	ng/L	NG	NG	2.4
PCB 114 (2,3,4,4',5-Pentachlorobiphenyl)	8082A Cong	ng/L	NG	NG	0.88
PCB 118 (2,3',4,4',5-Pentachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.1
PCB 119 (2,3',4,4',6-Pentachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.5
PCB 123 (2',3,4,4',5-Pentachlorobiphenyl)	8082A Cong	ng/L	NG	NG	2.1
PCB 126 (3,3',4,4',5-Pentachlorobiphenyl)	8082A Cong	ng/L	NG	NG	2.6
PCB 128 (2,2',3,3',4,4'-Hexachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.1
PCB 132 (2,2',3,3',4,6'-Hexachlorobiphenyl)	8082A Cong	ng/L	NG	NG	3
PCB 138 (2,2',3,4,4',5'-Hexachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.6
PCB 141 (2,2',3,4,5,5'-Hexachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.7
PCB 149 (2,2',3,4',5',6-Hexachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.4
PCB 151 (2,2',3,5,5',6-Hexachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.2
PCB 153 (2,2',4,4',5,5'-Hexachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.2
PCB 156 (2,3,3',4,4',5-Hexachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.9
PCB 157 (2,3,3',4,4',5'-Hexachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.9
PCB 158 (2,3,3',4,4',6-Hexachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.5
PCB 166 (2,3,4,4',5,6-Hexachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.7
PCB 167 (2,3',4,4',5,5'-Hexachlorobiphenyl)	8082A Cong	ng/L	NG	NG	2.8
PCB 168 (2,3',4,4',5',6-Hexachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.4
PCB 169 (3,3',4,4',5,5'-Hexachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.8
PCB 170 (2,2',3,3',4,4',5-Heptachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.6
PCB 174 (2,2',3,3',4,5,6'-Heptachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.5
PCB 177 (2,2',3,3',4',5,6-Heptachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.8
PCB 18 (2,2',5-Trichlorobiphenyl)	8082A Cong	ng/L	NG	NG	2
PCB 180 (2,2',3,4,4',5,5'-Heptachlorobiphenyl)	8082A Cong	ng/L	NG	NG	2.9
PCB 183 (2,2',3,4,4',5',6-Heptachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.5
PCB 184 (2,2',3,4,4',6,6'-Heptachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.3
PCB 187 (2,2',3,4',5,5',6-Heptachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.4
PCB 189 (2,3,3',4,4',5,5'-Heptachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.8
PCB 194 (2,2',3,3',4,4',5,5'-Octachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.2
PCB 195 (2,2',3,3',4,4',5,6-Octachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.8
PCB 201 (2,2',3,3',4,5',6,6'-Octachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.8
PCB 203 (2,2',3,4,4',5,5',6-Octachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.8
PCB 206 (2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl)	8082A Cong	ng/L	NG	NG	2.3
PCB 209 (Decachlorobiphenyl)	8082A Cong	ng/L	NG	NG	2.8
PCB 28 (2,4,4'-Trichlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.6

Table 8 (cont). PCB Congeners in Elutriates - Analytical Method, Target Detection Limits, and Related Guidance Concentrations

PCB Congeners	Method	Units	Class III Fresh Waters	Class III Salt Waters	ALS MDLs
PCB 31 (2,4',5-Trichlorobiphenyl)	8082A Cong	ng/L	NG	NG	0.96
PCB 33 (2',3,4-Trichlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.7
PCB 37 (3,4,4'-Trichlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.9
PCB 44 (2,2',3,5'-Tetrachlorobiphenyl)	8082A Cong	ng/L	NG	NG	3.3
PCB 49 (2,2',4,5'-Tetrachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.4
PCB 5 (2,3-Dichlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.8
PCB 52 (2,2',5,5'-Tetrachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.4
PCB 56 (2,3,3',4'-Tetrachlorobiphenyl)	8082A Cong	ng/L	NG	NG	2.7
PCB 60 (2,3,4,4'-Tetrachlorobiphenyl)	8082A Cong	ng/L	NG	NG	0.96
PCB 66 (2,3',4,4'-Tetrachlorobiphenyl)	8082A Cong	ng/L	NG	NG	4.2
PCB 70 (2,3',4',5-Tetrachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.5
PCB 74 (2,4,4',5-Tetrachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.6
PCB 77 (3,3',4,4'-Tetrachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.9
PCB 8 (2,4'-Dichlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.6
PCB 81 (3,4,4',5-Tetrachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.8
PCB 87 (2,2',3,4,5'-Pentachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.3
PCB 90 (2,2',3,4',5-Pentachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.3
PCB 95 (2,2',3,5',6-Pentachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.2
PCB 97 (2,2',3',4,5-Pentachlorobiphenyl)	8082A Cong	ng/L	NG	NG	2.3
PCB 99 (2,2',4,4',5-Pentachlorobiphenyl)	8082A Cong	ng/L	NG	NG	1.8
Total PCBs (Sum of PCB Congeners)	EPA 8082A	ng/L	< 0.045 annual avg.;14 max	< 0.045 annual avg.; 30 max	---

Table 9. Dioxins in Elutriates - Analytical Method, Target Detection Limits, and Related Guidance Concentrations

Dioxins	Method	Units	EPA Region Freshwater	EPA Region Saltwater	ALS MDLs
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	EPA 1613B	µg/L	3.10E-09	NG	5.0E-06
Dioxins (TEQ)	EPA 1613B	µg/L	0.003	NG	---

ALS - ALS Environmental Laboratories

MDL - (ALS's) Laboratory Method Detection Limits

NG - No Class III Guidance

EPA 200.8/RP - EPA 200.8/Reductive Precipitation; Prep Method 1640

* TCLP: Metals, pesticides, PAHs only
** See minimum criteria in paragraph 62-302.500(1)(c), F.A.C; (Silver in concentrations above 2.3 micrograms/liter in predominantly marine waters).
*** MET-DIG (CLP)

(1) Minimum Criteria. All surface waters of the State shall at all places and at all times be free from:2) This criterion is protective of human health, not of aquatic life.
(d) Lindane (g-benzene hexachloride) in concentrations above 0.16 micrograms/liter in predominantly marine waters or in concentrations above 0.95 micrograms/liter in predominantly fresh waters.

A8. Special Training and Certifications

ALS Jacksonville, Florida, ALS Kelso, Washington, and ALS Houston, Texas are accredited by the Florida Department of Health Environmental Accreditation Program. The three labs are NELAP recognized (FL E82502, E87412 and E87611, respectively). ALS's most recent certifications are available upon request.

ALS is certified for all of the proposed test measurements and can achieve **most requested detection limits**. Tables 4 through 9 present the proposed analytical methods and achievable reporting limits for this project. ALS's initial demonstration of capability (IDOC) documentation and supporting laboratory records are available for review and can be provided upon request.

The Amdrill and Water & Air field team has been trained in the collection and processing of environmental samples including sediments following FDEP SOPs (Florida Department of Environmental Protection Standard Operating Procedures for Field Activities). Water & Air personnel have also worked on many projects involving the collection and processing sediment samples for low-level metals and organics analyses. These projects have been performed with oversight of the Florida Department of Environmental Protection, USEPA Regions II and IV, and the US Army Corps of Engineers.

A9. Documentation and Records

Key individuals listed on the *Distribution List* will receive updated revisions of this QAPP document when a substantive change is warranted. A substantive change will be based on a decision made by the COE (COR) and the Water & Air Project Manager. At the completion of all analyses, data package reports will be compiled into a Final Report or submittal to the COE. The Final Report will include, but is not limited to, the following items:

- Data report tables summarizing analytical results for each sample (Excel);
- Summary of the sediment evaluation;
- Laboratory data report which will include the following:
    - Laboratory sample ID and associated field ID
    - Analytical test method
    - Parameter/analyte name
    - Analytical result
    - Applicable qualifiers;
- Result comments;
- Chain-of-custody and field documentation;
- Photos taken during the sampling event;
- Two final hard copies of the report and 3 CDs;
- GIS map or other representation of sampling site locations;
- Results of QC sample analyses will be provided in the laboratory data report summary and additionally described in laboratory QC narratives and/or QC sample checklists;
- Analytical methods, detection limits and observations;

- Narrative of problems/difficulties encountered during field sampling or laboratory testing; deviations from this QAPP or prescribed laboratory protocols; and corrective actions taken.

The Final Report for this study shall be provided to the COE. All "hard-copy" reports are stored in the COE Jacksonville, FL office. Original data records and QA information for this project will be maintained and archived by Water & Air for at least 5 years after project completion. These materials will be well organized and available in a timely fashion to the COE. Raw data will be archived at ALS, and laboratory reports will be submitted to the COE and kept on file at Water & Air's Gainesville facility. ALS's turn-around time is expected to be 15-business days from the sample receipt date.

B. DATA GENERATION AND ACQUISITION

B1. Sampling Process Design

Water & Air and Amdrill will collect 31 vibracore samples from 18 locations along Big Fishweir Creek to project depths listed in the scope of work. At 13 locations, two separate vibracores will be collected within five feet of each other (i.e. core names ending in GG and GE). Samples will be collected from Amdrill's vibracore-equipped vessel. Water & Air proposes using DGPS, along with verified tide staff gauges, to determine sampling locations and appropriate vertical datum for sampling depth (referenced to NAVD88). Proposed sample IDs and zone-specific project depths are listed on Table 1.

All sample collection, processing, handling, transport, and documentation will be performed in accordance with current Florida Department of Environmental Protection (FDEP) Standard Operating Procedures for Field Activities (SOPs). Chemistry cores will be carefully collected in a manner that prevents sample contamination. New vibracore sleeves will be used at each location, and all equipment will be decontaminated between stations with Liquinox solution, deionized water, and pesticide grade isopropanol. Other considerations the field team will be aware of are exhaust fumes from vessels, generators, vibracore equipment, cigarettes, dirty/torn nitrile gloves, etc. Sediment cores for chemistry will be stored on wet-ice within 15-minutes of collection. Sediment samples and their chain-of-custodies will be delivered to ALS by a field team member after cores are composited and elutriates generated at Water & Air's Gainesville facility.

B2. Sampling Methods

The vibracore drilling apparatus will use a continuous 10-foot by 3 or 3.5-inch diameter steel core barrel with a steel cutting head, clear plastic liners and core catcher. Sampling will be continuous unless refusal is encountered. Refusal will be defined as no additional penetration of the vibracore with two minutes of additional effort applied to penetrate through the resistant layer at maximum vibration. If refusal is not due to rock, two attempts will be made to reach a depth of eighty percent penetration. The Corps technical point of contact (to be determined) will be contacted immediately while still on site if an 85% maximum recovery is not attainable. Site water will be collected from a pre-designated location within Big Fishweir Creek.

Upon collection, geotechnical sample cores (to be delivered to the COE) will be capped, labeled with the sample ID, the top and bottoms of the cores labeled, and placed in labeled wooden boxes.

Once enough cores for chemistry have been collected to provide sufficient sample volume for testing all project parameters, sediments will be extruded from the coring tubes into a precleaned stainless steel mixing vat, composited (per zone), and homogenized in the field by Water & Air team members. Alternatively, sediments for chemistry will be returned to Water & Air's facility and composited, homogenized, and containerized there.

The stainless-steel equipment which will contact sediments will be decontaminated using, sequentially, Liquinox detergent, tap water rinse, pesticide-grade isopropanol rinse, and de-ionized water rinse. If not immediately used for sampling, decontaminated equipment will be air dried and wrapped in food-grade aluminum foil. Sampling equipment will be decontaminated before it is taken to the field.

The vibracore's steel tubing will be rinsed between sampling locations and a new clear plastic liner will be used for each core.

The field team leader will be responsible for ensuring that all field activities are performed in accordance to FDEP SOPs. Every member of the field team is expected to notify the field team leader if there is reason to believe that a situation or condition exists that requires a corrective action. The field team leader is responsible to assess and document the situation or condition and initiate any appropriate corrective action.

Immediately after homogenization, the sediment chemistry samples will be placed in analytically clean glass sample containers provided by the analytical laboratory. Sample container sizes and count are (per sample):

<u>Sediment Chemistry</u>

- One-16oz jar with Teflon liner for PAHs, Metals, and Chlorinated Pesticides;
- Two-4oz with Teflon liner for dioxins/furans and herbs;
- One-8oz with Teflon liner for PCB Congeners.

<u>Elutriate/Sitewater Chemistry</u>

- One-500mL plastic bottle for metals (TM grade HNO_3 preserved);
- Two-125mL glass amber bottle with Teflon liner for PCB congeners;
- Ten-1000mL glass amber bottle with Teflon liner for PAHs, pesticides, dioxins/furans and herbs.

<u>TCLP Chemistry</u>

- One-16oz jar with Teflon liner for TCLP parameters.

Samples will be preserved on wet ice to a temperature of less than 6 ^{o}C. Holding times for these parameters are:

- PAHs – 14 days
- Metals (other than mercury) – 180 days
- PCBs – 1 year
- Chlorinated Pesticides – 14 days
- Organophosphorus Pesticides – 14 days
- Dioxins and Furans – 30 days
- PCB Congeners – 1 year
- Percent Solids – 7 days

The Field team leader will ensure that sampling activities and information is documented on project-specific field data sheets (see Figure 7). These forms include collection method, field team member IDs, date, time, description of sediments, location, sample identifiers, and number and lengths of cores collected at each location.

Figure 7. Example Field Sheet

Big Fishweir Creek
Sediment Sampling Field Sheet
W&A Project #19-5801-01

Water & Air Research, Inc.
6821 S.W. Archer Road
Gainesville, Florida 32608
Phone: (352) 372-1500

Sample Station: _____
Sampled By: _____
Date: _____ Time: _____

Sampling Location Description: _____

_____

Site Observations, Comments, In-Situ, and Weather:

Station Lat/Long (WGS 84, WAAS Corrected): N _____ W _____

Air Temp (°F): _____ Wind: _____ Prevailing Weather: _____

Water Temp (°C): _____ pH _____ Sp. Cond. (µmhos/cm) _____ D.O. (mg/L) _____

Apparent Water Flow Direction, if any: _____

Observations/Comments: _____

_____

Sediment Collection Water Depth (ft): _____ Sampler: SS Coring Tube / Other: _____

Core No.	Core Length	Sediment Description

Preservation: chilled on wet ice

Containers:
___Two 16oz glass for PAHs, Metals, Chlorinated Pesticides, TCLP
___Two 4oz glass for Dioxins & Furans and Herbicides;
___One 8oz glass for PCB Congeners
___Two 1-gallon glass wide-mouth (only for samples requiring elutriates)

Comments/Notes: _____

_____

_____

Seminole Sediment Sampling 2017

B3. Sample Handling and Custody

Sediment samples will be placed in laboratory-supplied and appropriately labeled sample containers immediately after being subdivided and homogenized. These containers will be stored in ice chests with wet ice to chill them to less than 6ºC.

Sample Handling Post Collection

Field personnel are trained to ensure that the sample labels do not become separated from sample packaging due to free water from leaking ice bags or condensation. Each sample container will be wrapped with a layer of bubble wrap or other protective material to prevent loss due to breakage. All samples require refrigeration during transport and are stored in portable ice chests on wet ice. When shipping is imminent, water will be drained from the ice chests and the amount of solid ice will be restored to ensure that the samples remain appropriately chilled for the duration of the transport to the laboratory.

Chain-of-Custody Records

Chain-of-custody (COC) records are the administrative records associated with the physical possession and/or storage history of each individual sample from the purchase and preparation of each sample container and sampling apparatus to the final analytical result and sample disposal. Sample custody will be documented throughout the life of the sample. Samples will not be left unattended unless being properly secured (e.g., being placed in a locked vehicle).

The laboratory and field sampling team will have a formal documented system designed to provide sufficient information to reconstruct the history of each sample, including preparation of sampling containers, sample collection and delivery, receipt, distribution, analysis, storage or disposal, and data reporting within the laboratory. Laboratory documentation will provide a record of custody for each sample throughout processing, analysis, and disposal.

Samples are considered to be in a person's custody if:

- The samples are in a person's actual possession;
- The samples are in a person's view after being in that person's possession;
- The samples were in a person's possession and then were locked or sealed up to prevent tampering; or,
- The samples are in a secure area.

The COC record will also be used as a record of the samples collected and analyses requested (Figure 8). Multiple coolers may be sent in one delivery to the laboratory.

Figure 8. Example Laboratory Chain-of-Custody

ALS

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

001, 002, 003

SR#

T058455

Project Name: Big Fishweir Creek

Project Number: Report To: Bryan Carter

Company / Address: Water & Air Research, 6321 S.W. Archer Road, Gainesville FL 32608

Phone: 352-372-1500 | FAX #:

Sampler Signature: | Sampler Printed Name:

CLIENT SAMPLE ID	LAB ID	SAMPLING Date	Time	Matrix	NUMBER OF CONTAINERS	7D 8081A / PEST_OC	7D 8151A / HERB	7D 8270D SIM / SVOC	7D 8270D SIM / SVOC SIM	14D 8081A / PEST_OC	14D 8082A / PCB	14D 8151A / HERB	14D 8270D / SVOC	14D 8270D SIM / SVOC SIM	28D 7471A / Hg	180D 6020 / Metals Report	180D 6020B / Metals T	365D 1613B / Dioxins Furans	Remarks
1.				Liquid	13	X	X	X	X		X					X		X	
2.				Liquid	13	X	X	X	X		X					X		X	
3.				Liquid	13	X	X	X	X		X					X		X	
4.				Liquid	13	X	X	X	X		X					X		X	
5.				Liquid	13	X	X	X	X		X					X		X	
6.				Solid	4					X	X	X	X	X	X		X	X	
7.				Solid	4					X	X	X	X	X	X		X	X	
8.				Solid	4					X	X	X	X	X	X		X	X	
9.				Solid	4					X	X	X	X	X	X		X	X	
10.				Solid	4					X	X	X	X	X	X		X	X	

Special Instructions/Comments:

Turnaround Requirements

RUSH (SURCHARGES APPLY)

___ Standard

Requested Report Date:

Report Requirements

___ I. Results Only

___ II. Results + QC Summaries (LCS, DUP, MS/MSD as applied)

___ III. Results + QC and Calibration Summaries

___ IV. Data Validation Report with Raw Data

Fax? ___ Yes ___ No

Invoice Information

P.O.# _____

Bill To: _____

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature	Signature	Signature	Signature	Signature	Signature
Printed Name	Printed Name	Printed Name	Printed Name	Printed Name	Printed Name
Firm	Firm	Firm	Firm	Firm	Firm
Date/Time	Date/Time			Date/Time	Date/Time

CUSTODY SEAL

Date _____

Signature _____

VWR

Page 1 of 2

Laboratory Sample Receipt

Immediately upon receipt by ALS's custody department, the condition of samples will be assessed and documented. The contents of the shipping container will be checked against the information on the COC form for anomalies. If any discrepancies are noted, or if ALS acceptance criteria or project-specific criteria are not met, the ALS Project Manager will contact the Water & Air Project Manager. The discrepancy, its resolution, and the identity of the person contacted will be documented in the project file. The following conditions may cause sample data to be unusable and must be communicated to the Water & Air Project Manager and/or COE:

- The integrity of the samples is compromised (*e.g.,* leaks, cracks, grossly contaminated container exteriors or ice chest interiors, obvious odors, etc.);
- The identity of the container cannot be verified;
- Incomplete sample custody forms (*e.g.,* the sample collector is not documented, or the custody forms are not signed and dated by the person who relinquished the samples);
- The sample collector did not relinquish the samples;
- Required sample temperatures were not maintained during transport;
- The samples are in the incorrect containers.;
- The samples are not submitted within the recommended hold time and there is not sufficient time for analysis before the hold time will expire;
- There is insufficient sample volume to effectively complete the required tests.

Samples that meet any of the exceptions mentioned above will have the exception documented and depending upon the circumstances, will either be qualified accordingly or rejected entirely.

Thermal Preservation Check

The temperature of the samples will be verified upon receipt. The thermometer used for this is an infrared thermometer, so the sample will not have to be physically touched by the thermometer and the sample's integrity will not be compromised.

Any thermal preservation violation will be qualified. Since thermal preservation violations could seriously affect the integrity of the sample or the validity of the data, the COE (COR) will be consulted before proceeding with the analysis. The results of the consultation will be documented by the Water & Air Project Manager to provide the documentation necessary to determine acceptance/rejection of the sample.

Sample Holding Times

The holding time begins after the sample is bottled and labeled in the field. Sample analysis must begin within the recommended holding times.

ALS sample receipt personnel will verify that all samples are within hold time before signing the COC to receive custody of the samples. Any sample that does not meet holding time requirements will be documented accordingly on the ALS login checklist. The COE (COR) will be notified by the Water & Air Project Manager of the situation. Analytical holding times can be referenced in Section B2.

Sample Login into ALS's Laboratory Information Management System

Once the samples are accepted into the laboratory, the sample receipt personnel will enter the project and sample information into the Laboratory Information Management System (LIMS) and assign unique identifiers to each project and sample. Once the samples are entered into the LIMS and properly labeled, they are dispersed throughout the laboratory for analysis.

Samples that require thermal preservation are promptly placed in refrigerators once the login process is completed.

Sample Disposition

Samples will be archived at ALS for up to one month beyond the completion of the analysis.

B4. Analytical Methods

The contaminants of interest for these sediment samples include: metals, polycyclic aromatic hydrocarbons, phthalates, polychlorinated biphenyls (congeners), chlorinated pesticides, and dioxins and furans. The contaminants of interest for the elutriates are the same as the sediment except hardness will be analyzed too. A complete listing of the analytes, the analytical method numbers, target method detection limits, and relevant sediment and elutriate guidance concentrations are presented in Tables 4 through 9.

All analytical methods proposed for this project are either EPA methods or from Standard Methods. The ALS quality assurance officer will notify the ALS Project Manager and Water & Air Project Manager if any corrective action is required. The Water & Air Project Manager will contact the COE (COR) if further guidance is necessary. ALS's turn-around time is 15-business days from the sample receipt date.

B5. Quality Control

Field Quality Control

Generally, field quality control measurements are used to objectively determine the need for immediate corrective actions (i.e., if out of control conditions exist) and to provide a measure of data quality. Field quality control samples are collected and analyzed to identify errors that have occurred primarily with the intent of preventing their reoccurrence.

For this sampling effort, in-situ field measurements will be made using a YSI Pro multimeter which requires instrument calibration. Field measurements and recorded observations that will be made for this investigation include:

- latitude and longitude
- water depth
- Water column in-situ measurements (temperature, pH, specific conductance, and dissolved oxygen)
- sediment core length
- subjective observations of weather conditions and flow direction of water currents
- subjective description of sediments

Field duplicate sediment samples will not be collected during this project, however laboratory MS/MDS will be run.

Field Data Reduction

Raw field data is initially reviewed and assessed at the site of data generation. All pertinent data produced is recorded on field sheets. The Water & Air field team leader will review the reasonableness of the data collected at each location. If reasonableness of data is in question, the field team leader can take corrective actions. Data that the field team leader will consider includes:

- inconsistencies between the predetermined latitude and longitude and the coordinates measured at the time of sampling;
- inconsistencies in the lengths of cores obtained from a single location; and
- inconsistent water depth measurements made at proximate sampling locations.

Corrective actions may include repeating depth measurements at more than one location, having a project team member in the office verify the accuracy predetermined lat./long. with Geo-referenced software or for transcription errors; and ensuring that no sampling equipment malfunctions have occurred, e.g., core catcher on the vibracore not functioning properly.

Collected data is written in indelible ink; and transcribed data are, at a minimum, double-checked to ensure accuracy in reporting.

Field Data Validation

Before leaving each station where field observations or measurements have been recorded, the Water & Air Field Team Leader reviews data documentation for completeness, legibility, and reasonableness. Calculations made and used at the station are reviewed for reasonableness. At the end of each sampling day or before the beginning of the next sampling day, the field team leader checks chain-of-custody forms to confirm that they reflect correct information and requests for necessary analyses.

Laboratory Quality Control

ALS Environmental has been designed and constructed to provide safeguards against cross-contamination of samples and is arranged according to work function, which enhances the efficiency of analytical operations. The ventilation system has been specially designed to meet the needs of the analyses performed in each work space. Also, ALS minimizes contamination sources by employing janitorial and maintenance staff to ensure that good housekeeping and facilities maintenance are performed. In addition, the segregated laboratory areas are designed for safe and efficient handling of a variety of sample types.

In order to assure the validity of the laboratory's data, the quality of the analytical process is continuously monitored. Proper documentation will establish that protocols have been followed and sample identification and integrity are assured. In addition to the instrument calibrations, the analytical process is also monitored with the routine use of quality control measurements (e.g. Blanks, Laboratory Control Samples (LCS) or Standard Reference Materials (SRM), Matrix Spikes (MS), duplicates (DUP), and surrogates. In

addition to the routine process quality control samples, Proficiency Testing (PT) Samples are performed. These practices in addition to multiple levels of data review help to ensure the quality of the testing results.

Corrective Action

A prompt and thorough correction of non-conformance conditions that can affect data quality minimizes the possibility of questionable data or documentation. Immediate corrective actions include correction of documentation deficiencies or errors, repair of inaccurate instrumentation, or correction of inadequate procedures. Internal laboratory corrective actions will be implemented if analytical results exceed data quality objectives. Where corrective action is not feasible, appropriate data flags and qualifiers will be added to the data reported.

Quality problems and non-conformance conditions, including any deviations from this QAPP will be documented to provide a complete record of QA activities.

B6. Instrument/Equipment Testing, Inspection, and Maintenance

Field Equipment Maintenance

Maintenance begins with adequately trained personnel and the practice of good housekeeping. All equipment is generally cleaned after use (e.g., sediments wiped/brushed off, mixing vats thoroughly washed, sensors stored dry or in appropriate solutions, and power turned off). Employees trained to use specific equipment are also trained in the maintenance of that equipment. Maintenance on each instrument is performed in accordance with manufacture specifications.

GPS receivers, cameras and in-situ multiparameter meters are the only electronic instruments that will be used on this project. These will be maintained in accordance with manufacturers' instructions, and extra batteries and storage media will be available if needed.

The following describes preventive and routine maintenance of the specific sampling equipment that will be used by Water & Air staff to collect and process sediment samples:

- Before each field trip, equipment is checked to ensure proper functioning and calibrated.
- After each use, equipment and instruments are verified, cleaned, and properly stored.
- Equipment which malfunctions during use are fixed or adjusted before reuse or are replaced with redundant equipment.

Laboratory Maintenance

Preventive maintenance is a crucial element of the QA program. Equipment and instruments at ALS are regularly maintained by qualified laboratory staff or under commercial service contracts. All instruments are operated and maintained according to the instrument operating manuals. All routine and special maintenance activities pertaining to the instruments are recorded in instrument maintenance logbooks. The

maintenance logbooks used at ALS contain extensive information about the instruments used at the laboratory, including:

- The equipment's serial number;
- Date the equipment was received;
- Date the equipment was placed into service;
- Condition of equipment when received (new, used, reconditioned, etc.); and
- Prior history of damage, malfunction, modification or repair (if known).

Preventive maintenance procedures, frequencies, etc. are available for each instrument used at ALS. They may be found in ALS's various SOPs for routine methods performed on an instrument and may also be found in the operating or maintenance manuals provided with the equipment at the time of purchase.

B7. Instrument Calibration and Frequency

All calibrations at ALS are performed according to the analytical method specifications. ALS's individual analytical SOPs explain in detail how the calibrations are to be performed (available upon request). Section 21 of ALS's QAM provides an in-depth description of instrument calibration requirements.

The YSI Pro multimeter will be calibrated every day before sampling begins. An end of day verification will be performed daily.

B8. Inspection/Acceptance for Supplies and Consumables

Field Supplies

New field equipment is thoroughly inspected and tested by Amdrill personnel before use on projects.

Laboratory Supplies and Consumables

The quality level of reagents and materials (grade, traceability, etc.) required is specified in ALS's analytical SOPs (available upon request). Department supervisors ensure that the proper materials are purchased. Inspection and verification of material ordered is performed at the time of receipt by receiving personnel. The receiving staff labels the material with the date received. Expiration dates are assigned as appropriate for the material. Storage conditions and expiration dates are specified in the ALS's analytical SOP. CE-QA012, Quality of Reagents and Standards and ADM-RLT, Reagent and Standards Login and Tracking provides default expiration requirements. Supplies and services that are critical in maintaining the quality of laboratory testing are procured from pre-approved vendors. The policy and procedure for purchasing and procurement are described in SOP CE-GEN007, *Procurement and Control of Laboratory Services and Supplies* (available upon request).

Receipt procedures include technical review of the purchase order/request to verify that what was received is identical to the item ordered. The laboratory checks new lots of reagents for unacceptable levels of contamination prior to use in sample preservation, sample preparation, and sample analysis by following ALS's SOP CE-QA012, *Reagent and Standards Login and Tracking*.

B9. Data Acquisition Requirements for Non-Direct Measurements

Does not apply to this project.

B10. Data Management

Field

As mentioned in Section B5, raw field data is initially reviewed and assessed at the site of data generation. All pertinent data produced is recorded on field sheets. The Water & Air field team leader will review the reasonableness of the data with regards to other parameters and/or historical data. If reasonableness of data is in question, the field team leader can take corrective actions.

Field and laboratory technical data, employee training and certification, and instrument calibration data are retained in hardcopy and/or electronic form.

Hardcopy records are kept at the Water & Air office, which is locked during non-office hours. Personnel files holding employee-training records, OSHA certificates, and other professional certifications are kept indefinitely in a locked file cabinet to protect their confidentiality.

Project files are retained and stored by the Water & Air Project Manager in unlocked file cabinets. These files may contain all technical data, important forms, and final reports. Project files will be maintained for a minimum of five years.

Electronic copies of project records are stored on local Water & Air file servers. Members of Water & Air's network domain generally have access to files stored in Project Manager folders. When needed, additional security precautions are taken to restrict access to a document or folder. Administrative information is stored on separate servers with limited access. The servers are protected from intrusion by two different firewalls and by an anti-virus program. Electronic files are backed up daily and archived on a monthly basis to limit the risk of data loss due to server failure. The Document Production Group of Water & Air also stores all formal reports in electronic and hardcopy forms.

To ensure client confidentiality, Water & Air and its subcontractors will not release data, findings, or other sensitive information to outside persons without client permission.

Laboratory

Laboratory data management: see Section 26 (pg. 44) of ALS's QAM (available upon request).

C. ASSESSMENT AND OVERSIGHT

C1. Assessments and Response Actions

Corrective Actions During Field Activities

Corrective actions are implemented when a procedural or technical problem or deficiency is identified or suspected. Any field team member should alert the Water & Air Field Team Leader to such a condition. Such a problem or deficiency exists when there is a potential for data quality to be reduced to a level that is unacceptable for project needs. Mandatory corrective action is initiated for field measurements and activities when a problem or deficiency is identified, such as when:

- Initial or continuing calibration criteria are not met (not applicable on this project)
- Incorrect documentation is discovered
- Equipment or instruments malfunction
- The field team fails to follow the project specific QAPP
- There is an incomplete set of requested data
- There are findings during an internal audit of field measurements and activities
- There are findings during an EPA, FDEP, or client audit of field measurements and activities, and/or
- The data is suspect

Problems with personnel training or techniques used are corrected before field activities continue, if possible, or the personnel performing the specific tasks are changed. If a continuing calibration criterion is exceeded or if another type of problem (e.g., malfunctioning sampling equipment) is perceived, it is the responsibility of the field team leader to initiate corrective actions (e.g., recalibration of a field instrument). In the event that the field team leader is unable to identify the perceived problem and immediately affect corrective action, the Water & Air Project Manager and Water & Air QA Officer will be consulted. The COE (COR) will be consulted if the Water & Air Project Manager and QA Officer are unable to provide corrective action guidance or is uncertain regarding which corrective action would be the preferred alternative. The Water & Air Project Manager will respond promptly to any COE (COR) recommended corrective action(s).

Sometimes problems can arise which warrant corrective actions although no predefined criteria for corrective actions exist. Many of these problems cannot be foreseen or predicted. However, the occurrence of sampling equipment failure is foreseen, and spare parts and/or equipment redundancy are addressed during field trip preparation. Local sources of appropriate replacement equipment and field supplies (e.g., hardware stores and scientific supply companies) are identified as possible avenues for resolving unforeseen problems.

Corrective Actions During Laboratory Analysis

If a quality control measure is found to be out of control, and the data is to be reported, all samples associated with the failed quality control measure shall be reported with the appropriate data qualifier(s). Failure to meet established analytical controls, such as the quality control objectives, prompts corrective action. Corrective action may take several

forms and may involve a review of the calculations, a check of the instrument maintenance and operation, a review of analytical technique and methodology, and reanalysis of quality control and field samples. If a potential problem develops that cannot be solved directly by the responsible analyst, the supervisor, team leader, the laboratory department manager, and/or the QAM may examine and pursue alternative solutions. In addition, the appropriate laboratory Project Manager is notified in order to ascertain if the client needs to be notified.

Part of the corrective action process involves determining the root cause. Identifying the root cause of a nonconformance can be difficult, but important for implementing effective corrective action. Root cause principles are used to determine assignable causes, which leads to corrective action taken to prevent recurrence. Various preventive action processes are used for eliminating a potential problem or averting a problem before it occurs.

Deviation from Documented Policies and Procedures

In the field, if a deviation from standard policies and procedures occurs or the need to deviate arises (ex. refusal is hit before expected), it is the Field Team Leader's responsibility to initially gather the pertinent information, i.e., activities and conditions associated with the deviation should be well documented. If possible, the Water & Air Project Manager and QA Officer will be contacted at once. They will review all data involved in the deviation and make a determination on the validity of the collected data.

Planned and unplanned deviations from standard operating procedures that occur will be discussed, reviewed, and documented in project files by the COE (COR), Water & Air Project Manager and QA Officer.

Performance, Systems, and Management Audits

The Water & Air Project Manager and QA Officer will review and evaluate the sample acquisition system to ensure conformance to the procedures and methods to conform to the project objectives of this QAPP. Any deficiencies discovered in the system evaluation will be reported to the COE (COR). The Water & Air Project Manager and QA Officer have applicable professional experience and technical training in the system review process. The Water & Air QA Officer performs the function of that position independently from the Water & Air Project Manager and has the authority to identify deficiencies which need correction and reporting. Corrective actions will be addressed immediately and identified in reporting. Corrective actions will be addressed by the Water & Air Project Manager and COE (COR). The COE (COR) will address any dispute or ambiguity in the interpretation of the findings with the COE QA Officer. All system evaluation issues, and corrective actions will be included in the Final report for this project.

There are no plans for a field audit on this project.

See Section 15 (pg. 22 of ALS's QAM) regarding laboratory related audits (available upon request).

C2. Reports to Management

The laboratory data package, including the laboratory report, and analytical quality control report, will be submitted to the Water & Air Project Manager within 15-business days of the sample receipt date at the laboratory. If QA problems are encountered in the laboratory, the data package will include a narrative describing the problems and corrective actions taken. Laboratory data will be tabulated by Water & Air and submitted to the COE (COR) for review.

Water & Air will prepare the Project Draft report for COE review. Water & Air will review and incorporate COE comments into a Final report which will include the QAPP, photo-documentation of sample collection activities and sediment samples, the raw field data, chains-of-custody forms, copies of lab results, data QA/QC review and discussion including matrix interference and contamination assessment, data assessment and analysis, and a determination of need for additional monitoring. The COE will review the Final report and provide comments if applicable.

Data will be provided in electronic media and hard copy to the COE per the Scope of Work.

D. DATA VALIDATION AND USABILITY ACTIVITIES

D1. Data Review, Verification and Validation

A series of reviews by the ALS Project Manager, ALS QA Officer, and Water & Air QA Officer will be implemented to ensure that the data generated for this project meet the data quality objectives. These reviews will include the following:

- Data will be reviewed by the laboratory personnel to ensure that sample analytical activities are completely and adequately documented.
- Review of analytical results and supporting documentation will be the responsibility of the ALS Lab Manager. The Lab Manager will review sample holding times, sample preservation, equipment calibration, and sample integrity. The results of QC measurements will be compared to pre-established criteria as a measure of data acceptability.
- All calculations performed manually will be checked for accuracy by someone other than who performed the original calculation. Checking will be performed by qualified persons who did not participate in performing the calculations. Checking will be documented, by signature and date on the calculation worksheet. Separate documentation is acceptable, provided traceable records are maintained.
- For verification of data input into spreadsheets and/or data bases, the staff member entering data will ensure correct entry into the software by comparing data with the hard copy of the data listing. If errors are discovered, the errors will be corrected, and a new data listing generated. When data are correctly entered, the staff member entering the data will sign and date the correct data listing and submit it as a project record.

Actions Following Laboratory Analysis

The Water & Air QA Officer will evaluate the laboratory and field data as a single body of data. The need for corrective actions is based, in part, upon evaluation of the data set using the conditions and procedures described previously to detect deficiencies or inconsistencies. The analytical results will be reviewed by the Water & Air QA Officer for internal consistency regarding compounds that might be expected to behave in a similar manner within an ecosystem (for example, are several DDT residues present in all sediment samples except one?). Data will also be reviewed for “reasonableness”, and disparate results will be examined regarding possible calculation errors. Such a review for consistency and reasonableness may require laboratory document and procedure review to determine if sample switching or calculation errors might have occurred. In the event of error detection, such information will be identified in the Final report and may require retesting of samples or extending extracts.

Data for this project will be accepted or rejected based on the laboratory report, laboratory QA report, and laboratory qualifiers (see ALS’s QAM, Appendix E, pg. E1; available upon request). Data which cannot be accepted will be noted as qualified and

such information shall be clearly identified in the Final report. Data qualifiers will also be included in the electronic data submission.

The main data analysis for this project will involve assessment of the sample data results in the context of sediment guidance screening values for all analytes with detections.

Laboratory raw data will not be reported for this project.

D2. Validation and Verification Methods

Data verification and validation will include review of the Field Collection Forms, photographic documentation, chain-of-custody information, Laboratory Quality Control measures.

The resolution procedure for data quality problems and individuals responsible for resolving are provided as follows:

- The Water & Air Field Team Leader will be responsible to ensure the field procedures are properly followed and any deviations will be addressed and corrected in the field. If needed, the Field Team Leader will consult with the Project Manager, QA Officer or the Laboratory Project Manager, as appropriate, to ensure that appropriate adjustments and corrections are made.
- In the Laboratory, Project Management will oversee the documentation, analysis, data reduction, quality review and reporting for this project. If possible, any deviations will be corrected or, if unavoidable, data qualifiers will be assigned to the affected data. The Laboratory Project Manager will inform the Water & Air Project Manager and QA Office of any excursion from approved procedures.
- The Water & Air QA Officer will report data quality problems to the Water & Air Project Manager.
- The Water & Air Project Manager will work with the COE (COR) to resolve data quality problems. All data quality problems will be identified in the Final report.
- The results of data validation, review and verification will be documented in a section in the final report. The final report will include a section describing any data quality issues and whether data are suitable for their intended use for the project. These sections will include a summary of field activities as well as a summary of the laboratory narrative report and the review performed for data internal consistency and reasonableness. Any spurious or disparate data will be identified and the limitations for their use will be defined.
- As preliminary data are reported and reviewed, the QA Officer will provide the Water & Air Project Manager with the findings of the QA review. These findings will be included in the final report in the Data Quality Report section.

D3. Reconciliation of Data to Project Objectives

The process for reconciling project results with the project specific data quality objectives will result from the analysis of the laboratory test results as compared to the sediment quality guidance concentrations as shown on Tables 4 through 9.

Water & Air will summarize data results and provide recommendation for additional monitoring if necessary. The Water & Air Project Manager and COE (COR) will ensure reconciling the test results to the project data quality objectives. Should an issue arise, the issue will be taken to the next level in the project organizational chart for determination.

APPENDIX B

FIELD SHEETS, BORING LOGS, CHAIN OF CUSTODY FORMS

Zone A

Big Fishweir Creek
Sediment Sampling Field Sheet
W&A Project #19-5801-01

Water & Air Research, Inc.
6821 S.W. Archer Road
Gainesville, Florida 32608
Phone: (352) 372-1500

Sample Station: VB-BFWK1701(GE)
Sampled By: W&A + Andrill
Date: 10/25/19 Time: 0935

Sampling Location Description (GE) Environmental sample only due to longer core sleeves in route to site from Andrill.

Site Observations, Comments, In-Situ, and Weather:

Station Lat/Long (WGS 84, WAAS Corrected): N 30.29177 W -081.71929

Air Temp (°F): 80° Wind: calm Prevailing Weather: clear

Water Temp (°C): 23.2 pH 7.31 Sp. Cond. (µmhos/cm) 1,108 D.O. (mg/L) 3.00

Apparent Water Flow Direction, if any: No apparent flow.

Observations/Comments: Tide gauge @ bridge: 1.5'+ (NAVD88)
"+" or "-" indicates if water surface elevation is above or below sea level (NAVD 88).

Sediment Collection Water Depth (ft): 4.2 Sampler: SS Coring Tube / Other: Vibra core P-3

Core No.	Core Length Recovery	Sediment Description
1	~12"	collected in predeanned glass jar (C&G containers). Pen 3.5'
~~2~~ RE	~~1.2'~~	

Project Depth - 5' NAVD 88

Preservation: chilled on wet ice ✓

~~Pa 4.2' + 1.5' - 5' = 0.7' target~~ GE 5' + 1.5' - 4.2' = 2.3' target Recovery

Containers:
- ✓ Two 16oz glass for PAHs, Metals, Chlorinated Pesticides, TCLP
- ✓ Two 4oz glass for Dioxins & Furans and Herbicides;
- ✓ One 8oz glass for PCB Congeners
- ___ Two 1-gallon glass wide-mouth (for samples requiring elutriates)

These jars will be used after compositing back at W&A

Comments/Notes: Rivets used to install the stainless steel coring tip onto the vibracoring tubing are made of stainless steel. Coring tube made of steel. Plastic (rigid clear) core liner is made of polycarbonate.
Water & Air Staff: Bryan Cotter + Mac Byram (all week)

Zone A

Big Fishweir Creek
Sediment Sampling Field Sheet
W&A Project #19-5801-01

Water & Air Research, Inc.
6821 S.W. Archer Road
Gainesville, Florida 32608
Phone: (352) 372-1500

Sample Station: VB-BFWC19-01 (GG)
Sampled By: W&A + Andrill
Date: 10/28/19 Time: 1420

Sampling Location Description (GG) Geotech sample only

Site Observations, Comments, In-Situ, and Weather:

Station Lat/Long (WGS 84, WAAS Corrected): N 30.29177* W 081.71929*

Air Temp (°F): ~85° Wind: slight breeze Prevailing Weather:

Water Temp (°C): 24.52 pH 7.29 Sp. Cond. (µmhos/cm) 611 D.O. (mg/L) 2.03

Apparent Water Flow Direction, if any: outgoing flow

Observations/Comments: Tidegauge: 0.6' +
Turb: 4.03 NTU

Sediment Collection Water Depth (ft): 3.0' Sampler: SS Coring Tube / Other: VC

	Core No.	Core Length Recovery	Sediment Description
Attempt	1	8'	not long enough recovery, therefore tossed. 10' pen.
	2	3.1'	" 4' pen.
	3	7.7'	kept per contract orange clay mid-core observed 10' pen.

Preservation: chilled on wet ice NA

Containers:
- ✓ Two 16oz glass for PAHs, Metals, Chlorinated Pesticides, TCLP
- ✓ Two 4oz glass for Dioxins & Furans and Herbicides;
- ✓ One 8oz glass for PCB Congeners
- ✓ Two 1-gallon glass wide-mouth (for samples requiring elutriates)

Comments/Notes: *We set up the vibracore boat at the same location as the environmental samples last week. Coordinates were not remarked. Use coords from last week. W&A staff Bryan Cotter + Courtenay Harding. Collected site water for elutriate generation from Zone A @ 1426. The tide was outgoing.

Zone A

Big Fishweir Creek
Sediment Sampling Field Sheet
W&A Project #19-5801-01

Water & Air Research, Inc.
6821 S.W. Archer Road
Gainesville, Florida 32608
Phone: (352) 372-1500

Sample Station: VB-BFWC19-02(GE)
Sampled By: WGA + Andrill
Date: 10/25/19 Time: 0910

Sampling Location Description: Environmental sample only

Site Observations, Comments, In-Situ, and Weather:

Station Lat/Long (WGS 84, WAAS Corrected): N 30.29081 W -081.71852

Air Temp (°F): ~75 Wind: calm Prevailing Weather: clear + sunny

Water Temp (°C): 23.7 pH 7.19 Sp. Cond. (µmhos/cm) 1,380 D.O. (mg/L) 4.29

Apparent Water Flow Direction, if any: No apparent flow

Observations/Comments: Tide gauge: 1.5' +

Sediment Collection Water Depth (ft): 5.1 Sampler: SS Coring Tube / Other: Vibracore

Core No.	Core Length Recovery	Sediment Description
	18"	core length cut + capped. Sediment not visible enough to describe.
	~12"	collected into precleaned jar.
		Penetration 2.5' into sediment. lower foot of tossed.
		additional penetration helped w/ recovery.

Project Depth -5'
GE 5' + 1.5' - 5.1' = 1.4' target pen.

Preservation: chilled on wet ice ✓

Containers:
- X Two 16oz glass for PAHs, Metals, Chlorinated Pesticides, TCLP
- X Two 4oz glass for Dioxins & Furans and Herbicides;
- X One 8oz glass for PCB Congeners
- X Two 1-gallon glass wide-mouth (for samples requiring elutriates)

Comments/Notes:

Zone A

Big Fishweir Creek
Sediment Sampling Field Sheet
W&A Project #19-5801-01

Water & Air Research, Inc.
6821 S.W. Archer Road
Gainesville, Florida 32608
Phone: (352) 372-1500

Sample Station: VB-BFWC19-02 (GG)
Sampled By: WRA + Amdrill
Date: 10/28/19 Time: 1355

Sampling Location Description: Geotech sample only. West corner of JEA building under reconstruction.

Site Observations, Comments, In-Situ, and Weather:

Station Lat/Long (WGS 84, WAAS Corrected): N Same as env. W

Air Temp (°F): ~85° Wind: slight breeze Prevailing Weather: clear w/ few clouds

Water Temp (°C): 24.39 pH 7.25 Sp. Cond. (µmhos/cm) 664 D.O. (mg/L) 1.81

Apparent Water Flow Direction, if any: flowing downstream

Observations/Comments: Tide gauge @ Heurskell Bridge: 0.80+
Turb: 4.49 NTU

Sediment Collection Water Depth (ft): 4.2 Sampler: SS Coring Tube / Other: VC

	Core No.	Core Length	Sediment Description
1st Attempt	1	8'6"	Kept. 10' penetration depth.

Preservation: chilled on wet ice NA

Containers:
- ✓ Two 16oz glass for PAHs, Metals, Chlorinated Pesticides, TCLP
- ✓ Two 4oz glass for Dioxins & Furans and Herbicides;
- ✓ One 8oz glass for PCB Congeners
- ✓ Two 1-gallon glass wide-mouth (for samples requiring elutriates)

Comments/Notes: All Coring tubes cut to ~4' sections + capped + taped. Tubes are labeled on side + ends w/ ID an "top" or "bottom". Section lengths are also labeled. (ex 0'-4' + 4'-8')

Be ~~Zone A~~

Big Fishweir Creek
Sediment Sampling Field Sheet
W&A Project #19-5801-01

Water & Air Research, Inc.
6821 S.W. Archer Road
Gainesville, Florida 32608
Phone: (352) 372-1500

Sample Station: VB-BFWC19-03 (GS)
Sampled By: WA + Amdrill
Date: 10/28/19 Time: 1320

Sampling Location Description: Geotech only; ~~Ay~~ Adjacent to the JEA Building under renovation.

Site Observations, Comments, In-Situ, and Weather:

Station Lat/Long (WGS 84, WAAS Corrected): N 30.29050° W -081.71803°

Air Temp (°F): ~85° Wind: slight/brz Prevailing Weather: PC

Water Temp (°C): 24.59 pH 7.12 Sp. Cond. (µmhos/cm) 897 D.O. (mg/L) 1.88

Apparent Water Flow Direction, if any: Out flow

Observations/Comments: Tide gauge: 1.2'+

Sediment Collection Water Depth (ft): 4.4 Sampler: SS Coring Tube / Other: VC

Core No.	Core Length Recovery	Sediment Description
Attempt 1	1.8'	Hit a soda can which stopped movement of VC. Pen. 2'
2	8.7'	lower sand penetration depth was 10'

Preservation: chilled on wet ice ✓

Containers:
- ☒ Two 16oz glass for PAHs, Metals, Chlorinated Pesticides, TCLP
- ☒ Two 4oz glass for Dioxins & Furans and Herbicides;
- ☒ One 8oz glass for PCB Congeners
- ☒ Two 1-gallon glass wide-mouth (for samples requiring elutriates)

Comments/Notes:

Zone A

Big Fishweir Creek
Sediment Sampling Field Sheet
W&A Project #19-5801-01

Water & Air Research, Inc.
6821 S.W. Archer Road
Gainesville, Florida 32608
Phone: (352) 372-1500

Sample Station: UB-BFWC19-04 (GE)
Sampled By: W&A + Andrill
Date: 10/25/19 Time: 0845

Sampling Location Description: Environmental sample only

Site Observations, Comments, In-Situ, and Weather:

Station Lat/Long (WGS 84, WAAS Corrected): N 30.29010 W -081.71740

Air Temp (°F): 75° Wind: calm Prevailing Weather: clear

Water Temp (°C): 23.8 pH 6.52 Sp. Cond. (µmhos/cm) 1,482 D.O. (mg/L) 4.93

Apparent Water Flow Direction, if any: No flow

Observations/Comments: Tide gauge: 1.4'+

Sediment Collection Water Depth (ft): 5.7 Sampler: SS Coring Tube / Other: Vibracore 8.3

Core No.	Core Length Recovery	Sediment Description
	18"	Core sleeve cut to length & capped + end duct taped.
	< 12"	collected in jar
		Penetration was ~2'. Lower portion removed & kept

Preservation: chilled on wet ice

Project Depth -5'
GE 5'+1.4'-5.7' = 0.7' target recovery.

Containers:
- X Two 16oz glass for PAHs, Metals, Chlorinated Pesticides, TCLP
- X Two 4oz glass for Dioxins & Furans and Herbicides;
- X One 8oz glass for PCB Congeners
- X Two 1-gallon glass wide-mouth (for samples requiring elutriates)

Comments/Notes:

Zone A

Big Fishweir Creek
Sediment Sampling Field Sheet
W&A Project #19-5801-01

Water & Air Research, Inc.
6821 S.W. Archer Road
Gainesville, Florida 32608
Phone: (352) 372-1500

Sample Station: VB-BFWC19-04 (GG)
Sampled By: W&A & Andrill
Date: 10/28/19 Time: 1255

Sampling Location Description: Geotech only; Directly across from small wooden dock on South side of creek.

Site Observations, Comments, In-Situ, and Weather:

Station Lat/Long (WGS 84, WAAS Corrected): N Same as Env. W

Air Temp (°F): ~85° Wind: slight breeze Prevailing Weather: PC

Water Temp (°C): 24.48 pH 7.20 Sp. Cond. (µmhos/cm) 1,003 D.O. (mg/L) 2.64

Apparent Water Flow Direction, if any: no flow apparent

Observations/Comments: Tide gauge: 1.3'+

Sediment Collection Water Depth (ft): 5.4 Sampler: SS Coring Tube / Other: VC

Core No.	Core Length Recovery	Sediment Description
1	9'6"	upper sand, lower clayey; penetration 10'

Preservation: chilled on wet ice NA

Containers:
- [x] Two 16oz glass for PAHs, Metals, Chlorinated Pesticides, TCLP
- [x] Two 4oz glass for Dioxins & Furans and Herbicides;
- [x] One 8oz glass for PCB Congeners
- [x] Two 1-gallon glass wide-mouth (for samples requiring elutriates)

Comments/Notes:

Zone B up stream

Big Fishweir Creek
Sediment Sampling Field Sheet
W&A Project #19-5801-01

Water & Air Research, Inc.
6821 S.W. Archer Road
Gainesville, Florida 32608
Phone: (352) 372-1500

Sample Station: VB-BFWC19-05 (GG GE)
Sampled By: WAA + Andrill
Date: 10/24/19 Time: 1535

Sampling Location Description: _____

Site Observations, Comments, In-Situ, and Weather:

Station Lat/Long (WGS 84*, WAAS Corrected*): N 30.29015 W -081.71619

Air Temp (°F): ~80 Wind: calm Prevailing Weather: overcast + cloudy

Water Temp (°C): 23.9 pH 7.63 Sp. Cond. (µmhos/cm) 1,191 D.O. (mg/L) 6.21

Apparent Water Flow Direction, if any: slightly upstream

Observations/Comments: Tide gauge: 0.20+

Turbidity: 8.63 NTU

Sediment Collection Water Depth (ft): 4.2 Sampler: SS Coring Tube / Other: VC

	Core No.	Core Length/Recovery	Sediment Description
05	GG1	3'	1st attempt. Penetration length ~~should be~~ was 5', recovered 3'
05	GG2	3.5'	2nd " " " was 8', recovery 3.5'
05	GG3	3'	3rd " " " " 8.4'.
Env. Sampler 05	GE1	18"	Penetration 3' to obtain enough recovery
05	GE2	19"	" " " " " "

Preservation: chilled on wet ice

Project Depth -6' NAVD88
GE 6' + 0.2' - 4.2' = 2' recovery target

Containers:
- ✓ Two 16oz glass for PAHs, Metals, Chlorinated Pesticides, TCLP
- ✓ Two 4oz glass for Dioxins & Furans and Herbicides;
- ✓ One 8oz glass for PCB Congeners
- ✓ Two 1-gallon glass wide-mouth (for samples requiring elutriates)

Comments/Notes: Wood obstructions prevented full recovery. Lots of branches + logs beneath sediment surface ~3' depth. COE notified.
* done w/ all readings

Zone B Upstream

Big Fishweir Creek
Sediment Sampling Field Sheet
W&A Project #19-5801-01

Water & Air Research, Inc.
6821 S.W. Archer Road
Gainesville, Florida 32608
Phone: (352) 372-1500

Sample Station: VB-BFWC19-06 (GG GE)
Sampled By: Wdk & Andrill
Date: 10/24/19 Time: 1355

Sampling Location Description: _____

Site Observations, Comments, In-Situ, and Weather:

Station Lat/Long (WGS 84, WAAS Corrected): N 30.29009 W 81.71518

Air Temp (°F): ~80° Wind: Calm Prevailing Weather: OC/C

Water Temp (°C): 23.5 pH 7.50 Sp. Cond. (µmhos/cm) 1,215 D.O. (mg/L) 5.41

Apparent Water Flow Direction, if any: Slight upstream

Observations/Comments: Tide gauge: 0.1+ NAVD 88 (all tide readings)
Turb: 11.5 NTU

Sediment Collection Water Depth (ft): 1.9 Sampler: SS Coring Tube / Other: VC

Core No.	Core Length Recovery	Sediment Description
Attempt GG1	8'	10' penetration
" GG2	~~4.5'~~ re 5'	9.5' "
" GG3	8'	10' "
GE1	3.1'	4.5' penetration
GE2	3.2'	" "

Project Depth -6'

Preservation: chilled on wet ice

~~re 6'+1.9'~~ 6'+0.1'-1.9'= 4.2' recovery target

Containers:
- [x] Two 16oz glass for PAHs, Metals, Chlorinated Pesticides, TCLP
- [x] Two 4oz glass for Dioxins & Furans and Herbicides;
- [x] One 8oz glass for PCB Congeners
- [x] Two 1-gallon glass wide-mouth (for samples requiring elutriates)

Comments/Notes: _____

Big Fishweir Creek
Sediment Sampling Field Sheet
W&A Project #19-5801-01

Water & Air Research, Inc.
6821 S.W. Archer Road
Gainesville, Florida 32608
Phone: (352) 372-1500

Sample Station: VB-BFWC19-07 (GS)
Sampled By: WRA + Andrill
Date: 10/24/19 Time: 1257

Sampling Location Description: _____

Site Observations, Comments, In-Situ, and Weather:

Station Lat/Long (WGS 84, WAAS Corrected): N 30.29000 W-081.71494

Air Temp (°F): ~80° Wind: slight breeze Prevailing Weather: C/PC

Water Temp (°C): 23.2 pH 7.46 Sp. Cond. (µmhos/cm) 1220 D.O. (mg/L) 4.71

Apparent Water Flow Direction, if any: upstream

Observations/Comments: Tide gauge : 0.20'+
Turbidity : 7.30 NTU

Sediment Collection Water Depth (ft): 3.7 Sampler: SS Coring Tube / Other: VC

Core No.	Core Length Recovery	Sediment Description
Attempt GS/PC GC1	6.5'	7' penetration (8 feet from shoreline). Not deep enough.
" GS/PC GC2	8'	10' " (6 ft from shoreline).
" GS/PC GC3	~~5.5'~~ 4.9' VC	~~4.9'~~ 5.5' PC. Final attempt per Scope of work.

Preservation: chilled on wet ice

Containers:
- X Two 16oz glass for PAHs, Metals, Chlorinated Pesticides, TCLP
- X Two 4oz glass for Dioxins & Furans and Herbicides;
- X One 8oz glass for PCB Congeners
- X Two 1-gallon glass wide-mouth (for samples requiring elutriates)

Comments/Notes: VC = vibracore P-3

Big Fishweir Creek
Sediment Sampling Field Sheet
W&A Project #19-5801-01

Water & Air Research, Inc.
6821 S.W. Archer Road
Gainesville, Florida 32608
Phone: (352) 372-1500

Sample Station: VB-BFWC19-08 (G5)
Sampled By: Water & Air & Andrill
Date: ~~10/24/19~~ 10/28/19 Time: ~~1204~~ 1204

Sampling Location Description: Did not collect this day due to low tide hampering boat access (vibracorbout)

Site Observations, Comments, In-Situ, and Weather:

Station Lat/Long (WGS 84, WAAS Corrected): N 30.29010 W -081.71437

Air Temp (°F): ~78° Wind: slight breeze Prevailing Weather: OC

Water Temp (°C): 23.4 pH 7.48 Sp. Cond. (µmhos/cm) 1,397 D.O. (mg/L) 5.77

Apparent Water Flow Direction, if any: upstream

Observations/Comments: Tide gauge: 1.4'+ (on 10/28/19)

Don't use these in situ → use the 10/28 data BFC

Sediment Collection Water Depth (ft): 2.2 10/28/19 Sampler: SS Coring Tube / Other: VC

Core No.	Core Length Recovery	Sediment Description
Attempt 1		Penetration depth: 10'
2		" " : 10'
3		" " : 10'

} 10/28/19

Preservation: chilled on wet ice

Containers:
___Two 16oz glass for PAHs, Metals, Chlorinated Pesticides, TCLP
___Two 4oz glass for Dioxins & Furans and Herbicides;
___One 8oz glass for PCB Congeners
___Two 1-gallon glass wide-mouth (for samples requiring elutriates)

Comments/Notes: Sampling attempt on 10/24, however the tide was too low so it was ~~post~~ postponed till 10/28/19.

Big Fishweir Creek
Sediment Sampling Field Sheet
W&A Project #19-5801-01

Water & Air Research, Inc.
6821 S.W. Archer Road
Gainesville, Florida 32608
Phone: (352) 372-1500

Sample Station: VB-BFWC19-08(GS)
Sampled By: W&A + Amdrill
Date: 10/28/19 Time: 1157

Sampling Location Description: Geotech only; sample location adjacent to light blue house (North Side) w/ chainlink fencing.

Site Observations, Comments, In-Situ, and Weather:

Station Lat/Long (WGS 84, WAAS Corrected): N ~~Same~~ 30.29014 W-081.71438

Air Temp (°F): ~80° Wind: breezy Prevailing Weather: PC

Water Temp (°C): 25.24 pH 7.13 Sp. Cond. (µmhos/cm) 1,609 D.O. (mg/L) 5.56

Apparent Water Flow Direction, if any: No apparent flow. High tide @ 11AM

Observations/Comments: Tide gauge: 1.4'+
Turb: 1.03 NTU

Sediment Collection Water Depth (ft): 2.2 Sampler: SS Coring Tube / Other: VC

	Core No.	Core Length Recovery	Sediment Description
Attempt	1	8'2"	not long enough recovery. tossed 10' penetration
	2	7'10"	" 10' "
	3	8'3"	Kept. 10' "

Preservation: chilled on wet ice

Containers:
- [x] Two 16oz glass for PAHs, Metals, Chlorinated Pesticides, TCLP
- [x] Two 4oz glass for Dioxins & Furans and Herbicides;
- [x] One 8oz glass for PCB Congeners
- [x] Two 1-gallon glass wide-mouth (for samples requiring elutriates)

Comments/Notes:

Zone B Downstream

Big Fishweir Creek
Sediment Sampling Field Sheet
W&A Project #19-5801-01

Water & Air Research, Inc.
6821 S.W. Archer Road
Gainesville, Florida 32608
Phone: (352) 372-1500

Sample Station: VB-BFWC19-09 (GG GE)
Sampled By: Wlt + Amdwill
Date: 10/24/19 Time: 1024

Sampling Location Description: collected in front of adjacent apartments' concrete overlook (landing)

Site Observations, Comments, In-Situ, and Weather:

Station Lat/Long (WGS 84, WAAS Corrected): N 30.29006 W-081.71239

Air Temp (°F): ~75° Wind: calm Prevailing Weather: oc/c

Water Temp (°C): 22.8 pH 7.64 Sp. Cond. (µmhos/cm) 1,704 D.O. (mg/L) 6.27

Apparent Water Flow Direction, if any: slight upstream flow.

Observations/Comments: Tide gauge: 0.7+. Vibracore 6.7' below water surface. Turbidity: 10.9 NTU

Sediment Collection Water Depth (ft): 1.7' Sampler: SS Coring Tube / Other: VC

	Core No.	Core Length Recovery		Sediment Description
Geo	1	DC ~~<8.5' 7'~~	<8.5'	penetration
Geo	2	~~<8.5' 7'~~	10'	"
Geo	3	9'	9' 10'	" (large piece of wood recovered in core at bottom of coring tube. (photo taken))
GE	1	4.2'	6'	penetration
~~GE~~				

Project Depth -6'
6' + 0.7' - 1.7' = 5' target recovery

Preservation: chilled on wet ice ✓

Containers:
- [x] Two 16oz glass for PAHs, Metals, Chlorinated Pesticides, TCLP
- [ ] Two 4oz glass for Dioxins & Furans and Herbicides;
- [ ] One 8oz glass for PCB Congeners
- [ ] Two 1-gallon glass wide-mouth (for samples requiring elutriates)

Comments/Notes:

Zone B Downstream

Big Fishweir Creek
Sediment Sampling Field Sheet
W&A Project #19-5801-01

Water & Air Research, Inc.
6821 S.W. Archer Road
Gainesville, Florida 32608
Phone: (352) 372-1500

Sample Station: VB-BFWC19-10 (GG GE)
Sampled By: W&A + Andrill
Date: 10/24/19 Time: 0930

Sampling Location Description: _____

Site Observations, Comments, In-Situ, and Weather:

Station Lat/Long (WGS 84, WAAS Corrected): N 30.28990 W -081.71172

Air Temp (°F): ~75° Wind: calm Prevailing Weather: Oc/C

Water Temp (°C): 22.6 pH 7.65 Sp. Cond. (µmhos/cm) 1,688 D.O. (mg/L) 6.95

Apparent Water Flow Direction, if any: no apparent flow.

Observations/Comments: Tide gauge: 1.0'+

Sediment Collection Water Depth (ft): 1.5 Sampler: SS Coring Tube / Other: VC

Core No.	Core Length Recovery	Sediment Description
GG 1	~~10~~ 8.75' Re	Penetration 10'
GE 1	~~4.9~~ 5.2' Re	Penetration ~7'

Preservation: chilled on wet ice

Project Depth - 6'
6' + 1.0 - 1.5 = 5.5'

Containers:
- X Two 16oz glass for PAHs, Metals, Chlorinated Pesticides, TCLP
- X Two 4oz glass for Dioxins & Furans and Herbicides;
- X One 8oz glass for PCB Congeners
- X Two 1-gallon glass wide-mouth (for samples requiring elutriates)

Comments/Notes: Environmental sample penetration 1 ft beyond target point, then cut bottom 1.0' off + tossed. Reason is to have a better sample recovery length.

Zone C

Big Fishweir Creek
Sediment Sampling Field Sheet
W&A Project #19-5801-01

Water & Air Research, Inc.
6821 S.W. Archer Road
Gainesville, Florida 32608
Phone: (352) 372-1500

Sample Station: VB-BFWC19-011 (GG GS)
Sampled By: WRA + Andrill
Date: 10/23/19 Time: 1510

Sampling Location Description:

Site Observations, Comments, In-Situ, and Weather:

Station Lat/Long (WGS 84, WAAS Corrected): N 30.28952 W -081.71011

Air Temp (°F): ~75° Wind: Calm Prevailing Weather: Sunny

Water Temp (°C): 26.5 pH 7.87 Sp. Cond. (µmhos/cm) 1,851 D.O. (mg/L) 10.26

Apparent Water Flow Direction, if any: no apparent flow

Observations/Comments: Sulfide odor in sediment

Turb. 14.1 NTU Tide gauge: 0.6'+

Sediment Collection Water Depth (ft): 1.8' Sampler: SS Coring Tube / Other: VC

Core No.	Core Length Recovery (ft)	Sediment Description
GG 1	9.5'	10' Penetration length
GE 1	~~2.2'~~ 2.8'	~~2.2' only~~ Penetration 4.5' ~~sludgy~~ Sed. sloughing out some

Preservation: chilled on wet ice

Project Depth – 4.5'
4.5' + 0.6' – 1.8' = 3.3' target

Containers:
- [x] Two 16oz glass for PAHs, Metals, Chlorinated Pesticides, TCLP
- [x] Two 4oz glass for Dioxins & Furans and Herbicides;
- [x] One 8oz glass for PCB Congeners
- [x] Two 1-gallon glass wide-mouth (for samples requiring elutriates)

Comments/Notes:

Water surface to project depth ~5.1'

BC ~~Zone C~~

Big Fishweir Creek
Sediment Sampling Field Sheet
W&A Project #19-5801-01

Water & Air Research, Inc.
6821 S.W. Archer Road
Gainesville, Florida 32608
Phone: (352) 372-1500

Sample Station: VB-BFWC19-12 (GS)
Sampled By: WA + Andrill
Date: 10/23/19 Time: 1610

Sampling Location Description: Geotech only

Site Observations, Comments, In-Situ, and Weather:

Station Lat/Long (WGS 84, WAAS Corrected): N 30.29013 W -081.70980

Air Temp (°F): ~75 Wind: Calm Prevailing Weather: Sunny

Water Temp (°C): 26.4 pH 8.17 Sp. Cond. (µmhos/cm) 1855 D.O. (mg/L) 10.10

Apparent Water Flow Direction, if any:

Observations/Comments: Tide gauge: 0.8'+
Turb. 11.7 NTU

Sediment Collection Water Depth (ft): 2.4 Sampler: SS Coring Tube / Other: VC

	Core No.	Core Length Recovery	Sediment Description
GS	1	10'	length 10' penetration

Preservation: chilled on wet ice ✓

Containers:
- ✓ Two 16oz glass for PAHs, Metals, Chlorinated Pesticides, TCLP
- ✓ Two 4oz glass for Dioxins & Furans and Herbicides;
- ✓ One 8oz glass for PCB Congeners
- ✓ Two 1-gallon glass wide-mouth (for samples requiring elutriates)

Comments/Notes: lots of concrete submerged in water.

Zone C

Big Fishweir Creek
Sediment Sampling Field Sheet
W&A Project #19-5801-01

Water & Air Research, Inc.
6821 S.W. Archer Road
Gainesville, Florida 32608
Phone: (352) 372-1500

Sample Station: VB-BFWC19-13 (GG / GE)
Sampled By: W&A + Andrill
Date: 10/23/19 Time: 1640

Sampling Location Description: _____

Site Observations, Comments, In-Situ, and Weather:

Station Lat/Long (WGS 84, WAAS Corrected): N 30.29013 W -081.70965

Air Temp (°F): ~75° Wind: Calm Prevailing Weather: Sunny

Water Temp (°C): 26.4 pH 8.26 Sp. Cond. (µmhos/cm) 1,828 D.O. (mg/L) 10.16

Apparent Water Flow Direction, if any: Slight outgoing flow

Observations/Comments: Tide gauge: 0.9+

Sediment Collection Water Depth (ft): 1.1' Sampler: SS Coring Tube / Other: VC

Core No.	Core Length Recovery	Sediment Description
GG 1	~~10'~~ 8.5'	10' penetration length
GE 1	<2'	5.5' penetration tore
GE 2	4.0'	5.4' "

Project Depth -4.5'
4.5 + 0.9 - 1.1 = 4.3 recov. target

Preservation: chilled on wet ice ✓

Containers:
- ☒ Two 16oz glass for PAHs, Metals, Chlorinated Pesticides, TCLP
- ☒ Two 4oz glass for Dioxins & Furans and Herbicides;
- ☒ One 8oz glass for PCB Congeners
- ☒ Two 1-gallon glass wide-mouth (for samples requiring elutriates)

Comments/Notes: _____

Big Fishweir Creek
Sediment Sampling Field Sheet
W&A Project #19-5801-01

Water & Air Research, Inc.
6821 S.W. Archer Road
Gainesville, Florida 32608
Phone: (352) 372-1500

Sample Station: VB-BFWC19-14 (GS)
Sampled By: Andrill + WRA
Date: 10/24/19 Time: 0815 MB 0820

Sampling Location Description: collected in front of the gray house w/ four pillars.
~~Ex~~ RC Geo sample only

Site Observations, Comments, In-Situ, and Weather:

Station Lat/Long (WGS 84, WAAS Corrected): N 30.29057 W -081.70927

Air Temp (°F): 70 Wind: calm Prevailing Weather: OC

Water Temp (°C): 22.5 pH 7.31 Sp. Cond. (µmhos/cm) 1747 D.O. (mg/L) 5.86

Apparent Water Flow Direction, if any: No apparent flow, high tide

Observations/Comments: Tide gauge: 1.2'+
Turbidity: 9.11 NTU

Sediment Collection Water Depth (ft): 2.2 Sampler: SS Coring Tube / Other: Vibracore P-3 SS rivets

	Core No.	Core Length	Sediment Description
GS	1	9.5'	penetration 10'

Preservation: chilled on wet ice NA

Containers:
- X Two 16oz glass for PAHs, Metals, Chlorinated Pesticides, TCLP
- X Two 4oz glass for Dioxins & Furans and Herbicides;
- X One 8oz glass for PCB Congeners
- X Two 1-gallon glass wide-mouth (for samples requiring elutriates)

Comments/Notes: Sample collected adjacent to the wooden seawall.

Zone C

Big Fishweir Creek
Sediment Sampling Field Sheet
W&A Project #19-5801-01

Water & Air Research, Inc.
6821 S.W. Archer Road
Gainesville, Florida 32608
Phone: (352) 372-1500

Sample Station: VB-BFWC19-15 (GG GE GS Re)
Sampled By: Amdrill + W&A
Date: 10/24/19 Time: 900

Sampling Location Description: GG+GE samples collected.

Site Observations, Comments, In-Situ, and Weather:

Station Lat/Long (WGS 84, WAAS Corrected): N 30.29058 W - 81.70909

Air Temp (°F): 70 Wind: calm Prevailing Weather: OC

Water Temp (°C): 22.5 pH ~~1649~~ 7.40 mS Sp. Cond. (µmhos/cm) 1649 D.O. (mg/L) 5.58

Apparent Water Flow Direction, if any: No apparent flow

Observations/Comments: Tide gauge: 1.2'+
Turbidity: 10.6 NTU

Sediment Collection Water Depth (ft): 2.4 Sampler: SS Coring Tube / Other: Vibracore P-3 SS rivets

	Core No.	Core Length Recovery	Sediment Description
GG	1	~~10~~ 9.5'	Penetration depth 10'
GE	1	3.3'	" " ~8' (took only upper 3.3' for sample)

Project Depth -4.5'
4.5' + 1.2 - 2.4' = 3.3' recovery

Preservation: chilled on wet ice ✓

Containers:
- ✓ Two 16oz glass for PAHs, Metals, Chlorinated Pesticides, TCLP
- ✓ Two 4oz glass for Dioxins & Furans and Herbicides;
- ✓ One 8oz glass for PCB Congeners
- ✓ Two 1-gallon glass wide-mouth (for samples requiring elutriates)

Comments/Notes:

Zone D

Big Fishweir Creek
Sediment Sampling Field Sheet
W&A Project #19-5801-01

Water & Air Research, Inc.
6821 S.W. Archer Road
Gainesville, Florida 32608
Phone: (352) 372-1500

Sample Station: VB-BFWC19-16 (GG GE)
Sampled By: Wlst & Andrill
Date: 10/22/19 Time: 1515

Sampling Location Description: Entire sampling area very shallow. Must be sampled on mid- to high-tide. GG+GE collected

Site Observations, Comments, In-Situ, and Weather:

Station Lat/Long (WGS 84, WAAS Corrected): N 30.28822 W-081.71035

Air Temp (°F): ~85° Wind: strong breeze Prevailing Weather: OC + patchy storms

Water Temp (°C): 27.2° pH 8.27 Sp. Cond. (µmhos/cm) 2,160 D.O. (mg/L) 8.57

Apparent Water Flow Direction, if any: incoming tide

Observations/Comments: Location very shallow
Tide gauge: 0.80+

Sediment Collection Water Depth (ft): 2.6' Sampler: SS Coring Tube / Other: VC

	Core No.	Core Length Recovery	Sediment Description
Attempt GG	1	<80%	<80% recovery tossed
"	2	10'	10' penetration length
GE	1	5'1"	~7ft penetration

Preservation: chilled on wet ice ✓

Project Depth -8' NAVD88
8'+0.8-2.6' = 6.2' target

Containers:
- [X] Two 16oz glass for PAHs, Metals, Chlorinated Pesticides, TCLP
- [X] Two 4oz glass for Dioxins & Furans and Herbicides;
- [X] One 8oz glass for PCB Congeners
- [X] Two 1-gallon glass wide-mouth (for samples requiring elutriates)

Comments/Notes: Some soft sediment on surface. May be compressing or pushing out of core catcher tip.

Zone D

Big Fishweir Creek
Sediment Sampling Field Sheet
W&A Project #19-5801-01

Water & Air Research, Inc.
6821 S.W. Archer Road
Gainesville, Florida 32608
Phone: (352) 372-1500

Sample Station: VB-BFWC19-17 (GG GE)
Sampled By: Amdrill | W&A
Date: 10/22/19 Time: 1635

Sampling Location Description: GG + GE samples collected

Site Observations, Comments, In-Situ, and Weather:

Station Lat/Long (WGS 84, WAAS Corrected): N 30.28664 W -081.70876

Air Temp (°F): ~85 Wind: Strong breeze Prevailing Weather: Clr + patchy storms

Water Temp (°C): 26.3 pH 7.97 Sp. Cond. (µmhos/cm) 2,140 D.O. (mg/L) 8.71

Apparent Water Flow Direction, if any: Incoming tide

Observations/Comments:

Sediment Collection Water Depth (ft): 2.3' Sampler: SS Coring Tube / Other: VC

	Core No.	Core Length	Sediment Description
GE	1	5.1'	Penetration depth 10'
GG	1	8.1'	" " 10'
GE	#2 attempt	6.1'	" " 10'

Preservation: chilled on wet ice ✓

Project Depth -8'
8+0.9-2.3'=6.6' recovery target

Containers:
- X Two 16oz glass for PAHs, Metals, Chlorinated Pesticides, TCLP
- X Two 4oz glass for Dioxins & Furans and Herbicides;
- X One 8oz glass for PCB Congeners
- X Two 1-gallon glass wide-mouth (for samples requiring elutriates)

Comments/Notes: Tide gauge +0.90' Some soft sed @ surface. lower is sand.

GE1 5.1' core length GE2 6.1'

Zone D

Big Fishweir Creek
Sediment Sampling Field Sheet
W&A Project #19-5801-01

Water & Air Research, Inc.
6821 S.W. Archer Road
Gainesville, Florida 32608
Phone: (352) 372-1500

Sample Station: VB-BFWC19-18 (GG GE)
Sampled By: Amdrill | W&A
Date: 10/22/19 Time: 1725

Sampling Location Description: GG+GE samples collected

Site Observations, Comments, In-Situ, and Weather:

Station Lat/Long (WGS 84, WAAS Corrected): N 30.28535 W 081.70758

Air Temp (°F): 80 Wind: calm Prevailing Weather: PC

Water Temp (°C): 26.0 pH 7.95 Sp. Cond. (µmhos/cm) 1575 D.O. (mg/L) 8.27

Apparent Water Flow Direction, if any: Slack tide?, no flow observed

Observations/Comments:

Sediment Collection Water Depth (ft): 5.4 Sampler: SS Coring Tube / Other: Vibracore

	Core No.	Core Length	Sediment Description
GG	1	8.1 ~~9.0'~~ recovery	Dark fine sandy silt (muck) Lower Fine white Sand 10' penetration
GE	1	3.5' "	~7' penetration
			Difficult to characterize sediments in core tubing due to opaqueness + side smudging along tube.

Preservation: chilled on wet ice ✓

Project Depth -8' NAVD88 8'+0.9'-5.4'= 3.5' target pen.

Containers:
- [x] Two 16oz glass for PAHs, Metals, Chlorinated Pesticides, TCLP
- [x] Two 4oz glass for Dioxins & Furans and Herbicides;
- [x] One 8oz glass for PCB Congeners
- [x] Two 1-gallon glass wide-mouth (for samples requiring elutriates)

Comments/Notes: Tide gauge +0.90'

AMDRILL inc.

Vibracore Boring Logs

Boring# VB-BFWC19 16-GG	Bore Loc.: N30°17'17.5" W81°42'37.1"
Water Depth: 2'	Penetration Depth: 10'
End of Bore Depth: 10' BGS	Recovery: 10'
Start Time: 15:20	End Time: 15:21
Date: 10-22-19	Misc.: T.ΔE +0.8 NAVD88

Boring# VB-BFWC19 17GG	Bore Loc.: N30°17'11.9 W81°42'31.6"
Water Depth: 2.3'	Penetration Depth: 10'
End of Bore Depth: 10' BGS	Recovery: 8.1'
Start Time: 16:50	End Time: 16:51
Date: 10-22-19	Misc.: T.ΔE +0.9 NAVD88

Boring# VB-BFWC19 18GG	Bore Loc.: N30°17'07.1" W81°42'27.4"
Water Depth: 5.4'	Penetration Depth: 10'
End of Bore Depth: 10' BGS	Recovery: 9'
Start Time: 17:28	End Time: 17:29
Date: 10-22-19	Misc.: T.ΔE +0.9 NAVD88

Boring# VB-BFWC19 11GG	Bore Loc.: N30°17'22.3 W81°42'36.4"
Water Depth: 1.8'	Penetration Depth: 10'
End of Bore Depth: 10' BGS	Recovery: 9.5'
Start Time: 15:31	End Time: 15:32
Date: 10-23-19	Misc.: T.ΔE +0.6 NAVD88

Boring# VB-BFWC-19 12GS	Bore Loc.: N30°17'24.3 W81°42'35.4"
Water Depth: 2.4'	Penetration Depth: 10'
End of Bore Depth: 10' BGS	Recovery: 10'
Start Time: 16:10	End Time: 16:12
Date: 10-23-19	Misc.: T.ΔE +0.8 NAVD88

Boring# VB-BFWC-19 13GG	Bore Loc.: N30°17'24.4" W81°42'34.9"
Water Depth: 1.1'	Penetration Depth: 10'
End of Bore Depth: 10' BGS	Recovery: 8.5'
Start Time: 16:40	End Time: 16:41
Date: 10-23-19	Misc.: T.ΔE +0.9 NAVD88

AMDRILL inc.

Vibracore Boring Logs

Boring# VB-BFWC-19 14GS	Bore Loc.: N30°17'26.0 W81°42'33.4"
Water Depth: 2.2'	Penetration Depth: 10'
End of Bore Depth: 10' BGS	Recovery: 9.5'
Start Time: 8:20	End Time: 8:22
Date: 10-24-19	Misc.: T.AE +1.2 NAVD88

Boring# VB-BFWC-19 15GG	Bore Loc.: N30°17'26.2" W81°42'32.8"
Water Depth: 2.4'	Penetration Depth: 10'
End of Bore Depth: 10' BGS	Recovery: 9.5'
Start Time: 8:45	End Time: 8:47
Date: 10-24-19	Misc.: T.AE +1.2 NAVD88

Boring# VB-BFWC-19 10GG	Bore Loc.: N30°17'23.6" W81°42'[redacted]42.2"
Water Depth: 1.5'	Penetration Depth: 10'
End of Bore Depth: 10' BGS	Recovery: 8.75'
Start Time: 9:30	End Time: 9:32
Date: 10-24-19	Misc.: T.AE +1.0' NAVD88

Boring# VB-BFWC-19 9GG	Bore Loc.: N30°17'24.1" W81°42'44.6
Water Depth: 1.7	Penetration Depth: 1ST 9' | 2ND 10' | 3RD 10'
End of Bore Depth: 10' BGS	Recovery: 1ST 7' | 2ND 7' | 3RD 9'
Start Time: 10:22	End Time: 10:24
Date: 10-24-19	Misc.: T.AE +0.7 NAVD88

Boring# VB-BFWC-19 7-GS	Bore Loc. N30° 17'23.9" W81°42'53.8"
Water Depth: 3.7	Penetration Depth: 1ST 7' | 2ND 10' | 3RD 5.5'
End of Bore Depth: 5.5 BGS	Recovery: 1ST 7' | 2ND 8' | 3RD 4.9'
Start Time: 12:45	End Time: 12:48'
Date: 10-24-19	Misc.: T.AE +0.2 NAVD88

Boring# VB-BFWC-19 6-GG	Bore Loc.: N30°17'24.2" W81°42'54.7"
Water Depth: 1.9	Penetration Depth: 1ST 10' | 2ND 9.5' | 3RD 10'
End of Bore Depth: 10' BGS	Recovery: 1ST 8' | 2ND 5.5' | 3RD 8'
Start Time: 13:50	End Time: 13:53
Date: 10-24-19	Misc.: T.AE +0.1 NAVD88

AMDRILL inc.

Vibracore Boring Logs

Boring# VB-BFWC19 5GG	Bore Loc.: N30°17'24.5" W81°42'58.3"
Water Depth: 4.2	Penetration Depth: 1ST 5' / 2ND 8' / 3RD 8.4'
End of Bore Depth: 8.4'	Recovery: 1ST 3' / 2ND 3.7' / 3RD 3'
Start Time: 15:37	End Time: 15:40
Date: 10-24-19	Misc.: TIDE + 0.2 NAVD88

Boring# VB-BFWC19 8GS	Bore Loc.: N30° 17'24.5" W81°42' 51.8"
Water Depth: 2.2'	Penetration Depth: 1ST 10' / 2ND 10' / 3RD 10'
End of Bore Depth: 10' BGS	Recovery: 1ST 8.1' / 2ND 7.9' / 3RD 8.3'
Start Time: 12:04	End Time: 12:06
Date: 10-28-19	Misc.: TIDE + 1.4 NAVD88

Boring# VB-BFWC19-4 GG	Bore Loc.: N30°17'24.3" W81°43'02.7"
Water Depth: 5.4'	Penetration Depth: 10'
End of Bore Depth: 10' BGS	Recovery: 9.5'
Start Time: 12:56	End Time: 12:58
Date: 10-28-19	Misc.: TIDE +1.3 NAVD88

Boring# VB-BFWC19 3GS	Bore Loc.: N30°17'25.8" W81°43'04.9"
Water Depth: 4.4'	Penetration Depth: 1ST 2' / 2ND 10'
End of Bore Depth: 10' BGS	Recovery: 1ST 1.8' / 2ND 8.7
Start Time: 13:20	End Time: 13:23
Date: 10-28-19	Misc.: TIDE 1.2 NAVD88

Boring# VB-BFWC19 2GG	Bore Loc.: N30°17'26.8" W81°43'06.6"
Water Depth: 4.2'	Penetration Depth: 10'
End of Bore Depth: 10' BGS	Recovery: 8.5'
Start Time: 14:00	End Time: 14:04
Date: 10-28-19	Misc.: TIDE +0.8 NAVD88

Boring# VB-BFWC19 1GG	Bore Loc.: N30°17'30.1" W81°43'09.5"
Water Depth:	Penetration Depth: 1ST 10' / 2ND 4' / 3RD 10'
End of Bore Depth:	Recovery: 1ST 8' / 2ND 3.1' / 3RD 7.7'
Start Time:	End Time: 14:22
Date:	Misc.: TIDE +0.6 NAVD88

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

ALS

9143 Phillips Highway, Suite 200, Jacksonville, FL 32256
Phone (904) 739-2277 / 800-695-7222 x06 / FAX (904) 739-2011

SR# 001, 002, 003

T058455

Project Name: USACE Big Fishweir Creek	
Project Number: 19-5805-01	Report To: Bryan Cotter
Company / Address: Water and Air Research, 6821 S.W. Archer Road, Gainesville FL, 32608	
Phone # 352-372-1500	FAX #
Sampler Signature	Sampler Printed Name: Bryan Cotter + Am Drill

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	7D 8081A / PEST_OC	7D 8151A / HERB	7D 8270D / SVO	7D 8270D SIM / SVO SIM	14D 8081A / PEST_OC	14D 8082A / PCB	14D 8151A / HERB	14D 8270D / SVO	14D 8270D SIM / SVO SIM	28D 7471B / Hg	180D 200.8 / Metals Redppt	180D 6020B / Metals T	365D 1613B / Dioxins Furans	Hardness SM2340B	Remarks
					15															
1. VB-BFWK19-Zone A Eut.		10/30/19	1155	Liquid	13	X	X	X	X		X					X		X	✓	
2. VB-BFWK19-Zone D Eut.		↓	1230	Liquid	13	X	X	X	X		X					X		X	✓	
3. VB-BFWK19-Site water		↓	1255	Liquid	13	X	X	X	X		X					X		X	✓	
4.				~~Liquid~~	~~13~~	X	X	X	X		X					X		X	✓	
5.				~~Liquid~~	~~13~~	X	X	X	X		X					X		X	✓	
6.				~~Solid~~	4					X	X	X	X	X	X		X	X		
7.				~~Solid~~	4					X	X	X	X	X	X		X	X		
8.				~~Solid~~	4					X	X	X	X	X	X		X	X		
9.				~~Solid~~	4					X	X	X	X	X	X		X	X		
10.				~~Solid~~	4					X	X	X	X	X	X		X	X		

Special Instructions/Comments:

Please include hardness. Analyte list and MDLs attached.

1.0°/2.8°/3.2°

Turnaround Requirements

___ RUSH (SURCHARGES APPLY)

___ Standard 15 Business Days per Quote

REQUESTED FAX DATE

Nov 23 2019

Requested Report Date

Report Requirements

___ I. Results Only

X II. Results + QC Summaries (LCS, DUP, MS/MSD as required)

___ III. Results + QC and Cilibration Summaries

___ IV. Data Validation Report with Raw Data

EData ____Yes ____No

Invoice Information

P.O.# _____

Bill To: Water & Air Research

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Kit Gunn AEL Jax					
Signature Fed Ex	Signature	Signature	Signature	Signature	Signature
Printed Name	Printed Name Bryan Cotter	Printed Name	Printed Name Bennie Brock	Printed Name	Printed Name
Firm	Firm Water & Air Research	Firm	Firm ALS	Firm	Firm
Date/Time	Date/Time 10/31/19	Date/Time 10/31/19 1242	Date/Time 10/31/19 1242	Date/Time	Date/Time

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

ALS

9143 Phillips Highway, Suite 200, Jacksonville, FL 32256
Phone (904) 739-2277 / 800-695-7222 x06 / FAX (904) 739-2011

SR# J190 6537

001, 002, 003

T058455

Project Name: USACE Big Fishweir Creek
Project Number:
Report To: Bryan Cotter
Company / Address: Water and Air Research, 6821 S.W. Archer Road, Gainesville FL 32608
Phone #: 352-372-1500
FAX #:
Sampler Signature:
Sampler Printed Name: Bryan Cotter + Mindrill

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	7D 8081A / PEST_OC	7D 8151A / HERB	7D 8270D / SVO	7D 8270D SIM / SVO SIM	14D 8081A / PEST_OC	14D 8082A / PCB	14D 8151A / HERB	14D 8270D / SVO	14D 8270D SIM / SVO SIM	28D 7471B / Hg	180D 200.8 / Metals Redppt	180D 6020B / Metals T	365D 1613B / Dioxins Furans	Remarks
~~1. VB-BFWC19-Zone A~~	BC			~~Liquid~~	~~13~~	X	X	X	X		X					X		X	
~~2.~~				~~Liquid~~	~~13~~	X	X	X	X		X					X		X	
~~3.~~				~~Liquid~~	~~13~~	X	X	X	X		X					X		X	
~~4.~~				~~Liquid~~	~~13~~	X	X	X	X		X					X		X	
~~5.~~				~~Liquid~~	~~13~~	X	X	X	X		X					X		X	
6. VB-BFWC19-Zone A		10/25/19	0935	Solid	4					X	X	X	X	X	X		X	X	
7. Zone B upstream		10/24/19	1535	Solid	4					X	X	X	X	X	X		X	X	
8. Zone B Downstream		10/24/19	1024	Solid	4					X	X	X	X	X	X		X	X	
9. Zone C		10/23/19	1610	Solid	4					X	X	X	X	X	X		X	X	
10. Zone D		10/22/19	1725	Solid	4					X	X	X	X	X	X		X	X	

Special Instructions/Comments:
See attached MDLs

0.1°C

Turnaround Requirements
___ RUSH (SURCHARGES APPLY)
___ Standard 15 Business Days per quote
REQUESTED FAX DATE
November 21, 2019
Requested Report Date

Report Requirements
___ I. Results Only
X II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
___ III. Results + QC and Cilibration Summaries
___ IV. Data Validation Report with Raw Data
EData ____Yes ____No

Invoice Information
P.O.#
Bill To: Water & Air Research, Inc

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Kit from ALS Jax			Fed Ex	Fed Ex	
Signature: Fed Ex	Signature:	Signature:	Signature:	Signature:	Signature:
Printed Name:	Printed Name: Bryan Cotter	Printed Name: Bryan Cotter	Printed Name:	Printed Name:	Printed Name: Levi Mason
Firm:	Firm: W&A	Firm: W&A	Firm:	Firm:	Firm: ALS
Date/Time:	Date/Time: 10/14/19 1200	Date/Time: 10/29/19 1700	Date/Time: 10/29/19 1700	Date/Time: 10/30/19	Date/Time: 10/30/19 1213

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

ALS Environmental

9143 Phillips Highway, Suite 200, Jacksonville, FL 32256
Phone (904) 739-2277 / 800-695-7222 x06 / FAX (904) 739-2011

001, 002, 003

SR#

T058455

Project Name: USACE Big Fishweir Creek	
Project Number:	Report To: Bryan Cotter
Company / Address: Water and Air Research, 6821 S.W. Archer Road, Gainesville FL, 32608	
Phone #: 352-372-1500	FAX #
Sampler Signature	Sampler Printed Name

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	7D: 8081A / PEST_OC	7D: 8081A /	7D: 8151A / HERB	7D: 8270D / SVO	7D: 8270D / SVO TCLP	7D: 8270D SIM / SVO SIM	14D: 8081A / PEST_OC	14D: 8082A / PCB	14D: 8151A / HERB	14D: 8270D / SVO	14D: 8270D SIM / SVO SIM	14D: EPA 1311 / TCLP	28D: 7470A / Hg TCLP	28D: 7471B / Hg	180D: 200.8 / Metals Redppt	180D: 6010D / Metals TCLP	180D: 6020B / Metals T	365D: 1613B / Dioxins Furans	Remarks
11. VB-BFWC19-Zone C		10/23/19	1610	Solid	1		X			X						X	X	X			X			
12. VB-BFWC19-Zone D		10/22/19	1725	Solid	1		X			X						X	X	X			X			
13.				Liquid																				
14.				Liquid																				
15.				Liquid																				
16.				Liquid																				
17.				Liquid																				
18.				Liquid																				
19.				Liquid																				
20.				Liquid																				

Special Instructions/Comments:

Turnaround Requirements

___ RUSH (SURCHARGES APPLY)

___ Standard 15 Business Days per quote

11/21/19
REQUESTED FAX DATE

Requested Report Date

Report Requirements

___ I. Results Only

X II. Results + QC Summaries (LCS, DUP, MS/MSD as required)

___ III. Results + QC and Calibration Summaries

___ IV. Data Validation Report with Raw Data

EData ____Yes ____No

Invoice Information

P.O.# ____

Bill To: ____

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Kit from ALS Jax			Fed Ex	Fed Ex	
Signature: Fed Ex	Signature: [signature]	Signature: [signature]	Signature	Signature	Signature
Printed Name	Printed Name: Bryan Cotter	Printed Name	Printed Name	Printed Name	Printed Name
Firm	Firm: WAA	Firm: WAA	Firm	Firm	Firm
Date/Time	Date/Time: 10/14/19 1200	Date/Time: 10/29/19 1700	Date/Time: 10/29/19 1700	Date/Time: 10/30/19	Date/Time

Water & Air Research, Inc.
6821 S.W. Archer Road, (352) 372-1500
Gainesville, Florida 32608
Email: businessdev@waterandair.com

CHAIN-OF-CUSTODY-RECORD

Method of Shipping (Fed Ex, UPS, Dropped off, etc):

Project Name/Number: USACE-Big Fishweir Creek 2019

Site Name & Address: Big Fishweir Creek, Jacksonville, FL

Sampler(s): *(Print & Sign)*: Bryan Cotter + Andrill

Sample Field ID. Number	Date	Time	Comp or Grab	Station Location / Number	Sample Matrix	Number of Containers	Analysis Required and Preservation Method: Geotech Samples (for USACE)									Remarks or Observations
	10/28/19	1420	G	VB-BFWC19-01GG	Sed		✓									3rd coring attempt
	10/28/19	1355		-02GG												1st coring attempt
	10/28/19	1320		-03GS												2nd coring attempt
	10/28/19	1255		-04GG												1st coring attempt
	10/24/19	1535		-05GG												3rd coring attempt
	10/24/19	1355		-06GG												" " "
	10/24/19	1257		-07GS												" " "
	10/28/19	1157		-08GS												" " "
	10/24/19	1024		-09GG												3rd coring attempt
	10/24/19	0930		-10GG												1st coring attempt

Preservation Codes

CF	Chilled-Filtered
SF	Sulfuric-Filtered
NF	Nitric-Filtered
C	Chilled
S	Sulfuric
N	Nitric
B	Basic/NaOH
Z	Zinc
T	Thiosulfate
H	HCL
Ot	Other (see Remarks)

Special Instructions: Note: large branches or logs were encountered during vibracoring, especially west of Herschel St. Bridge.

Matrix Types					
	S	Soil or Sediment	WW	Wastewater	T	Animal Tissues
	SW	Surface Water	SL	Sludge or Solid Waste	MW	Marine Water
	GW	Groundwater	DW	Drinking Water	P	Plant Tissue
	Ot	Other (see remarks)				

Precleaned Containers (Sample Kits) Relinquished by: *(Signature)*	Date/Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date/Time	Received by: *(Signature)*
Cotter	10/31/19 / 1320	[illegible]		/	
Relinquished by: *(Signature)*	**Date/Time**	**Received by: *(Signature)***	**Relinquished by: *(Signature)***	**Date/Time**	**Received by: *(Signature)***
	/			/	

Distribution: Original accompanies shipment and should be returned to Project Manager, Yellow Copy - Field Team; Pink Copy – Lab.

Water & Air Research, Inc.
6821 S.W. Archer Road, (352) 372-1500
Gainesville, Florida 32608
Email: businessdev@waterandair.com

CHAIN-OF-CUSTODY-RECORD

Method of Shipping (Fed Ex, UPS, Dropped off, etc):

Project Name/Number: USACE-Big Fishweir Creek 2019

Site Name & Address: Big Fishweir Creek, Jacksonville, FL

Sampler(s): *(Print & Sign)*

Analysis Required and Preservation Method: Geotech Samples

Sample Field ID. Number	Date	Time	Comp or Grab	Station Location / Number	Sample Matrix	Number of Containers	Geotech Samples									Remarks or Observations
	10/23/19	1510	G	VB-BFWC 19-11 GG	Sed		✓									1st coring attempt
	↓	1610	↓	-12 GS	↓		↓									" " "
	↓	1640	↓	-13 GG	↓		↓									↓ ↓ ↓
	10/24/19	0820	↓	-14 GS	↓		↓									↓ ↓ ↓
	↓	0900	↓	-15 GG	↓		↓									↓ ↓ ↓
	10/22/19	1515	↓	-16 GG	↓		↓									↓ ↓ ↓
	↓	1635	↓	-17 GG	↓		↓									↓ ↓ ↓
	↓	1725	↓	-18 GG	↓		↓									↓ ↓ ↓

Preservation Codes

CF	Chilled-Filtered
SF	Sulfuric-Filtered
NF	Nitric-Filtered
C	Chilled
S	Sulfuric
N	Nitric
B	Basic/NaOH
Z	Zinc
T	Thiosulfate
H	HCL
Ot	Other (see Remarks)

Special Instructions:

Matrix Types							
	S	Soil or Sediment	WW	Wastewater	T	Animal Tissues
	SW	Surface Water	SL	Sludge or Solid Waste	MW	Marine Water
	GW	Groundwater	DW	Drinking Water	P	Plant Tissue
	Ot	Other (see remarks)				

Precleaned Containers (Sample Kits) Relinquished by: *(Signature)*	Date/Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date/Time	Received by: *(Signature)*
Cotter	10/31/19 / 1320	X		/	
Relinquished by: *(Signature)*	**Date/Time**	**Received by: *(Signature)***	**Relinquished by: *(Signature)***	**Date/Time**	**Received by: *(Signature)***
	/			/	

Distribution: Original accompanies shipment and should be returned to Project Manager, Yellow Copy - Field Team; Pink Copy – Lab.

Field Instrument Calibration Log

PROJECT NAME: USACE Big Fishweir Creek 2019 PROJECT LOCATION: Big Fishweir Creek, Jacksonville, FL

INSTRUMENT # YSI EXO

Dissolved Oxygen - SOP FT 1500

	DATE	TIME	EXPIRATION DATE	STD VALUE (%)	STD VALUE (mg/L)	TEMP (°C)	THEORETICAL SATURATION (mg/L)	PASS (Y, N)	SAMPLER INITIALS	COMMENTS
IC*	10/22/19	1320	Per Sampling	100	---	---	---	Y	MB	
ICV*			Per Sampling	---	7.97	27.0	7.90	Y	MB	
CCV*		1840	Per Sampling	---	8.03	26.6	8.03	Y	MB	

pH Calibration - SOP FT 1100

	DATE	TIME	EXPIRATION DATE***	LOT #	STD VALUE (SU)	INSTRUMENT RESPONSE (SU)	% DIFF	PASS (Y, N)****	SAMPLER INITIALS	
IC*	10/22/19	1450	8/20	1909205	7	7.00	0	Y	MB	
			3/21	1909124	4.01	4.01	0	Y	MB	
ICV*			3/20	1809238	10	9.81	1.9	Y		
CCV*		1820			7	7.09	1.3	Y	MB	
					4.01	4.06	1.2			
					10	9.85	1.5			

Specific Conductance - SOP FT1200

	DATE	TIME	EXPIRATION DATE***	LOT #	STD VALUE (µmhos/cm)	INSTRUMENT RESPONSE (µmhos/cm)	% DIFF	PASS (Y, N)****	SAMPLER INITIALS	
IC*	10/22/19	1340	9/20	1909126	1413	1413	0	Y	MB	
ICV*			9/20	1909128	100	101.5	1.5	Y	MB	
ICV*			10/20	1909254	50000	50021	0.1	Y	MB	
CCV*		1830			100	101.9	1.9	Y	MB	
CCV*					50000	50215	0.43	Y	MB	

Notes:

* IC= Initial Calibration **ICV**= Initial Calibration Verification (low) **CCV**= Continuing Calibration Verification

** Standard Purchased From Exaxol Chemical Corporation

Acceptance Criteria: **Dissolved Oxygen**: ± 0.3 mg/L **pH**: ± 0.2 units **Specific Conductance**: ± 5%

pH 4 mV range +(160-177)
pH 7 mV range ± 50
pH 10 mV range -(160-177)

Field Instrument Calibration Log

PROJECT NAME: USACE Big Fishweir Creek 2019 PROJECT LOCATION: Big Fishweir Creek, Jacksonville, FL

INSTRUMENT # 45I EXO

Dissolved Oxygen - SOP FT 1500

	DATE	TIME	EXPIRATION DATE	STD VALUE (%)	STD VALUE (mg/L)	TEMP (°C)	THEORETICAL SATURATION (mg/L)	PASS (Y, N)	SAMPLER INITIALS	COMMENTS
IC*	10/23/19	900	Per Sampling	100	---	---	---	Y	MB	
ICV*			Per Sampling	---	8.85	21.3	8.85	Y	MB	
CCV*		1815	Per Sampling	---		20.4				

pH Calibration - SOP FT 1100

	DATE	TIME	EXPIRATION DATE***	LOT #	STD VALUE (SU)	INSTRUMENT RESPONSE (SU)	% DIFF	PASS (Y, N)****	SAMPLER INITIALS	
IC*	10/23/19	920	8/20	190205	7	7.00	0	Y	MB	
			3/21	1909126	4.01	4.01	0	Y	MB	
ICV*			3/20	1808238	10	9.85	1.5	Y	MB	
CCV*		1800			7	7.00	0	Y	MB	
					4.01	4.01	0	Y	MB	
					10	9.82	1.8	Y	MB	

Specific Conductance - SOP FT1200

	DATE	TIME	EXPIRATION DATE***	LOT #	STD VALUE (µmhos/cm)	INSTRUMENT RESPONSE (µmhos/cm)	% DIFF	PASS (Y, N)****	SAMPLER INITIALS	
IC*	10/23/19	940	9/20	1909126	1413	1413	0	Y	MB	
ICV*			9/20	1909128	100	102.4	2.4	Y	MB	
ICV*			10/20	1909254	50000	49177	1.6	Y	MB	
CCV*		1810			100	104.5	4.5	Y	MB	
CCV*					50000	48245	2.4	Y	MB	

Notes:

* **IC**= Initial Calibration **ICV**= Initial Calibration Verification (low) **CCV**= Continuing Calibration Verification

** Standard Purchased From Exaxol Chemical Corporation

Acceptance Criteria: **Dissolved Oxygen**: ± 0.3 mg/L **pH**: ± 0.2 units **Specific Conductance**: ± 5%

pH 4 mV range +(160-177)
pH 7 mV range ± 50
pH 10 mV range -(160-177)

	Tur Ø12		STD	Reading/Response		
ICV	10/23/19	1000	5.58	5.59	✓	MB
ICV			49.3	50.1	✓	
ICV			530	538	✓	
CCV		1620	5.58	5.49	✓	
CCV			49.3	49.4	✓	
CCV			530	531	✓	

Revised 4/28/15

STD LOT: A4308
EXP: 11/6/2019

REMEMBER TO MAKE A COPY

Field Instrument Calibration Log

PROJECT NAME: USACE Big Fishweir Creek 2019 PROJECT LOCATION: Big Fishweir Creek, Jacksonville, FL

INSTRUMENT # YSI EXO

Dissolved Oxygen - SOP FT 1500

	DATE	TIME	EXPIRATION DATE	STD VALUE (%)	STD VALUE (mg/L)	TEMP (°C)	THEORETICAL SATURATION (mg/L)	PASS (Y, N)	SAMPLER INITIALS	COMMENTS
IC*	10/24/19	700	Per Sampling	100	---	---	---	Y	MB	
ICV*			Per Sampling	---	8.63	22.7	8.65	Y	MB	
CCV*		1720	Per Sampling	---	7.94	27.2	7.91	Y	MB	

pH Calibration - SOP FT 1100

	DATE	TIME	EXPIRATION DATE***	LOT #	STD VALUE (SU)	INSTRUMENT RESPONSE (SU)	% DIFF	PASS (Y, N)****	SAMPLER INITIALS	
IC*	10/24/19	710	8/20	190205	7	7.00	Ø	Y	MB	
			3/21	190912A	4.01	4.01	Ø	Y	MB	
ICV*			3/20	18 0B238	10	9.80	2	Y	MB	
CCV*		1730			7	7.04	0.6	Y	MB	
					4.01	4.04	0.75	Y	MB	
					10	9.85	1.5	Y	MB	

Specific Conductance - SOP FT1200

	DATE	TIME	EXPIRATION DATE***	LOT #	STD VALUE (µmhos/cm)	INSTRUMENT RESPONSE (µmhos/cm)	% DIFF	PASS (Y, N)****	SAMPLER INITIALS	
IC*	10/24/19	720	9/20	190912G	1413	1413	0	Y	MB	
ICV*			9/20	190912B	100	104.3	4.3	Y	MB	
ICV*			10/20	190925A	50000	48109	3.78	Y	MB	
CCV*		1746			100	102.5	2.5	Y	MB	
CCV*					50000	48875	2.25	Y	MB	

Notes:

* **IC**= Initial Calibration **ICV**= Initial Calibration Verification (low) **CCV**= Continuing Calibration Verification

** Standard Purchased From Exaxol Chemical Corporation

Acceptance Criteria: **Dissolved Oxygen**: ± 0.3 mg/L **pH**: ± 0.2 units **Specific Conductance**: ± 5%

pH 4 mV range +(160-177)
pH 7 mV range ± 50
pH 10 mV range -(160-177)

Tur 012

24641-05 AR398A	730	5.58	5.50	✓	MB
		49.3	49.7	✓	
		530	531	✓	
LOT A4308 EXP: 11/6/19	1750	5.58	5.53	✓	
		49.3	49.9	✓	
		530	526	✓	

Revised 4/28/15

REMEMBER TO MAKE A COPY

Field Instrument Calibration Log

PROJECT NAME: USACE Big Fishweir Creek 2019 PROJECT LOCATION: Big Fishweir Creek, Jacksonville, FL

INSTRUMENT # YSI EXO

Dissolved Oxygen - SOP FT 1500

	DATE	TIME	EXPIRATION DATE	STD VALUE (%)	STD VALUE (mg/L)	TEMP (°C)	THEORETICAL SATURATION (mg/L)	PASS (Y, N)	SAMPLER INITIALS	COMMENTS
IC*	10/25/19	700	Per Sampling	100	---	---	---	Y	MB	
ICV*			Per Sampling	---	8.69	22.3	8.63	Y	MB	
CCV*		1130	Per Sampling	---	8.19	25.5	8.16	Y	MB	

pH Calibration - SOP FT 1100

	DATE	TIME	EXPIRATION DATE***	LOT #	STD VALUE (SU)	INSTRUMENT RESPONSE (SU)	% DIFF	PASS (Y, N)****	SAMPLER INITIALS	
IC*	10/25/19	710	8/20	190205	7	7.00	Ø	Y	MB	
			3/21	1909124	4.01	4.01	Ø	Y	MB	
ICV*			3/20	1808238	10	9.91	0.9	Y	MB	
CCV*		1141			7	7.05	0.7	Y	MB	
					4.01	4.10	2.2	Y	MB	
					10	9.80	2	Y	MB	

Specific Conductance - SOP FT1200

	DATE	TIME	EXPIRATION DATE***	LOT #	STD VALUE (µmhos/cm)	INSTRUMENT RESPONSE (µmhos/cm)	% DIFF	PASS (Y, N)****	SAMPLER INITIALS	
IC*	10/25/19	720	9/20	1909120	1413	1413	Ø	Y	MB	
ICV*			9/20	1909128	100	101.0	1	Y	MB	
ICV*			190925A**	5/10/20	50000	49011	2	Y	MB	
CCV*		1155			100	103.9	3.9	Y	MB	
CCV*					50000	48409	3.2	Y	MB	

Notes:

* **IC**= Initial Calibration **ICV**= Initial Calibration Verification (low) **CCV**= Continuing Calibration Verification

** Standard Purchased From Exaxol Chemical Corporation

Acceptance Criteria: **Dissolved Oxygen**: ± 0.3 mg/L **pH**: ± 0.2 units **Specific Conductance**: ± 5%

pH 4 mV range +(160-177)
pH 7 mV range ± 50
pH 10 mV range -(160-177)

Turb: 0710 BFE
012

5.58	5.60
49.3	50.1
530	531
	5.71
	50.6
	533

REMEMBER TO MAKE A COPY

Field Instrument Calibration Log

PROJECT NAME: USACE Big Fishweir Creek 2019 PROJECT LOCATION: Big Fishweir Creek, Jacksonville, FL

INSTRUMENT # YSI EXO

Dissolved Oxygen - SOP FT 1500

	DATE	TIME	EXPIRATION DATE	STD VALUE (%)	STD VALUE (mg/L)	TEMP (°C)	THEORETICAL SATURATION (mg/L)	PASS (Y, N)	SAMPLER INITIALS	COMMENTS
IC*	10/28/19	1000	Per Sampling	100	---	---	---	Y	BFC	
ICV*	↓	↓	Per Sampling	---	8.55	23.32	8.53	Y	↓	
CCV*	↓	1520	Per Sampling	---	8.30	24.75	8.29	Y	↓	

pH Calibration - SOP FT 1100

	DATE	TIME	EXPIRATION DATE***	Exaxol LOT #	STD VALUE (SU)	INSTRUMENT RESPONSE (SU)	% DIFF	PASS (Y, N)****	SAMPLER INITIALS
IC*	10/28/19	1005	8/2020	190205	7	6.96	99%	Y	BFC
	↓	↓	3/2020**	190912A	4.01	3.97	99	↓	↓
ICV*	↓	↓	3/2020	180823B	10	9.45	99	↓	↓
		↓	↓	↓					
CCV*		1570	↓	↓	7	6.99	99	Y	↓
	↓	↓	↓	↓	4.01	4.00	99	↓	↓
					10	9.99	99	↓	↓

Specific Conductance - SOP FT1200

	DATE	TIME	EXPIRATION DATE***	LOT #	STD VALUE (µmhos/cm)	INSTRUMENT RESPONSE (µmhos/cm)	% DIFF	PASS (Y, N)****	SAMPLER INITIALS
IC*	10/28/19	1010	9/2020	190912C	1413	1410	<5%	Y	BFC
ICV*	↓	↓	9/2020	190912B	100	100.3	↓	Y	↓
ICV*	↓	↓	10/2019	181011	50000	49950	↓	Y	↓
CCV*	↓	1575	↓	↓	100	101	↓	Y	↓
CCV*	↓	↓	↓	↓	50000	49960	↓	Y	↓

Notes:

* **IC**= Initial Calibration **ICV**= Initial Calibration Verification (low) **CCV**= Continuing Calibration Verification

** Standard Purchased From Exaxol Chemical Corporation

Acceptance Criteria: **Dissolved Oxygen**: ± 0.3 mg/L **pH**: ± 0.2 units **Specific Conductance**: ± 5%

pH 4 mV range +(160-177)
pH 7 mV range ± 50
pH 10 mV range -(160-177)

Turb				STD	Reading	Pass	
10/28/19	1015	11/4/19	—	538	531	Y	BFC
↓	↓	↓	—	49.3	50.8	Y	BFC
			—	5.58	5.54	Y	BFC
10/28/19	1515	↓	—	↓	531	Y	↓
↓	↓	↓	—		50.9	Y	
					5.54	Y	

Revised 4/28/15

REMEMBER TO MAKE A COPY

C&G Containers Scientific

Cleaning Protocol Form

Validation Statement: The following containers were pre-cleaned according to one of three cleaning protocols listed below:

Cleaning Protocol A: X

Note:
Containers used in the analyses of: Metals, (Organics - Extractables BNAs, Pesticides/PCBs, - (Glass only)), Inorganics - Cyanide, Sulfide, Alkalinity, Anions as (Fluoride, Chlorides, Sulfate), Acidity, Hardness, (TOC, Oil & Grease, Phenolics - Glass only)

1. Virgin containers are cycle washed using ASTM Type I Deionized water
2. Cycle rinsed with 1:1 Nitric acid.
3. Cycle rinsed *thoroughly* with ASTM Type I Deionized water.
4. Oven Dried.

Cleaning Protocol B:

Note:
Containers used in the analysis of: Organic - Purgeables (VOCs), PCB Wipes.

1. Virgin containers are cycle washed using ASTM Type I Deionized water.
2. Oven Dried.

Cleaning Protocol C:

Note:
Containers used in the analyses of: Inorganics - BOD, CBOD, COD, Residues as TSS, TS, TDS, VSS, Hardness, Nitrogen Species (Ammonia, TKN, Nitrate, Nitrite), TOC & Oil & Grease (Glass only)

1. Virgin containers are cycle washed using ASTM Type I Deionized water.
2. Cycle rinsed with 1:1 Hydrochloric acid.
3. Cycle rinsed *thoroughly* with ASTM Type I Deionized water.
4. Oven Dried.

This case is preserved. X This case is NOT preserved.

Each Container contains:

Bar-Coded: No *Stirbars:* No *Tared Weight:* No

Level: 1

Glassware / Plasticware received full Quality Assurance and Quality Control treatment. Containers, liners, and closures as applicable, are cleaned according to EPA recommended procedures and validated through a third party (NELAP) testing Laboratory. Each case of containers is custody sealed and labeled for traceability by Lot Number.

Available Preservatives:

Ascorbic Acid (crystal)	Ammonium Chloride (crystal)	Deionized Water	1:1 Hydrochloric Acid
Methanol	1:1 Nitric Acid	18.8% - 19.6% Nitric Acid	1:1 Phosphoric Acid
Potassium Acetate (crystal)	Potassium Phosphate Monobasic (crystal)	Monochloroacetic Acid/ Potassium Acetate Buffer Solution	1:1 Sulfuric Acid
Sodium Azide (crystal)	Sodium Bisulfate (crystal)	Sodium Bisulfate Solution (1 g / 5 ml DI)	Sodium Phosphate Tribasic (crystal)
6 N Sodium Hydroxide	10 N Sodium Hydroxide	1:1 Sodium Hydroxide	Sodium Phosphate Tribasic Solution (1 g / 5 ml DI)
1 Molar Sodium Sulfite Solution	Sodium Sulfite (crystal)	Zinc Acetate (crystal)	1 N Zinc Acetate
Sodium Thiosulfate (crystal)	10% Sodium Thiosulfate	0.1 N Sodium Thiosulfate	0.008% Sodium Thiosulfate

---

This "Cleaning Protocol Form" is provided for your records and is used to facilitate any required correspondences as needed. Please contact Bo Blankfield at (800) 396-7123 for Quality Assurance/ Quality Control questions.

Date: 12/28/09

Item Description: 4 Liter Amber N/M w/ 38-430 Teflon lined cap

Lot Number: 122809-1ZZ LAN133100000

Protocol: A **Level:** 1

Chemical Lot No.: N/A

C&G Containers Scientific
"The Total Package!"

Office: 337-237-7123 Toll Free: 800-396-7123 Fax: 337-237-8712

CERTIFICATE OF ANALYSIS

This "Certificate of Analysis" represents a precleaned product that has been prepared in accordance with Performance-Based specifications. This product meets or exceeds analyte specifications established in the U. S. EPA "Specification and Guidance for Contaminant-free Sample Containers" for use in Superfund and other Hazardous waste programs.

Group 1 Containers for Semivolatile Organics

Compound	R.L ug/L	Compound	R.L ug/L	Compound	R.L ug/L
1,2,4-Trichlorobenzene	2.5 U	4-Chloro-3-methylphenol	2.5 U	Nitrobenzene	2.5 U
1,2-Dichlorobenzene	2.5 U	4-Chloroaniline	2.5 U	Phenol	2.5 U
1,3-Dichlorobenzene	2.5 U	4-Chlorophenyl phenyl ether	2.5 U	Acenaphthene	2.5 U
1,4-Dichlorobenzene	2.5 U	4-Nitroaniline	2.5 U	Acenaphthylene	2.5 U
2,4,5-Trichlorophenol	2.5 U	4-Nitrophenol	2.5 U	Anthracene	2.5 U
2,4,6-Trichlorophenol	2.5 U	Bis(2-chloroethoxy)methane	2.5 U	Benzo(a)pyrene	2.5 U
2,4-Dichlorophenol	2.5 U	Bis(2-chloroethyl)ether	2.5 U	Benzo(a)anthracene	2.5 U
2,4-Dimethylphenol	2.5 U	Bis(2-chloroisopropyl)ether	2.5 U	Benzo(b)fluoranthene	2.5 U
2,4-Dinitrophenol	2.5 U	Bis(2-ethylhexyl)phthalate	2.5 U	Benzo(g,h,i)perylene	2.5 U
2,4-Dinitrotoluene	2.5 U	Butyl benzyl phthalate	2.5 U	Benzo(k)fluoranthene	2.5 U
2,6-Dinitrotoluene	2.5 U	Carbazole	2.5 U	Chrysene	2.5 U
2-Chloronaphthalene	2.5 U	Di-n-butyl phthalate	2.5 U	Dibenz(a,h)anthracene	2.5 U
2-Chlorophenol	2.5 U	Di-n-octyl phthalate	2.5 U	Fluorene	2.5 U
2-Methylnaphthalene	2 5 U	Dibenzofuran	2.5 U	Fluoranthene	2.5 U
2-Methylphenol	2.5 U	Diethyl phthalate	2.5 U	Indeno(1,2,3-cd)pyrene	2.5 U
2-Nitroaniline	2.5 U	Dimethyl phthalate	2.5 U	Isophorone	2.5 U
2-Nitrophenol	2.5 U	Hexachlorobenzene	2.5 U	Naphthalene	2.5 U
3&4-Methylphenol	2.5 U	Hexachlorobutadiene	2.5 U	Pentachlorophenol	2.5 U
3,3'-Dichlorobenzidine	2.5 U	Hexachlorocyclopentadiene	2.5 U	Phenanthrene	2.5 U
3-Nitroaniline	2.5 U	Hexachloroethane	2.5 U	Pyrene	2.5 U
4,6-Dinitro-2-methylphenol	2.5 U	N-Nitrosodi-n-propylamine	2.5 U	Chlordane	0.12 U
4-Bromophenyl phenyl ether	2.5 U	N-Nitrosodiphenylamine	2.5 U	alpha-BHC	0.012 U
beta-BHC	0.012 U	delta-BHC	0.012 U	gamma-BHC (Lindane)	0.012 U
Heptachlor	0.012 U	Aldrin	0.012 U	Heptachlor epoxide	0.012 U
Endosulfan I	0.012 U	Dieldrin	0.012 U	4,4'-DDD	0.012 U
4,4'-DDE	0.012 U	Endosulfan sulfate	0.012 U	Endosulfan II	0.012 U
Endrin	0.012 U	4,4'-DDT	0.012 U	Methoxychlor	0.12 U
Endrin ketone	0.012 U	Endrin aldehyde	0.012 U	alpha-Chlordane	0.012 U
gamma-Chlordane	0.012 U	Toxaphene	0.12 U	ARO-1221	0.12 U
ARO-1232	0.12 U	ARO-1242	0.12 U	ARO-1248	0.12 U
ARO-1254	0.12 U	ARO-1260	0.12 U	Phenolics	0.005 U mg/L
ARO-1016	0.12 U	Oil & Grease	5.0 U mg/L	Total Organic Carbon	1.0 U mg/L
Diesel Range Organics	0.2 U mg/L	Diesel Range Organics	5.0 U mg/Kg	TPH by TX1005	50 U mg/Kg

NOTES:
a. R.L. = Reporting Limit = The lowest concentration standard analyzed and can be verified.
b. U = The compound was analyzed for but not detected above the Reporting Limit.

The Prepared and Precautionary dates inscribed on this product are provided as guidance for the user.

This "Certificate of Analysis" is provided for your records and is used to facilitate any required correspondences as needed. Please contact Bo Blankfield at (800) 396-7123 for Quality Assurance/Quality Control questions.

Item Description: 4 Liter Amber N/M w/ 38-430 Teflon lined cap

Lot Number: 122809-1ZZ LAN133100000

Protocol: A **Level:** 1

Group: 1 (applies)

Date Product Prepared: 12/28/09

Precautionary Date: 12/28/10

Bo Blankfield - Technical Director

P.O Box 2003
Lafayette, LA 70502

152 Easy Street
Lafayette, LA 70506

Electronic Version Only

APPENDIX C

LABORATORY ANALYTICAL REPORTS

January 27, 2020 Service Request No:J1906537

Mr. Bryan Cotter
Water and Air Research
6821 S.W. Archer Road.
Gainesville, FL 32608

Laboratory Results for: USACE Big Fishweir Creek

Dear Mr.Cotter,

Enclosed are the results of the sample(s) submitted to our laboratory October 30, 2019
For your reference, these analyses have been assigned our service request number **J1906537.**

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and ALS Environmental is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. In accordance with the TNI 2016 Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Please contact me if you have any questions. My extension is 4406. You may also contact me via email at Mandy.Sullivan@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Mandy Sullivan
Project Manager

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PHONE +1 904 739 2277 | FAX +1 904 739 2011
ALS Group USA, Corp.
dba ALS Environmental

Narrative Documents

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www.alsglobal.com

9143 Philips Highway, Suite 200, Jacksonville, FL 32256 | 904-739-2277 | www.alsglobal.com

Client: Water and Air Research
Project: USACE Big Fishweir Creek
Sample Matrix: Sediment

Service Request: J1906537
Date Received: 10/30/2019

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Seven sediment samples were received for analysis at ALS Environmental on 10/30/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivolatiles by GC/MS:

Method 8270D: The reporting limit is elevated for all in sample(s) J1906537(001-005). The sample extract was diluted prior to instrumental analysis due to relatively high levels of non-target background components. The extract was highly colored and viscous, which indicated the need to perform a dilution prior to injection into the instrument. Clean-up of the extract was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilution. The result(s) is/are flagged to indicate the matrix interference.

Semivoa GC:

No significant anomalies were noted with this analysis.

Metals:

No significant anomalies were noted with this analysis.

Subcontracted Analytical Parameters:

One or more samples were subcontracted to another laboratory for testing. The certified analytical report from the subcontractor has been included in its entirety at the end of this report and includes the name and address of the subcontracted laboratory.

Approved by _____ Date 11/30/2019

SAMPLE DETECTION SUMMARY

CLIENT ID: VB-BFWC19-Zone A			Lab ID: J1906537-001			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Solids, Total	59.3				Percent	160.3 Modified
Aluminum, Total	1550		2	25	mg/Kg	6020B
Antimony, Total	0.09	J	0.007	0.50	mg/Kg	6020B
Arsenic, Total	0.60		0.05	0.50	mg/Kg	6020B
Barium, Total	14.1		0.02	1.0	mg/Kg	6020B
Beryllium, Total	0.12	J	0.03	0.25	mg/Kg	6020B
Boron, Total	5	BJ	0.8	50	mg/Kg	6020B
Cadmium, Total	0.11	J	0.03	0.20	mg/Kg	6020B
Calcium, Total	16800		8	50	mg/Kg	6020B
Chromium, Total	3.49		0.04	0.50	mg/Kg	6020B
Cobalt, Total	0.52		0.007	0.50	mg/Kg	6020B
Copper, Total	3.11		0.02	0.50	mg/Kg	6020B
Iron, Total	2230		0.2	50	mg/Kg	6020B
Lead, Total	30.6		0.007	0.25	mg/Kg	6020B
Magnesium, Total	414		0.6	50	mg/Kg	6020B
Manganese, Total	37.5		0.2	1.0	mg/Kg	6020B
Mercury, Total	0.0186		0.0015	0.0086	mg/Kg	7471B
Molybdenum, Total	0.4	J	0.06	1.0	mg/Kg	6020B
Nickel, Total	1.5		0.08	1.0	mg/Kg	6020B
Potassium, Total	155		3	50	mg/Kg	6020B
Selenium, Total	0.1	J	0.08	1.0	mg/Kg	6020B
Silver, Total	0.02	J	0.009	0.25	mg/Kg	6020B
Sodium, Total	489		2	50	mg/Kg	6020B
Strontium, Total	34.9		0.07	1.0	mg/Kg	6020B
Thallium, Total	0.03	J	0.007	0.10	mg/Kg	6020B
Tin, Total	1.9	BJ	0.03	2.5	mg/Kg	6020B
Titanium, Total	23.4		0.5	2.5	mg/Kg	6020B
Vanadium, Total	3.2		0.08	1.0	mg/Kg	6020B
Zinc, Total	27.9		0.4	2.5	mg/Kg	6020B
Benz(a)anthracene	281	J	211	377	ug/Kg	8270D SIM
Benzo(a)pyrene	168	J	111	377	ug/Kg	8270D SIM
Fluoranthene	235	J	222	377	ug/Kg	8270D SIM
Pyrene	231	J	222	377	ug/Kg	8270D SIM

CLIENT ID: VB-BFWC19-Zone B Upstream			Lab ID: J1906537-002			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Solids, Total	74.5				Percent	160.3 Modified
Aluminum, Total	525		2	24	mg/Kg	6020B
Antimony, Total	0.08	BJ	0.006	0.48	mg/Kg	6020B
Arsenic, Total	0.33	J	0.05	0.48	mg/Kg	6020B
Barium, Total	4.97		0.02	0.97	mg/Kg	6020B
Beryllium, Total	0.03	J	0.03	0.24	mg/Kg	6020B

SAMPLE DETECTION SUMMARY

CLIENT ID: VB-BFWC19-Zone B Upstream			Lab ID: J1906537-002			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Boron, Total	3	BJ	0.8	48	mg/Kg	6020B
Cadmium, Total	0.09	J	0.03	0.19	mg/Kg	6020B
Calcium, Total	7120		8	48	mg/Kg	6020B
Chromium, Total	1.83		0.04	0.48	mg/Kg	6020B
Cobalt, Total	0.19	J	0.006	0.48	mg/Kg	6020B
Copper, Total	1.98		0.02	0.48	mg/Kg	6020B
Iron, Total	735		0.2	48	mg/Kg	6020B
Lead, Total	19.2		0.006	0.24	mg/Kg	6020B
Magnesium, Total	213		0.6	48	mg/Kg	6020B
Manganese, Total	8.42		0.16	0.97	mg/Kg	6020B
Mercury, Total	0.0107		0.0015	0.0088	mg/Kg	7471B
Molybdenum, Total	0.16	J	0.06	0.97	mg/Kg	6020B
Nickel, Total	0.64	J	0.08	0.97	mg/Kg	6020B
Potassium, Total	61	B	3	48	mg/Kg	6020B
Silver, Total	0.01	J	0.009	0.24	mg/Kg	6020B
Sodium, Total	310		2	48	mg/Kg	6020B
Strontium, Total	10.4		0.07	0.97	mg/Kg	6020B
Thallium, Total	0.012	J	0.007	0.097	mg/Kg	6020B
Tin, Total	1.6	BJ	0.03	2.4	mg/Kg	6020B
Titanium, Total	27.4		0.5	2.4	mg/Kg	6020B
Vanadium, Total	1.46		0.08	0.97	mg/Kg	6020B
Zinc, Total	20.7		0.4	2.4	mg/Kg	6020B
Benz(a)anthracene	76.4		26.4	47.1	ug/Kg	8270D SIM
Benzo(a)pyrene	60.8		13.9	47.1	ug/Kg	8270D SIM
Benzo(b)fluoranthene	115		27.8	47.1	ug/Kg	8270D SIM
Benzo(g,h,i)perylene	51.1		30.6	47.1	ug/Kg	8270D SIM
Benzo(k)fluoranthene	37.4	J	33.3	47.1	ug/Kg	8270D SIM
Chrysene	59.6		26.4	47.1	ug/Kg	8270D SIM
Fluoranthene	104		27.8	47.1	ug/Kg	8270D SIM
Indeno(1,2,3-cd)pyrene	46.2	J	30.6	47.1	ug/Kg	8270D SIM
Pyrene	97.6		27.8	47.1	ug/Kg	8270D SIM

CLIENT ID: VB-BFWC19-Zone B Downstream			Lab ID: J1906537-003			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Solids, Total	56.5				Percent	160.3 Modified
Aluminum, Total	1480		2	31	mg/Kg	6020B
Antimony, Total	0.24	J	0.008	0.61	mg/Kg	6020B
Arsenic, Total	1.48		0.06	0.61	mg/Kg	6020B
Barium, Total	11.3		0.02	1.2	mg/Kg	6020B
Beryllium, Total	0.09	J	0.03	0.31	mg/Kg	6020B
Boron, Total	9	BJ	1.0	61	mg/Kg	6020B
Cadmium, Total	0.28		0.03	0.25	mg/Kg	6020B

SAMPLE DETECTION SUMMARY

CLIENT ID: VB-BFWC19-Zone B Downstream			Lab ID: J1906537-003			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Calcium, Total	3710		9	61	mg/Kg	6020B
Chromium, Total	5.92		0.04	0.61	mg/Kg	6020B
Cobalt, Total	0.72		0.008	0.61	mg/Kg	6020B
Copper, Total	9.14		0.02	0.61	mg/Kg	6020B
Iron, Total	3980		0.2	61	mg/Kg	6020B
Lead, Total	63.7		0.008	0.31	mg/Kg	6020B
Magnesium, Total	934		0.8	61	mg/Kg	6020B
Manganese, Total	19.3		0.2	1.2	mg/Kg	6020B
Mercury, Total	0.0359		0.0014	0.0085	mg/Kg	7471B
Molybdenum, Total	0.9	J	0.08	1.2	mg/Kg	6020B
Nickel, Total	2.4		0.09	1.2	mg/Kg	6020B
Potassium, Total	159		4	61	mg/Kg	6020B
Selenium, Total	0.3	J	0.10	1.2	mg/Kg	6020B
Silver, Total	0.06	J	0.02	0.31	mg/Kg	6020B
Sodium, Total	494		2	61	mg/Kg	6020B
Strontium, Total	22.2		0.09	1.2	mg/Kg	6020B
Thallium, Total	0.03	J	0.008	0.12	mg/Kg	6020B
Tin, Total	2.3	BJ	0.04	3.1	mg/Kg	6020B
Titanium, Total	46.7		0.6	3.1	mg/Kg	6020B
Vanadium, Total	5.7		0.09	1.2	mg/Kg	6020B
Zinc, Total	78.4		0.4	3.1	mg/Kg	6020B
Benz(a)anthracene	481		247	442	ug/Kg	8270D SIM
Benzo(a)pyrene	307	J	130	442	ug/Kg	8270D SIM
Benzo(b)fluoranthene	509		260	442	ug/Kg	8270D SIM
Chrysene	247	J	247	442	ug/Kg	8270D SIM
Fluoranthene	598		260	442	ug/Kg	8270D SIM
Pyrene	584		260	442	ug/Kg	8270D SIM

CLIENT ID: VB-BFWC19-Zone C			Lab ID: J1906537-004			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Solids, Total	45.2				Percent	160.3 Modified
Aluminum, Total	2780		2	33	mg/Kg	6020B
Antimony, Total	0.11	J	0.008	0.65	mg/Kg	6020B
Arsenic, Total	1.77		0.07	0.65	mg/Kg	6020B
Barium, Total	16.3		0.02	1.3	mg/Kg	6020B
Beryllium, Total	0.19	J	0.04	0.33	mg/Kg	6020B
Boron, Total	7	BJ	2	65	mg/Kg	6020B
Cadmium, Total	0.34		0.03	0.26	mg/Kg	6020B
Calcium, Total	3580		10	65	mg/Kg	6020B
Chromium, Total	8.52		0.04	0.65	mg/Kg	6020B
Cobalt, Total	0.66		0.008	0.65	mg/Kg	6020B
Copper, Total	7.96		0.02	0.65	mg/Kg	6020B

SAMPLE DETECTION SUMMARY

CLIENT ID: VB-BFWC19-Zone C			Lab ID: J1906537-004			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Iron, Total	5130		0.3	65	mg/Kg	6020B
Lead, Total	34.6		0.008	0.33	mg/Kg	6020B
Magnesium, Total	961		0.8	65	mg/Kg	6020B
Manganese, Total	29.6		0.2	1.3	mg/Kg	6020B
Mercury, Total	0.105		0.003	0.013	mg/Kg	7471B
Molybdenum, Total	1.1	J	0.08	1.3	mg/Kg	6020B
Nickel, Total	2.5		0.10	1.3	mg/Kg	6020B
Potassium, Total	260		4	65	mg/Kg	6020B
Selenium, Total	0.4	J	0.10	1.3	mg/Kg	6020B
Silver, Total	0.14	J	0.02	0.33	mg/Kg	6020B
Sodium, Total	317		2	65	mg/Kg	6020B
Strontium, Total	32.1		0.09	1.3	mg/Kg	6020B
Thallium, Total	0.06	J	0.009	0.13	mg/Kg	6020B
Tin, Total	2.5	BJ	0.04	3.3	mg/Kg	6020B
Titanium, Total	58.0		0.6	3.3	mg/Kg	6020B
Vanadium, Total	5.9		0.10	1.3	mg/Kg	6020B
Zinc, Total	48.0		0.5	3.3	mg/Kg	6020B
Benz(a)anthracene	117		29.9	53.4	ug/Kg	8270D SIM
Benzo(a)pyrene	97.0		15.8	53.4	ug/Kg	8270D SIM
Benzo(b)fluoranthene	186		31.5	53.4	ug/Kg	8270D SIM
Benzo(g,h,i)perylene	91.7		34.6	53.4	ug/Kg	8270D SIM
Benzo(k)fluoranthene	55.3		37.8	53.4	ug/Kg	8270D SIM
Chrysene	84.5		29.9	53.4	ug/Kg	8270D SIM
Fluoranthene	189		31.5	53.4	ug/Kg	8270D SIM
Indeno(1,2,3-cd)pyrene	77.9		34.6	53.4	ug/Kg	8270D SIM
Phenanthrene	42.0	J	26.8	107	ug/Kg	8270D SIM
Pyrene	193		31.5	53.4	ug/Kg	8270D SIM

CLIENT ID: VB-BFWC19-Zone D			Lab ID: J1906537-005			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Solids, Total	71.6				Percent	160.3 Modified
Aluminum, Total	515		2	23	mg/Kg	6020B
Antimony, Total	0.07	BJ	0.006	0.47	mg/Kg	6020B
Arsenic, Total	0.26	J	0.05	0.47	mg/Kg	6020B
Barium, Total	2.93		0.02	0.93	mg/Kg	6020B
Boron, Total	3	BJ	0.8	47	mg/Kg	6020B
Cadmium, Total	0.09	J	0.03	0.19	mg/Kg	6020B
Calcium, Total	1500		8	47	mg/Kg	6020B
Chromium, Total	1.86		0.04	0.47	mg/Kg	6020B
Cobalt, Total	0.18	J	0.006	0.47	mg/Kg	6020B
Copper, Total	3.14		0.02	0.47	mg/Kg	6020B
Iron, Total	761		0.2	47	mg/Kg	6020B

SAMPLE DETECTION SUMMARY

CLIENT ID: VB-BFWC19-Zone D			Lab ID: J1906537-005			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Lead, Total	15.3		0.006	0.23	mg/Kg	6020B
Magnesium, Total	259		0.6	47	mg/Kg	6020B
Manganese, Total	6.32		0.16	0.93	mg/Kg	6020B
Mercury, Total	0.0089		0.0011	0.0065	mg/Kg	7471B
Molybdenum, Total	0.20	J	0.06	0.93	mg/Kg	6020B
Nickel, Total	0.65	J	0.08	0.93	mg/Kg	6020B
Potassium, Total	63	B	3	47	mg/Kg	6020B
Silver, Total	0.01	J	0.009	0.23	mg/Kg	6020B
Sodium, Total	333		2	47	mg/Kg	6020B
Strontium, Total	6.39		0.07	0.93	mg/Kg	6020B
Thallium, Total	0.009	J	0.007	0.093	mg/Kg	6020B
Tin, Total	1.3	BJ	0.03	2.3	mg/Kg	6020B
Titanium, Total	39.7		0.5	2.3	mg/Kg	6020B
Vanadium, Total	1.53		0.08	0.93	mg/Kg	6020B
Zinc, Total	22.5		0.4	2.3	mg/Kg	6020B
Anthracene	70.5	J	61.5	243	ug/Kg	8270D
Bis(2-ethylhexyl) Phthalate	150	J	63.0	243	ug/Kg	8270D
Fluoranthene	74.8	J	68.7	243	ug/Kg	8270D
Benz(a)anthracene	73.5		26.8	47.9	ug/Kg	8270D SIM
Benzo(a)pyrene	59.7		14.1	47.9	ug/Kg	8270D SIM
Benzo(b)fluoranthene	108		28.2	47.9	ug/Kg	8270D SIM
Benzo(g,h,i)perylene	55.9		31.0	47.9	ug/Kg	8270D SIM
Chrysene	52.7		26.8	47.9	ug/Kg	8270D SIM
Pyrene	79.1	J	65.8	243	ug/Kg	8270D
Fluoranthene	112		28.2	47.9	ug/Kg	8270D SIM
Indeno(1,2,3-cd)pyrene	50.4		31.0	47.9	ug/Kg	8270D SIM
Phenanthrene	29.8	J	24.0	95.7	ug/Kg	8270D SIM
Pyrene	104		28.2	47.9	ug/Kg	8270D SIM

CLIENT ID: VB-BFWC19-Zone C			Lab ID: J1906537-006			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Solids, Total	65.4				Percent	160.3 Modified
Barium, TCLP	0.09	J	0.002	0.10	mg/L	6010D
Lead, TCLP	0.04	J	0.006	0.10	mg/L	6010D
1-Methylnaphthalene	45.6		27.4	34.4	ug/Kg	8270D SIM
2-Methylnaphthalene	87.5		23.3	34.4	ug/Kg	8270D SIM
Benz(a)anthracene	69.5		19.3	34.4	ug/Kg	8270D SIM
Benzo(a)pyrene	64.3		10.2	34.4	ug/Kg	8270D SIM
Benzo(b)fluoranthene	131		20.3	34.4	ug/Kg	8270D SIM
Benzo(g,h,i)perylene	65.2		22.3	34.4	ug/Kg	8270D SIM
Benzo(k)fluoranthene	38.8		24.4	34.4	ug/Kg	8270D SIM
Chrysene	54.5		19.3	34.4	ug/Kg	8270D SIM

SAMPLE DETECTION SUMMARY

CLIENT ID: VB-BFWC19-Zone C			Lab ID: J1906537-006			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Fluoranthene	104		20.3	34.4	ug/Kg	8270D SIM
Indeno(1,2,3-cd)pyrene	57.7		22.3	34.4	ug/Kg	8270D SIM
Phenanthrene	35.9	J	17.3	68.9	ug/Kg	8270D SIM
Pyrene	99.6		20.3	34.4	ug/Kg	8270D SIM

CLIENT ID: VB-BFWC19-Zone D			Lab ID: J1906537-007			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Solids, Total	43.2				Percent	160.3 Modified
Arsenic, TCLP	0.02	J	0.02	0.10	mg/L	6010D
Barium, TCLP	0.13		0.002	0.10	mg/L	6010D
Benz(a)anthracene	41.6		12.6	22.4	ug/Kg	8270D SIM
Benzo(a)pyrene	40.6		6.60	22.4	ug/Kg	8270D SIM
Benzo(b)fluoranthene	69.3		13.2	22.4	ug/Kg	8270D SIM
Benzo(g,h,i)perylene	38.7		14.5	22.4	ug/Kg	8270D SIM
Benzo(k)fluoranthene	21.2	J	15.9	22.4	ug/Kg	8270D SIM
Chrysene	31.3		12.6	22.4	ug/Kg	8270D SIM
Fluoranthene	60.5		13.2	22.4	ug/Kg	8270D SIM
Indeno(1,2,3-cd)pyrene	33.2		14.5	22.4	ug/Kg	8270D SIM
Phenanthrene	13.5	J	11.3	44.8	ug/Kg	8270D SIM
Pyrene	65.9		13.2	22.4	ug/Kg	8270D SIM

Sample Receipt Information

ALS Environmental—Jacksonville Laboratory
9143 Philips Highway, Suite 200, Jacksonville, FL 32256
Phone (904) 739-2277 Fax (904) 739-2011
www.alsglobal.com

Client: Water and Air Research **Service Request:**J1906537
Project: USACE Big Fishweir Creek

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
J1906537-001	VB-BFWC19-Zone A	10/25/2019	0935
J1906537-002	VB-BFWC19-Zone B Upstream	10/24/2019	1535
J1906537-003	VB-BFWC19-Zone B Downstream	10/24/2019	1024
J1906537-004	VB-BFWC19-Zone C	10/23/2019	1610
J1906537-005	VB-BFWC19-Zone D	10/22/2019	1725
J1906537-006	VB-BFWC19-Zone C	10/23/2019	1610
J1906537-007	VB-BFWC19-Zone D	10/22/2019	1725

J1906537 5
Water and Air Research
USACE Big Fishweir Creek

ALS Environmental

Cooler Receipt Form

Client: Water + Air Research Service Request #:

Project: USACE Big Fishweir Creek Shipping paid by ALS?

Cooler received on 10/30/19 and opened on 10/30/19 by LM Yes (No) N/A

COURIER: ALS UPS (FEDEX) DHL Client Other _____ Airbill # 7768 4680 1200

1	Were custody seals on outside of cooler?	(Yes)	No		
	If yes, how many and where?	#: 1 on lid	other		
2	Were seals intact and signature and date correct?	(Yes)	No	N/A	
3	Were custody papers properly filled out?	(Yes)	No	N/A	
4	Temperature of cooler(s) upon receipt (Should be 0°C and ≤ 6°C)	0.1			
5	Thermometer ID	T188			
6	Temperature Blank Present?	(Yes)	No		
7	Were Ice or Ice Packs present	(Ice)	Ice Packs	No	
8	Did all bottles arrive in good condition (unbroken, etc....)?	(Yes)	No	N/A	
9	Type of packing material present	Netting	Vial Holder	(Bubble Wrap)	
		Paper	Styrofoam	Other	N/A
10	Were all bottle labels complete (sample ID, preservation, etc....)?	(Yes)	No	N/A	
11	Did all bottle labels and tags agree with custody papers?	(Yes)	No	N/A	
12	Were the correct bottles used for the tests indicated?	(Yes)	No	N/A	
13	Were all of the preserved bottles received with the appropriate preservative?	Yes	No	(N/A)	
	HNO3 pH<2 H2SO4 pH<2 ZnAc2/NaOH pH>9 NaOH pH>12 HCl pH<2				
	Preservative additions noted below				
14	Were all samples received within analysis holding times?	(Yes)	No	N/A	
15	Were VOA vials free of air bubbles greater than 6mm? If present, note below	Yes	No	(N/A)	
16	Where did the bottles originate?	(ALS)	Client		

Sample ID	Reagent	Lot #	ml added	Initials Date/Time

Additional comments and/or explanation of all discrepancies noted above:

Client approval to run samples if discrepancies noted: Date:

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

ALS

9143 Phillips Highway, Suite 200, Jacksonville, FL 32256
Phone (904) 739-2277 / 800-695-7222 x06 / FAX (904) 739-2011

SR# J198 6537

001, 002, 003

T058455

Project Name: USACE Big Fishweir Creek	
Project Number:	Report To: Bryan Cotter
Company / Address: Water and Air Research, 6821 S.W. Archer Road, Gainesville FL 32608	
Phone #: 352-372-1500	FAX #
Sampler Signature:	Sampler Printed Name: Bryan Cotter + Mindrill

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	7D 8081A / PEST_OC	7D 8151A / HERB	7D 8270D / SVO	7D 8270D SIM / SVO SIM	14D 8081A / PEST_OC	14D 8082A / PCB	14D 8151A / HERB	14D 8270D / SVO	14D 8270D SIM / SVO SIM	28D 7471B / Hg	180D 200.8 / Metals Redppt	180D 6020B / Metals T	365D 1613B / Dioxins Furans	Remarks
~~1. VB-BFWC19-Zone A~~	BC			~~Liquid~~	~~13~~	X	X	X	X		X					X		X	
~~2.~~				~~Liquid~~	~~13~~	X	X	X	X		X					X		X	
~~3.~~				~~Liquid~~	~~13~~	X	X	X	X		X					X		X	
~~4.~~				~~Liquid~~	~~13~~	X	X	X	X		X					X		X	
~~5.~~				~~Liquid~~	~~13~~	X	X	X	X		X					X		X	
6. VB-BFWC19-Zone A		10/25/19	0935	Solid	4					X	X	X	X	X	X		X	X	
7. Zone B upstream		10/24/19	1535	Solid	4					X	X	X	X	X	X		X	X	
8. Zone B Downstream		10/24/19	1024	Solid	4					X	X	X	X	X	X		X	X	
9. Zone C		10/23/19	1610	Solid	4					X	X	X	X	X	X		X	X	
10. Zone D		10/22/19	1725	Solid	4					X	X	X	X	X	X		X	X	

Special Instructions/Comments:
See attached MDLs

0.1°C

Turnaround Requirements
___ RUSH (SURCHARGES APPLY)
___ Standard 15 Business Days per quote
REQUESTED FAX DATE
November 21, 2019
Requested Report Date

Report Requirements
___ I. Results Only
X II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
___ III. Results + QC and Cilibration Summaries
___ IV. Data Validation Report with Raw Data
EData ____Yes ____No

Invoice Information
P.O.# ____
Bill To: Water & Air Research, Inc

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Kit from ALS Jax			Fed Ex	Fed Ex	
Signature: Fed Ex	Signature:	Signature:	Signature:	Signature:	Signature:
Printed Name:	Printed Name: Bryan Cotter	Printed Name: Bryan Cotter	Printed Name:	Printed Name:	Printed Name: Levi Mason
Firm:	Firm: W&A	Firm: W&A	Firm:	Firm:	Firm: ALS
Date/Time:	Date/Time: 10/14/19 1200	Date/Time: 10/29/19 1700	Date/Time: 10/29/19 1700	Date/Time: 10/30/19	Date/Time: 10/30/19 1213

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

ALS Environmental

9143 Phillips Highway, Suite 200, Jacksonville, FL 32256
Phone (904) 739-2277 / 800-695-7222 x06 / FAX (904) 739-2011

001, 002, 003

SR#

T058455

Project Name: USACE Big Fishweir Creek	
Project Number:	Report To: Bryan Cotter
Company / Address: Water and Air Research, 6821 S.W. Archer Road, Gainesville FL, 32608	
Phone #: 352-372-1500	FAX #
Sampler Signature	Sampler Printed Name

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	7D: 8081A / PEST_OC	7D: 8081A /	7D: 8151A / HERB	7D: 8270D / SVO	7D: 8270D / SVO TCLP	7D: 8270D SIM / SVO SIM	14D: 8081A / PEST_OC	14D: 8082A / PCB	14D: 8151A / HERB	14D: 8270D / SVO	14D: 8270D SIM / SVO SIM	14D: EPA 1311 / TCLP	28D: 7470A / Hg TCLP	28D: 7471B / Hg	180D: 200.8 / Metals Redppt	180D: 6010D / Metals TCLP	180D: 6020B / Metals T	365D: 1613B / Dioxins Furans	Remarks
11. VB-BFWC19-Zone C		10/23/19	1610	Solid	1		X			X						X	X	X			X			
12. VB-BFWC19-Zone D		10/22/19	1725	Solid	1		X			X						X	X	X			X			
13.				Liquid																				
14.				Liquid																				
15.				Liquid																				
16.				Liquid																				
17.				Liquid																				
18.				Liquid																				
19.				Liquid																				
20.				Liquid																				

Special Instructions/Comments:

Turnaround Requirements

___ RUSH (SURCHARGES APPLY)

___ Standard 15 Business Days per quote

11/21/19
REQUESTED FAX DATE

Requested Report Date

Report Requirements

___ I. Results Only

X II. Results + QC Summaries (LCS, DUP, MS/MSD as required)

___ III. Results + QC and Calibration Summaries

___ IV. Data Validation Report with Raw Data

EData ____Yes ____No

Invoice Information

P.O.# ____

Bill To: ____

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Kit from ALS Jax			Fed Ex	Fed Ex	
Signature: Fed Ex	Signature: [signature]	Signature: [signature]	Signature	Signature	Signature
Printed Name	Printed Name: Bryan Cotter	Printed Name	Printed Name	Printed Name	Printed Name
Firm	Firm: WAA	Firm: WAA	Firm	Firm	Firm
Date/Time	Date/Time: 10/14/19 1200	Date/Time: 10/29/19 1700	Date/Time: 10/29/19 1700	Date/Time: 10/30/19	Date/Time

Miscellaneous Forms

ALS Environmental—Jacksonville Laboratory
9143 Philips Highway, Suite 200, Jacksonville, FL 32256
Phone (904) 739-2277 Fax (904) 739-2011
www.alsglobal.com

REPORT QUALIFIERS AND DEFINITIONS

INORGANIC DATA

* The result is an outlier. See case narrative.
# The control limit criteria are not applicable. See case narrative.
B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
E The result is an estimated amount because the value exceeded the instrument calibration range.
J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
Z Too many colonies were present (TNTC). The numeric value represents the filtration volume.
i The MRL/MDL has been elevated due to matrix interference.
X See case narrative.

METALS DATA

* The result is an outlier. See case narrative.
# The control limit criteria are not applicable. See case narrative.
J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
E The reported value is estimated because of the presence of matrix interference.
M The duplicate injection precision was not met.
N The Matrix Spike sample recovery is not within control limits. See case narrative.
S The result was determined by Method of Standard Additions (MSA).
U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i The MRL/MDL has been elevated due to matrix interference.
X See case narrative.
+ The correlation coefficient for the MSA is less than 0.995.

ORGANIC DATA

* The result is an outlier. See case narrative.
# The control limit criteria are not applicable. See case narrative.
A The tentatively identified compound is a suspected aldol-condensation product.
B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D The reported result is from a dilution.
E The result is an estimated amount because the value exceeded the instrument calibration range.
J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P The GC or HPLC confirmation criteria were exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides)
U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i The MRL/MDL has been elevated due to a chromatographic interference.
X See case narrative.

PETROLEUM HYDROCARBON SPECIFIC

F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.

Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.

Z The chromatographic fingerprint does not resemble a petroleum product.

Jacksonville Lab ID # for State Certifications[1]

Agency	Number	Expiration Date
Department of Defense	66206	6/30/2020
Florida Department of Health	E82502	6/30/2020
Georgia Department of Natural Resources	958	6/30/2020
Kentucky Division of Waste Management	123042	6/30/2020
Louisiana Department of Environmental Quality	02086	6/30/2020
Maine Department of Health and Human Services	2019004	2/3/2021
New York State Department of Health	12113	4/1/2020
North Carolina Department of Environment and Natural Resources	527	12/31/2019
South Carolina Department of Health and Environmental Control	96021001	6/30/2019
Texas Commission on Environmental Quality	T104704197-19-12	5/31/2020
Virginia Environmental Accreditation Program	460191	12/14/2019

[1] Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the laboratory case narrative provided. For a specific list of accredited analytes, refer to http://www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads/North-America-Downloads

ACRONYMS

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Client: Water and Air Research **Service Request:** J1906537
Project: USACE Big Fishweir Creek/

Sample Name: VB-BFWC19-Zone A **Date Collected:** 10/25/19
Lab Code: J1906537-001 **Date Received:** 10/30/19
Sample Matrix: Sediment

Analysis Method	Extracted/Digested By	Analyzed By
160.3 Modified		MMASSEY
1613B	DBOTROS	LLUONG
6020B	MRUCKER	EGARDNER
7471B	MRUCKER	EGARDNER
8081B	TMIRENTA	SHERBELIN
8082A	BGREER	MCHAPPELLE
8151A	KSERCU	JMISIUREWICZ
8270D	ECOMOR	TYEREMYANTS
8270D SIM	ECOMOR	TYEREMYANTS

Sample Name: VB-BFWC19-Zone A **Date Collected:** 10/25/19
Lab Code: J1906537-001.R01 **Date Received:** 10/30/19
Sample Matrix: Sediment

Analysis Method	Extracted/Digested By	Analyzed By
8081B	TMIRENTA	SHERBELIN
8082A	BGREER	MCHAPPELLE

Sample Name: VB-BFWC19-Zone B Upstream **Date Collected:** 10/24/19
Lab Code: J1906537-002 **Date Received:** 10/30/19
Sample Matrix: Sediment

Analysis Method	Extracted/Digested By	Analyzed By
160.3 Modified		MMASSEY
1613B	DBOTROS	LLUONG
6020B	MRUCKER	EGARDNER
7471B	MRUCKER	EGARDNER
8081B	TMIRENTA	SHERBELIN
8082A	BGREER	MCHAPPELLE
8151A	KSERCU	JMISIUREWICZ
8270D	ECOMOR	TYEREMYANTS
8270D SIM	ECOMOR	TYEREMYANTS

Client: Water and Air Research **Service Request:** J1906537
Project: USACE Big Fishweir Creek/

Sample Name: VB-BFWC19-Zone B Upstream **Date Collected:** 10/24/19
Lab Code: J1906537-002.R01 **Date Received:** 10/30/19
Sample Matrix: Sediment

Analysis Method	Extracted/Digested By	Analyzed By
8081B	TMIRENTA	SHERBELIN
8082A	BGREER	MCHAPPELLE

Sample Name: VB-BFWC19-Zone B Upstream **Date Collected:** 10/24/19
Lab Code: J1906537-002.R02 **Date Received:** 10/30/19
Sample Matrix: Sediment

Analysis Method	Extracted/Digested By	Analyzed By
8081B	TMIRENTA	SHERBELIN

Sample Name: VB-BFWC19-Zone B Downstream **Date Collected:** 10/24/19
Lab Code: J1906537-003 **Date Received:** 10/30/19
Sample Matrix: Sediment

Analysis Method	Extracted/Digested By	Analyzed By
160.3 Modified		MMASSEY
1613B	DBOTROS	LLUONG
6020B	MRUCKER	EGARDNER
7471B	MRUCKER	EGARDNER
8081B	TMIRENTA	SHERBELIN
8082A	BGREER	MCHAPPELLE
8151A	KSERCU	JMISIUREWICZ
8270D	ECOMOR	TYEREMYANTS
8270D SIM	ECOMOR	TYEREMYANTS

Sample Name: VB-BFWC19-Zone B Downstream **Date Collected:** 10/24/19
Lab Code: J1906537-003.R01 **Date Received:** 10/30/19
Sample Matrix: Sediment

Analysis Method	Extracted/Digested By	Analyzed By
8081B	TMIRENTA	SHERBELIN

Client: Water and Air Research
Project: USACE Big Fishweir Creek/
Service Request: J1906537

Sample Name: VB-BFWC19-Zone B Downstream
Lab Code: J1906537-003.R01
Sample Matrix: Sediment
Date Collected: 10/24/19
Date Received: 10/30/19

Analysis Method	Extracted/Digested By	Analyzed By
8082A	BGREER	MCHAPPELLE

Sample Name: VB-BFWC19-Zone C
Lab Code: J1906537-004
Sample Matrix: Sediment
Date Collected: 10/23/19
Date Received: 10/30/19

Analysis Method	Extracted/Digested By	Analyzed By
160.3 Modified		MMASSEY
1613B	DBOTROS	LLUONG
6020B	MRUCKER	EGARDNER
7471B	MRUCKER	EGARDNER
8081B	TMIRENTA	SHERBELIN
8082A	BGREER	MCHAPPELLE
8151A	KSERCU	JMISIUREWICZ
8270D	ECOMOR	TYEREMYANTS
8270D SIM	ECOMOR	TYEREMYANTS

Sample Name: VB-BFWC19-Zone C
Lab Code: J1906537-004.R01
Sample Matrix: Sediment
Date Collected: 10/23/19
Date Received: 10/30/19

Analysis Method	Extracted/Digested By	Analyzed By
8081B	TMIRENTA	SHERBELIN
8082A	BGREER	MCHAPPELLE
8270D SIM	ECOMOR	TYEREMYANTS

Client: Water and Air Research **Service Request:** J1906537
Project: USACE Big Fishweir Creek/

Sample Name: VB-BFWC19-Zone D **Date Collected:** 10/22/19
Lab Code: J1906537-005 **Date Received:** 10/30/19
Sample Matrix: Sediment

Analysis Method	Extracted/Digested By	Analyzed By
160.3 Modified		MMASSEY
1613B	DBOTROS	LLUONG
6020B	MRUCKER	EGARDNER
7471B	MRUCKER	EGARDNER
8081B	TMIRENTA	SHERBELIN
8082A	BGREER	MCHAPPELLE
8151A	KSERCU	JMISIUREWICZ
8270D	ECOMOR	TYEREMYANTS
8270D SIM	ECOMOR	TYEREMYANTS

Sample Name: VB-BFWC19-Zone D **Date Collected:** 10/22/19
Lab Code: J1906537-005.R01 **Date Received:** 10/30/19
Sample Matrix: Sediment

Analysis Method	Extracted/Digested By	Analyzed By
8081B	TMIRENTA	SHERBELIN
8082A	BGREER	MCHAPPELLE

Sample Name: VB-BFWC19-Zone C **Date Collected:** 10/23/19
Lab Code: J1906537-006 **Date Received:** 10/30/19
Sample Matrix: Sediment

Analysis Method	Extracted/Digested By	Analyzed By
160.3 Modified		MMASSEY
6010D	MRUCKER	EGARDNER
7470A	MRUCKER	EGARDNER
8081A	ECOMOR	ECOMOR
8270D	ECOMOR	TYEREMYANTS
8270D SIM	ECOMOR	TYEREMYANTS

Analyst Summary report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek/		

Sample Name:	VB-BFWC19-Zone D	**Date Collected:**	10/22/19
Lab Code:	J1906537-007	**Date Received:**	10/30/19
Sample Matrix:	Sediment		

Analysis Method	Extracted/Digested By	Analyzed By
160.3 Modified		MMASSEY
6010D	MRUCKER	EGARDNER
7470A	MRUCKER	EGARDNER
8081A	ECOMOR	ECOMOR
8270D	ECOMOR	TYEREMYANTS
8270D SIM	ECOMOR	TYEREMYANTS

Sample Results

ALS Environmental—Jacksonville Laboratory
9143 Philips Highway, Suite 200, Jacksonville, FL 32256
Phone (904) 739-2277 Fax (904) 739-2011
www.alsglobal.com

Semivolatile Organic Compounds by GC/MS

ALS Environmental—Jacksonville Laboratory
9143 Philips Highway, Suite 200, Jacksonville, FL 32256
Phone (904)739-2277 Fax (904)739-2011
www.alsglobal.com

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/25/19 09:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone A	**Units:**	ug/Kg
Lab Code:	J1906537-001	**Basis:**	Dry

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	7640	U	20600	7640	10	11/19/19 04:55	10/31/19	
1,2-Dichlorobenzene	3880	U	20600	3880	10	11/19/19 04:55	10/31/19	
1,3-Dichlorobenzene	4610	U	20600	4610	10	11/19/19 04:55	10/31/19	
1,4-Dichlorobenzene	4980	U	20600	4980	10	11/19/19 04:55	10/31/19	
1-Methylnaphthalene	8010	U	20600	8010	10	11/19/19 04:55	10/31/19	
2,4,5-Trichlorophenol	6920	U	20600	6920	10	11/19/19 04:55	10/31/19	
2,4,6-Trichlorophenol	6070	U	20600	6070	10	11/19/19 04:55	10/31/19	
2,4-Dichlorophenol	7640	U	20600	7640	10	11/19/19 04:55	10/31/19	
2,4-Dimethylphenol	10100	U	20600	10100	10	11/19/19 04:55	10/31/19	
2,4-Dinitrophenol	2790	U	81200	2790	10	11/19/19 04:55	10/31/19	
2,4-Dinitrotoluene	4980	U	20600	4980	10	11/19/19 04:55	10/31/19	
2,6-Dinitrotoluene	5820	U	20600	5820	10	11/19/19 04:55	10/31/19	
2-Chloronaphthalene	5220	U	20600	5220	10	11/19/19 04:55	10/31/19	
2-Chlorophenol	4250	U	20600	4250	10	11/19/19 04:55	10/31/19	
2-Methylnaphthalene	7160	U	20600	7160	10	11/19/19 04:55	10/31/19	
2-Methylphenol	5820	U	20600	5820	10	11/19/19 04:55	10/31/19	
2-Nitroaniline	6190	U	20600	6190	10	11/19/19 04:55	10/31/19	
2-Nitrophenol	6310	U	81200	6310	10	11/19/19 04:55	10/31/19	
3- and 4-Methylphenol Coelution	5220	U	20600	5220	10	11/19/19 04:55	10/31/19	
3,3'-Dichlorobenzidine	10400	U	81200	10400	10	11/19/19 04:55	10/31/19	
3-Nitroaniline	6190	U	20600	6190	10	11/19/19 04:55	10/31/19	
4,6-Dinitro-2-methylphenol	5820	U	81200	5820	10	11/19/19 04:55	10/31/19	
4-Bromophenyl Phenyl Ether	6310	U	20600	6310	10	11/19/19 04:55	10/31/19	
4-Chloro-3-methylphenol	6430	U	20600	6430	10	11/19/19 04:55	10/31/19	
4-Chloroaniline	8370	U	20600	8370	10	11/19/19 04:55	10/31/19	
4-Chlorophenyl Phenyl Ether	6310	U	20600	6310	10	11/19/19 04:55	10/31/19	
4-Nitroaniline	6670	U	20600	6670	10	11/19/19 04:55	10/31/19	
4-Nitrophenol	6790	U	81200	6790	10	11/19/19 04:55	10/31/19	
Acenaphthene	6430	U	20600	6430	10	11/19/19 04:55	10/31/19	
Acenaphthylene	5700	U	20600	5700	10	11/19/19 04:55	10/31/19	
Acetophenone	5580	U	41200	5580	10	11/19/19 04:55	10/31/19	
Anthracene	5220	U	20600	5220	10	11/19/19 04:55	10/31/19	
Benz(a)anthracene	5700	U	20600	5700	10	11/19/19 04:55	10/31/19	
Benzo(a)pyrene	4490	U	20600	4490	10	11/19/19 04:55	10/31/19	
Benzo(b)fluoranthene	3160	U	20600	3160	10	11/19/19 04:55	10/31/19	
Benzo(g,h,i)perylene	6310	U	20600	6310	10	11/19/19 04:55	10/31/19	
Benzo(k)fluoranthene	7160	U	20600	7160	10	11/19/19 04:55	10/31/19	
Benzyl Alcohol	4610	U	41200	4610	10	11/19/19 04:55	10/31/19	
Bis(2-chloroethoxy)methane	6430	U	20600	6430	10	11/19/19 04:55	10/31/19	
Bis(2-chloroethyl) Ether	5100	U	20600	5100	10	11/19/19 04:55	10/31/19	
Bis(2-ethylhexyl) Phthalate	5340	U	20600	5340	10	11/19/19 04:55	10/31/19	
Butyl Benzyl Phthalate	5700	U	41200	5700	10	11/19/19 04:55	10/31/19	
Carbazole	6920	U	20600	6920	10	11/19/19 04:55	10/31/19	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/25/19 09:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone A	**Units:**	ug/Kg
Lab Code:	J1906537-001	**Basis:**	Dry

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Chrysene	5460	U	20600	5460	10	11/19/19 04:55	10/31/19	
Dibenz(a,h)anthracene	5580	U	20600	5580	10	11/19/19 04:55	10/31/19	
Dibenzofuran	5580	U	20600	5580	10	11/19/19 04:55	10/31/19	
Diethyl Phthalate	6190	U	20600	6190	10	11/19/19 04:55	10/31/19	
Dimethyl Phthalate	6430	U	20600	6430	10	11/19/19 04:55	10/31/19	
Di-n-butyl Phthalate	4130	U	20600	4130	10	11/19/19 04:55	10/31/19	
Di-n-octyl Phthalate	6310	U	41200	6310	10	11/19/19 04:55	10/31/19	
Fluoranthene	5820	U	20600	5820	10	11/19/19 04:55	10/31/19	
Fluorene	5700	U	20600	5700	10	11/19/19 04:55	10/31/19	
Hexachlorobenzene	5820	U	20600	5820	10	11/19/19 04:55	10/31/19	
Hexachlorobutadiene	6670	U	20600	6670	10	11/19/19 04:55	10/31/19	
Hexachlorocyclopentadiene	4130	U	20600	4130	10	11/19/19 04:55	10/31/19	
Hexachloroethane	3760	U	20600	3760	10	11/19/19 04:55	10/31/19	
Indeno(1,2,3-cd)pyrene	4980	U	20600	4980	10	11/19/19 04:55	10/31/19	
Isophorone	7040	U	20600	7040	10	11/19/19 04:55	10/31/19	
Naphthalene	5950	U	20600	5950	10	11/19/19 04:55	10/31/19	
Nitrobenzene	4730	U	20600	4730	10	11/19/19 04:55	10/31/19	
N-Nitrosodi-n-propylamine	6070	U	20600	6070	10	11/19/19 04:55	10/31/19	
Pentachlorophenol (PCP)	4250	U	81200	4250	10	11/19/19 04:55	10/31/19	
Phenanthrene	5100	U	20600	5100	10	11/19/19 04:55	10/31/19	
Phenol	5580	U	20600	5580	10	11/19/19 04:55	10/31/19	
Pyrene	5580	U	20600	5580	10	11/19/19 04:55	10/31/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	54	30 - 136	11/19/19 04:55	
2-Fluorobiphenyl	66	20 - 115	11/19/19 04:55	
2-Fluorophenol	53	10 - 110	11/19/19 04:55	
Nitrobenzene-d5	57	20 - 110	11/19/19 04:55	
Phenol-d6	62	14 - 100	11/19/19 04:55	
p-Terphenyl-d14	78	32 - 119	11/19/19 04:55	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 15:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Upstream	**Units:**	ug/Kg
Lab Code:	J1906537-002	**Basis:**	Dry

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	860	U	2320	860	10	11/19/19 05:20	10/31/19	
1,2-Dichlorobenzene	437	U	2320	437	10	11/19/19 05:20	10/31/19	
1,3-Dichlorobenzene	519	U	2320	519	10	11/19/19 05:20	10/31/19	
1,4-Dichlorobenzene	560	U	2320	560	10	11/19/19 05:20	10/31/19	
1-Methylnaphthalene	900	U	2320	900	10	11/19/19 05:20	10/31/19	
2,4,5-Trichlorophenol	778	U	2320	778	10	11/19/19 05:20	10/31/19	
2,4,6-Trichlorophenol	682	U	2320	682	10	11/19/19 05:20	10/31/19	
2,4-Dichlorophenol	860	U	2320	860	10	11/19/19 05:20	10/31/19	
2,4-Dimethylphenol	1140	U	2320	1140	10	11/19/19 05:20	10/31/19	
2,4-Dinitrophenol	314	U	9140	314	10	11/19/19 05:20	10/31/19	
2,4-Dinitrotoluene	560	U	2320	560	10	11/19/19 05:20	10/31/19	
2,6-Dinitrotoluene	655	U	2320	655	10	11/19/19 05:20	10/31/19	
2-Chloronaphthalene	587	U	2320	587	10	11/19/19 05:20	10/31/19	
2-Chlorophenol	478	U	2320	478	10	11/19/19 05:20	10/31/19	
2-Methylnaphthalene	805	U	2320	805	10	11/19/19 05:20	10/31/19	
2-Methylphenol	655	U	2320	655	10	11/19/19 05:20	10/31/19	
2-Nitroaniline	696	U	2320	696	10	11/19/19 05:20	10/31/19	
2-Nitrophenol	710	U	9140	710	10	11/19/19 05:20	10/31/19	
3- and 4-Methylphenol Coelution	587	U	2320	587	10	11/19/19 05:20	10/31/19	
3,3'-Dichlorobenzidine	1160	U	9140	1160	10	11/19/19 05:20	10/31/19	
3-Nitroaniline	696	U	2320	696	10	11/19/19 05:20	10/31/19	
4,6-Dinitro-2-methylphenol	655	U	9140	655	10	11/19/19 05:20	10/31/19	
4-Bromophenyl Phenyl Ether	710	U	2320	710	10	11/19/19 05:20	10/31/19	
4-Chloro-3-methylphenol	723	U	2320	723	10	11/19/19 05:20	10/31/19	
4-Chloroaniline	941	U	2320	941	10	11/19/19 05:20	10/31/19	
4-Chlorophenyl Phenyl Ether	710	U	2320	710	10	11/19/19 05:20	10/31/19	
4-Nitroaniline	750	U	2320	750	10	11/19/19 05:20	10/31/19	
4-Nitrophenol	764	U	9140	764	10	11/19/19 05:20	10/31/19	
Acenaphthene	723	U	2320	723	10	11/19/19 05:20	10/31/19	
Acenaphthylene	641	U	2320	641	10	11/19/19 05:20	10/31/19	
Acetophenone	628	U	4640	628	10	11/19/19 05:20	10/31/19	
Anthracene	587	U	2320	587	10	11/19/19 05:20	10/31/19	
Benz(a)anthracene	641	U	2320	641	10	11/19/19 05:20	10/31/19	
Benzo(a)pyrene	505	U	2320	505	10	11/19/19 05:20	10/31/19	
Benzo(b)fluoranthene	355	U	2320	355	10	11/19/19 05:20	10/31/19	
Benzo(g,h,i)perylene	710	U	2320	710	10	11/19/19 05:20	10/31/19	
Benzo(k)fluoranthene	805	U	2320	805	10	11/19/19 05:20	10/31/19	
Benzyl Alcohol	519	U	4640	519	10	11/19/19 05:20	10/31/19	
Bis(2-chloroethoxy)methane	723	U	2320	723	10	11/19/19 05:20	10/31/19	
Bis(2-chloroethyl) Ether	573	U	2320	573	10	11/19/19 05:20	10/31/19	
Bis(2-ethylhexyl) Phthalate	600	U	2320	600	10	11/19/19 05:20	10/31/19	
Butyl Benzyl Phthalate	641	U	4640	641	10	11/19/19 05:20	10/31/19	
Carbazole	778	U	2320	778	10	11/19/19 05:20	10/31/19	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 15:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Upstream	**Units:**	ug/Kg
Lab Code:	J1906537-002	**Basis:**	Dry

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Chrysene	614	U	2320	614	10	11/19/19 05:20	10/31/19	
Dibenz(a,h)anthracene	628	U	2320	628	10	11/19/19 05:20	10/31/19	
Dibenzofuran	628	U	2320	628	10	11/19/19 05:20	10/31/19	
Diethyl Phthalate	696	U	2320	696	10	11/19/19 05:20	10/31/19	
Dimethyl Phthalate	723	U	2320	723	10	11/19/19 05:20	10/31/19	
Di-n-butyl Phthalate	464	U	2320	464	10	11/19/19 05:20	10/31/19	
Di-n-octyl Phthalate	710	U	4640	710	10	11/19/19 05:20	10/31/19	
Fluoranthene	655	U	2320	655	10	11/19/19 05:20	10/31/19	
Fluorene	641	U	2320	641	10	11/19/19 05:20	10/31/19	
Hexachlorobenzene	655	U	2320	655	10	11/19/19 05:20	10/31/19	
Hexachlorobutadiene	750	U	2320	750	10	11/19/19 05:20	10/31/19	
Hexachlorocyclopentadiene	464	U	2320	464	10	11/19/19 05:20	10/31/19	
Hexachloroethane	423	U	2320	423	10	11/19/19 05:20	10/31/19	
Indeno(1,2,3-cd)pyrene	560	U	2320	560	10	11/19/19 05:20	10/31/19	
Isophorone	791	U	2320	791	10	11/19/19 05:20	10/31/19	
Naphthalene	669	U	2320	669	10	11/19/19 05:20	10/31/19	
Nitrobenzene	532	U	2320	532	10	11/19/19 05:20	10/31/19	
N-Nitrosodi-n-propylamine	682	U	2320	682	10	11/19/19 05:20	10/31/19	
Pentachlorophenol (PCP)	478	U	9140	478	10	11/19/19 05:20	10/31/19	
Phenanthrene	573	U	2320	573	10	11/19/19 05:20	10/31/19	
Phenol	628	U	2320	628	10	11/19/19 05:20	10/31/19	
Pyrene	628	U	2320	628	10	11/19/19 05:20	10/31/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	48	30 - 136	11/19/19 05:20	
2-Fluorobiphenyl	60	20 - 115	11/19/19 05:20	
2-Fluorophenol	47	10 - 110	11/19/19 05:20	
Nitrobenzene-d5	49	20 - 110	11/19/19 05:20	
Phenol-d6	58	14 - 100	11/19/19 05:20	
p-Terphenyl-d14	73	32 - 119	11/19/19 05:20	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 10:24
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Downstream	**Units:**	ug/Kg
Lab Code:	J1906537-003	**Basis:**	Dry

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	1160	U	3110	1160	10	11/19/19 06:34	10/31/19	
1,2-Dichlorobenzene	585	U	3110	585	10	11/19/19 06:34	10/31/19	
1,3-Dichlorobenzene	695	U	3110	695	10	11/19/19 06:34	10/31/19	
1,4-Dichlorobenzene	750	U	3110	750	10	11/19/19 06:34	10/31/19	
1-Methylnaphthalene	1210	U	3110	1210	10	11/19/19 06:34	10/31/19	
2,4,5-Trichlorophenol	1050	U	3110	1050	10	11/19/19 06:34	10/31/19	
2,4,6-Trichlorophenol	914	U	3110	914	10	11/19/19 06:34	10/31/19	
2,4-Dichlorophenol	1160	U	3110	1160	10	11/19/19 06:34	10/31/19	
2,4-Dimethylphenol	1520	U	3110	1520	10	11/19/19 06:34	10/31/19	
2,4-Dinitrophenol	421	U	12200	421	10	11/19/19 06:34	10/31/19	
2,4-Dinitrotoluene	750	U	3110	750	10	11/19/19 06:34	10/31/19	
2,6-Dinitrotoluene	878	U	3110	878	10	11/19/19 06:34	10/31/19	
2-Chloronaphthalene	786	U	3110	786	10	11/19/19 06:34	10/31/19	
2-Chlorophenol	640	U	3110	640	10	11/19/19 06:34	10/31/19	
2-Methylnaphthalene	1080	U	3110	1080	10	11/19/19 06:34	10/31/19	
2-Methylphenol	878	U	3110	878	10	11/19/19 06:34	10/31/19	
2-Nitroaniline	933	U	3110	933	10	11/19/19 06:34	10/31/19	
2-Nitrophenol	951	U	12200	951	10	11/19/19 06:34	10/31/19	
3- and 4-Methylphenol Coelution	786	U	3110	786	10	11/19/19 06:34	10/31/19	
3,3'-Dichlorobenzidine	1560	U	12200	1560	10	11/19/19 06:34	10/31/19	
3-Nitroaniline	933	U	3110	933	10	11/19/19 06:34	10/31/19	
4,6-Dinitro-2-methylphenol	878	U	12200	878	10	11/19/19 06:34	10/31/19	
4-Bromophenyl Phenyl Ether	951	U	3110	951	10	11/19/19 06:34	10/31/19	
4-Chloro-3-methylphenol	969	U	3110	969	10	11/19/19 06:34	10/31/19	
4-Chloroaniline	1270	U	3110	1270	10	11/19/19 06:34	10/31/19	
4-Chlorophenyl Phenyl Ether	951	U	3110	951	10	11/19/19 06:34	10/31/19	
4-Nitroaniline	1010	U	3110	1010	10	11/19/19 06:34	10/31/19	
4-Nitrophenol	1030	U	12200	1030	10	11/19/19 06:34	10/31/19	
Acenaphthene	969	U	3110	969	10	11/19/19 06:34	10/31/19	
Acenaphthylene	859	U	3110	859	10	11/19/19 06:34	10/31/19	
Acetophenone	841	U	6210	841	10	11/19/19 06:34	10/31/19	
Anthracene	786	U	3110	786	10	11/19/19 06:34	10/31/19	
Benz(a)anthracene	859	U	3110	859	10	11/19/19 06:34	10/31/19	
Benzo(a)pyrene	677	U	3110	677	10	11/19/19 06:34	10/31/19	
Benzo(b)fluoranthene	476	U	3110	476	10	11/19/19 06:34	10/31/19	
Benzo(g,h,i)perylene	951	U	3110	951	10	11/19/19 06:34	10/31/19	
Benzo(k)fluoranthene	1080	U	3110	1080	10	11/19/19 06:34	10/31/19	
Benzyl Alcohol	695	U	6210	695	10	11/19/19 06:34	10/31/19	
Bis(2-chloroethoxy)methane	969	U	3110	969	10	11/19/19 06:34	10/31/19	
Bis(2-chloroethyl) Ether	768	U	3110	768	10	11/19/19 06:34	10/31/19	
Bis(2-ethylhexyl) Phthalate	805	U	3110	805	10	11/19/19 06:34	10/31/19	
Butyl Benzyl Phthalate	859	U	6210	859	10	11/19/19 06:34	10/31/19	
Carbazole	1050	U	3110	1050	10	11/19/19 06:34	10/31/19	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 10:24
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Downstream	**Units:**	ug/Kg
Lab Code:	J1906537-003	**Basis:**	Dry

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Chrysene	823	U	3110	823	10	11/19/19 06:34	10/31/19	
Dibenz(a,h)anthracene	841	U	3110	841	10	11/19/19 06:34	10/31/19	
Dibenzofuran	841	U	3110	841	10	11/19/19 06:34	10/31/19	
Diethyl Phthalate	933	U	3110	933	10	11/19/19 06:34	10/31/19	
Dimethyl Phthalate	969	U	3110	969	10	11/19/19 06:34	10/31/19	
Di-n-butyl Phthalate	622	U	3110	622	10	11/19/19 06:34	10/31/19	
Di-n-octyl Phthalate	951	U	6210	951	10	11/19/19 06:34	10/31/19	
Fluoranthene	878	U	3110	878	10	11/19/19 06:34	10/31/19	
Fluorene	859	U	3110	859	10	11/19/19 06:34	10/31/19	
Hexachlorobenzene	878	U	3110	878	10	11/19/19 06:34	10/31/19	
Hexachlorobutadiene	1010	U	3110	1010	10	11/19/19 06:34	10/31/19	
Hexachlorocyclopentadiene	622	U	3110	622	10	11/19/19 06:34	10/31/19	
Hexachloroethane	567	U	3110	567	10	11/19/19 06:34	10/31/19	
Indeno(1,2,3-cd)pyrene	750	U	3110	750	10	11/19/19 06:34	10/31/19	
Isophorone	1060	U	3110	1060	10	11/19/19 06:34	10/31/19	
Naphthalene	896	U	3110	896	10	11/19/19 06:34	10/31/19	
Nitrobenzene	713	U	3110	713	10	11/19/19 06:34	10/31/19	
N-Nitrosodi-n-propylamine	914	U	3110	914	10	11/19/19 06:34	10/31/19	
Pentachlorophenol (PCP)	640	U	12200	640	10	11/19/19 06:34	10/31/19	
Phenanthrene	768	U	3110	768	10	11/19/19 06:34	10/31/19	
Phenol	841	U	3110	841	10	11/19/19 06:34	10/31/19	
Pyrene	841	U	3110	841	10	11/19/19 06:34	10/31/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	38	30 - 136	11/19/19 06:34	
2-Fluorobiphenyl	53	20 - 115	11/19/19 06:34	
2-Fluorophenol	34	10 - 110	11/19/19 06:34	
Nitrobenzene-d5	37	20 - 110	11/19/19 06:34	
Phenol-d6	38	14 - 100	11/19/19 06:34	
p-Terphenyl-d14	63	32 - 119	11/19/19 06:34	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/23/19 16:10
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone C	**Units:**	ug/Kg
Lab Code:	J1906537-004	**Basis:**	Dry

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	1440	U	3870	1440	10	11/19/19 06:58	10/31/19	
1,2-Dichlorobenzene	729	U	3870	729	10	11/19/19 06:58	10/31/19	
1,3-Dichlorobenzene	865	U	3870	865	10	11/19/19 06:58	10/31/19	
1,4-Dichlorobenzene	934	U	3870	934	10	11/19/19 06:58	10/31/19	
1-Methylnaphthalene	1510	U	3870	1510	10	11/19/19 06:58	10/31/19	
2,4,5-Trichlorophenol	1300	U	3870	1300	10	11/19/19 06:58	10/31/19	
2,4,6-Trichlorophenol	1140	U	3870	1140	10	11/19/19 06:58	10/31/19	
2,4-Dichlorophenol	1440	U	3870	1440	10	11/19/19 06:58	10/31/19	
2,4-Dimethylphenol	1890	U	3870	1890	10	11/19/19 06:58	10/31/19	
2,4-Dinitrophenol	524	U	15200	524	10	11/19/19 06:58	10/31/19	
2,4-Dinitrotoluene	934	U	3870	934	10	11/19/19 06:58	10/31/19	
2,6-Dinitrotoluene	1100	U	3870	1100	10	11/19/19 06:58	10/31/19	
2-Chloronaphthalene	979	U	3870	979	10	11/19/19 06:58	10/31/19	
2-Chlorophenol	797	U	3870	797	10	11/19/19 06:58	10/31/19	
2-Methylnaphthalene	1350	U	3870	1350	10	11/19/19 06:58	10/31/19	
2-Methylphenol	1100	U	3870	1100	10	11/19/19 06:58	10/31/19	
2-Nitroaniline	1170	U	3870	1170	10	11/19/19 06:58	10/31/19	
2-Nitrophenol	1190	U	15200	1190	10	11/19/19 06:58	10/31/19	
3- and 4-Methylphenol Coelution	979	U	3870	979	10	11/19/19 06:58	10/31/19	
3,3'-Dichlorobenzidine	1940	U	15200	1940	10	11/19/19 06:58	10/31/19	
3-Nitroaniline	1170	U	3870	1170	10	11/19/19 06:58	10/31/19	
4,6-Dinitro-2-methylphenol	1100	U	15200	1100	10	11/19/19 06:58	10/31/19	
4-Bromophenyl Phenyl Ether	1190	U	3870	1190	10	11/19/19 06:58	10/31/19	
4-Chloro-3-methylphenol	1210	U	3870	1210	10	11/19/19 06:58	10/31/19	
4-Chloroaniline	1580	U	3870	1580	10	11/19/19 06:58	10/31/19	
4-Chlorophenyl Phenyl Ether	1190	U	3870	1190	10	11/19/19 06:58	10/31/19	
4-Nitroaniline	1260	U	3870	1260	10	11/19/19 06:58	10/31/19	
4-Nitrophenol	1280	U	15200	1280	10	11/19/19 06:58	10/31/19	
Acenaphthene	1210	U	3870	1210	10	11/19/19 06:58	10/31/19	
Acenaphthylene	1070	U	3870	1070	10	11/19/19 06:58	10/31/19	
Acetophenone	1050	U	7740	1050	10	11/19/19 06:58	10/31/19	
Anthracene	979	U	3870	979	10	11/19/19 06:58	10/31/19	
Benz(a)anthracene	1070	U	3870	1070	10	11/19/19 06:58	10/31/19	
Benzo(a)pyrene	843	U	3870	843	10	11/19/19 06:58	10/31/19	
Benzo(b)fluoranthene	592	U	3870	592	10	11/19/19 06:58	10/31/19	
Benzo(g,h,i)perylene	1190	U	3870	1190	10	11/19/19 06:58	10/31/19	
Benzo(k)fluoranthene	1350	U	3870	1350	10	11/19/19 06:58	10/31/19	
Benzyl Alcohol	865	U	7740	865	10	11/19/19 06:58	10/31/19	
Bis(2-chloroethoxy)methane	1210	U	3870	1210	10	11/19/19 06:58	10/31/19	
Bis(2-chloroethyl) Ether	956	U	3870	956	10	11/19/19 06:58	10/31/19	
Bis(2-ethylhexyl) Phthalate	1010	U	3870	1010	10	11/19/19 06:58	10/31/19	
Butyl Benzyl Phthalate	1070	U	7740	1070	10	11/19/19 06:58	10/31/19	
Carbazole	1300	U	3870	1300	10	11/19/19 06:58	10/31/19	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/23/19 16:10
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone C	**Units:**	ug/Kg
Lab Code:	J1906537-004	**Basis:**	Dry

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Chrysene	1030	U	3870	1030	10	11/19/19 06:58	10/31/19	
Dibenz(a,h)anthracene	1050	U	3870	1050	10	11/19/19 06:58	10/31/19	
Dibenzofuran	1050	U	3870	1050	10	11/19/19 06:58	10/31/19	
Diethyl Phthalate	1170	U	3870	1170	10	11/19/19 06:58	10/31/19	
Dimethyl Phthalate	1210	U	3870	1210	10	11/19/19 06:58	10/31/19	
Di-n-butyl Phthalate	774	U	3870	774	10	11/19/19 06:58	10/31/19	
Di-n-octyl Phthalate	1190	U	7740	1190	10	11/19/19 06:58	10/31/19	
Fluoranthene	1100	U	3870	1100	10	11/19/19 06:58	10/31/19	
Fluorene	1070	U	3870	1070	10	11/19/19 06:58	10/31/19	
Hexachlorobenzene	1100	U	3870	1100	10	11/19/19 06:58	10/31/19	
Hexachlorobutadiene	1260	U	3870	1260	10	11/19/19 06:58	10/31/19	
Hexachlorocyclopentadiene	774	U	3870	774	10	11/19/19 06:58	10/31/19	
Hexachloroethane	706	U	3870	706	10	11/19/19 06:58	10/31/19	
Indeno(1,2,3-cd)pyrene	934	U	3870	934	10	11/19/19 06:58	10/31/19	
Isophorone	1330	U	3870	1330	10	11/19/19 06:58	10/31/19	
Naphthalene	1120	U	3870	1120	10	11/19/19 06:58	10/31/19	
Nitrobenzene	888	U	3870	888	10	11/19/19 06:58	10/31/19	
N-Nitrosodi-n-propylamine	1140	U	3870	1140	10	11/19/19 06:58	10/31/19	
Pentachlorophenol (PCP)	797	U	15200	797	10	11/19/19 06:58	10/31/19	
Phenanthrene	956	U	3870	956	10	11/19/19 06:58	10/31/19	
Phenol	1050	U	3870	1050	10	11/19/19 06:58	10/31/19	
Pyrene	1050	U	3870	1050	10	11/19/19 06:58	10/31/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	34	30 - 136	11/19/19 06:58	
2-Fluorobiphenyl	45	20 - 115	11/19/19 06:58	
2-Fluorophenol	37	10 - 110	11/19/19 06:58	
Nitrobenzene-d5	37	20 - 110	11/19/19 06:58	
Phenol-d6	37	14 - 100	11/19/19 06:58	
p-Terphenyl-d14	72	32 - 119	11/19/19 06:58	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/22/19 17:25
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone D	**Units:**	ug/Kg
Lab Code:	J1906537-005	**Basis:**	Dry

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	90.1	U	243	90.1	1	11/19/19 07:23	10/31/19	
1,2-Dichlorobenzene	45.8	U	243	45.8	1	11/19/19 07:23	10/31/19	
1,3-Dichlorobenzene	54.4	U	243	54.4	1	11/19/19 07:23	10/31/19	
1,4-Dichlorobenzene	58.7	U	243	58.7	1	11/19/19 07:23	10/31/19	
1-Methylnaphthalene	94.4	U	243	94.4	1	11/19/19 07:23	10/31/19	
2,4,5-Trichlorophenol	81.5	U	243	81.5	1	11/19/19 07:23	10/31/19	
2,4,6-Trichlorophenol	71.5	U	243	71.5	1	11/19/19 07:23	10/31/19	
2,4-Dichlorophenol	90.1	U	243	90.1	1	11/19/19 07:23	10/31/19	
2,4-Dimethylphenol	119	U	243	119	1	11/19/19 07:23	10/31/19	
2,4-Dinitrophenol	32.9	U	958	32.9	1	11/19/19 07:23	10/31/19	
2,4-Dinitrotoluene	58.7	U	243	58.7	1	11/19/19 07:23	10/31/19	
2,6-Dinitrotoluene	68.7	U	243	68.7	1	11/19/19 07:23	10/31/19	
2-Chloronaphthalene	61.5	U	243	61.5	1	11/19/19 07:23	10/31/19	
2-Chlorophenol	50.1	U	243	50.1	1	11/19/19 07:23	10/31/19	
2-Methylnaphthalene	84.4	U	243	84.4	1	11/19/19 07:23	10/31/19	
2-Methylphenol	68.7	U	243	68.7	1	11/19/19 07:23	10/31/19	
2-Nitroaniline	73.0	U	243	73.0	1	11/19/19 07:23	10/31/19	
2-Nitrophenol	74.4	U	958	74.4	1	11/19/19 07:23	10/31/19	
3- and 4-Methylphenol Coelution	61.5	U	243	61.5	1	11/19/19 07:23	10/31/19	
3,3'-Dichlorobenzidine	122	U	958	122	1	11/19/19 07:23	10/31/19	
3-Nitroaniline	73.0	U	243	73.0	1	11/19/19 07:23	10/31/19	
4,6-Dinitro-2-methylphenol	68.7	U	958	68.7	1	11/19/19 07:23	10/31/19	
4-Bromophenyl Phenyl Ether	74.4	U	243	74.4	1	11/19/19 07:23	10/31/19	
4-Chloro-3-methylphenol	75.8	U	243	75.8	1	11/19/19 07:23	10/31/19	
4-Chloroaniline	98.7	U	243	98.7	1	11/19/19 07:23	10/31/19	
4-Chlorophenyl Phenyl Ether	74.4	U	243	74.4	1	11/19/19 07:23	10/31/19	
4-Nitroaniline	78.7	U	243	78.7	1	11/19/19 07:23	10/31/19	
4-Nitrophenol	80.1	U	958	80.1	1	11/19/19 07:23	10/31/19	
Acenaphthene	75.8	U	243	75.8	1	11/19/19 07:23	10/31/19	
Acenaphthylene	67.2	U	243	67.2	1	11/19/19 07:23	10/31/19	
Acetophenone	65.8	U	486	65.8	1	11/19/19 07:23	10/31/19	
Anthracene	**70.5**	**J**	243	61.5	1	11/19/19 07:23	10/31/19	
Benz(a)anthracene	67.2	U	243	67.2	1	11/19/19 07:23	10/31/19	
Benzo(a)pyrene	52.9	U	243	52.9	1	11/19/19 07:23	10/31/19	
Benzo(b)fluoranthene	37.2	U	243	37.2	1	11/19/19 07:23	10/31/19	
Benzo(g,h,i)perylene	74.4	U	243	74.4	1	11/19/19 07:23	10/31/19	
Benzo(k)fluoranthene	84.4	U	243	84.4	1	11/19/19 07:23	10/31/19	
Benzyl Alcohol	54.4	U	486	54.4	1	11/19/19 07:23	10/31/19	
Bis(2-chloroethoxy)methane	75.8	U	243	75.8	1	11/19/19 07:23	10/31/19	
Bis(2-chloroethyl) Ether	60.1	U	243	60.1	1	11/19/19 07:23	10/31/19	
Bis(2-ethylhexyl) Phthalate	**150**	**J**	243	63.0	1	11/19/19 07:23	10/31/19	
Butyl Benzyl Phthalate	67.2	U	486	67.2	1	11/19/19 07:23	10/31/19	
Carbazole	81.5	U	243	81.5	1	11/19/19 07:23	10/31/19	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/22/19 17:25
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone D	**Units:**	ug/Kg
Lab Code:	J1906537-005	**Basis:**	Dry

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Chrysene	64.4	U	243	64.4	1	11/19/19 07:23	10/31/19	
Dibenz(a,h)anthracene	65.8	U	243	65.8	1	11/19/19 07:23	10/31/19	
Dibenzofuran	65.8	U	243	65.8	1	11/19/19 07:23	10/31/19	
Diethyl Phthalate	73.0	U	243	73.0	1	11/19/19 07:23	10/31/19	
Dimethyl Phthalate	75.8	U	243	75.8	1	11/19/19 07:23	10/31/19	
Di-n-butyl Phthalate	48.7	U	243	48.7	1	11/19/19 07:23	10/31/19	
Di-n-octyl Phthalate	74.4	U	486	74.4	1	11/19/19 07:23	10/31/19	
Fluoranthene	**74.8**	**J**	243	68.7	1	11/19/19 07:23	10/31/19	
Fluorene	67.2	U	243	67.2	1	11/19/19 07:23	10/31/19	
Hexachlorobenzene	68.7	U	243	68.7	1	11/19/19 07:23	10/31/19	
Hexachlorobutadiene	78.7	U	243	78.7	1	11/19/19 07:23	10/31/19	
Hexachlorocyclopentadiene	48.7	U	243	48.7	1	11/19/19 07:23	10/31/19	
Hexachloroethane	44.4	U	243	44.4	1	11/19/19 07:23	10/31/19	
Indeno(1,2,3-cd)pyrene	58.7	U	243	58.7	1	11/19/19 07:23	10/31/19	
Isophorone	83.0	U	243	83.0	1	11/19/19 07:23	10/31/19	
Naphthalene	70.1	U	243	70.1	1	11/19/19 07:23	10/31/19	
Nitrobenzene	55.8	U	243	55.8	1	11/19/19 07:23	10/31/19	
N-Nitrosodi-n-propylamine	71.5	U	243	71.5	1	11/19/19 07:23	10/31/19	
Pentachlorophenol (PCP)	50.1	U	958	50.1	1	11/19/19 07:23	10/31/19	
Phenanthrene	60.1	U	243	60.1	1	11/19/19 07:23	10/31/19	
Phenol	65.8	U	243	65.8	1	11/19/19 07:23	10/31/19	
Pyrene	**79.1**	**J**	243	65.8	1	11/19/19 07:23	10/31/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	44	30 - 136	11/19/19 07:23	
2-Fluorobiphenyl	46	20 - 115	11/19/19 07:23	
2-Fluorophenol	37	10 - 110	11/19/19 07:23	
Nitrobenzene-d5	39	20 - 110	11/19/19 07:23	
Phenol-d6	36	14 - 100	11/19/19 07:23	
p-Terphenyl-d14	66	32 - 119	11/19/19 07:23	

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/23/19 16:10
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone C	**Units:**	mg/L
Lab Code:	J1906537-006	**Basis:**	As Received

TCLP Semivolatile Organic Compounds by GC/MS

Analysis Method:	8270D	**Pre-Prep Method:**	EPA 1311
Prep Method:	EPA 3510C	**Pre-Prep Date:**	11/4/19

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
o-Cresol, TCLP	0.0130	U	0.0500	0.0130	1	11/19/19 07:47	11/6/19	
2,4-Dinitrotoluene, TCLP	0.0130	U	0.0500	0.0130	1	11/19/19 07:47	11/6/19	
2,4,5-Trichlorophenol, TCLP	0.0130	U	0.0500	0.0130	1	11/19/19 07:47	11/6/19	
2,4,6-Trichlorophenol, TCLP	0.00890	U	0.0500	0.00890	1	11/19/19 07:47	11/6/19	
m,p-Cresols, TCLP	0.0100	U	0.0500	0.0100	1	11/19/19 07:47	11/6/19	
Hexachlorobenzene, TCLP	0.0170	U	0.0500	0.0170	1	11/19/19 07:47	11/6/19	
Hexachlorobutadiene, TCLP	0.0120	U	0.0500	0.0120	1	11/19/19 07:47	11/6/19	
Hexachloroethane, TCLP	0.00810	U	0.0500	0.00810	1	11/19/19 07:47	11/6/19	
Nitrobenzene, TCLP	0.0210	U	0.0500	0.0210	1	11/19/19 07:47	11/6/19	
Pentachlorophenol (PCP), TCLP	0.0110	U	0.200	0.0110	1	11/19/19 07:47	11/6/19	
Pyridine, TCLP	0.0110	U	0.200	0.0110	1	11/19/19 07:47	11/6/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	66	23 - 122	11/19/19 07:47	
2-Fluorobiphenyl	70	15 - 117	11/19/19 07:47	
2-Fluorophenol	46	10 - 85	11/19/19 07:47	
Nitrobenzene-d5	64	10 - 110	11/19/19 07:47	
Phenol-d6	42	7 - 60	11/19/19 07:47	
p-Terphenyl-d14	103	40 - 125	11/19/19 07:47	

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/22/19 17:25
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone D	**Units:**	mg/L
Lab Code:	J1906537-007	**Basis:**	As Received

TCLP Semivolatile Organic Compounds by GC/MS

Analysis Method:	8270D	**Pre-Prep Method:**	EPA 1311
Prep Method:	EPA 3510C	**Pre-Prep Date:**	11/4/19

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
o-Cresol, TCLP	0.0130	U	0.0500	0.0130	1	11/19/19 08:12	11/6/19	
2,4-Dinitrotoluene, TCLP	0.0130	U	0.0500	0.0130	1	11/19/19 08:12	11/6/19	
2,4,5-Trichlorophenol, TCLP	0.0130	U	0.0500	0.0130	1	11/19/19 08:12	11/6/19	
2,4,6-Trichlorophenol, TCLP	0.00890	U	0.0500	0.00890	1	11/19/19 08:12	11/6/19	
m,p-Cresols, TCLP	0.0100	U	0.0500	0.0100	1	11/19/19 08:12	11/6/19	
Hexachlorobenzene, TCLP	0.0170	U	0.0500	0.0170	1	11/19/19 08:12	11/6/19	
Hexachlorobutadiene, TCLP	0.0120	U	0.0500	0.0120	1	11/19/19 08:12	11/6/19	
Hexachloroethane, TCLP	0.00810	U	0.0500	0.00810	1	11/19/19 08:12	11/6/19	
Nitrobenzene, TCLP	0.0210	U	0.0500	0.0210	1	11/19/19 08:12	11/6/19	
Pentachlorophenol (PCP), TCLP	0.0110	U	0.200	0.0110	1	11/19/19 08:12	11/6/19	
Pyridine, TCLP	0.0110	U	0.200	0.0110	1	11/19/19 08:12	11/6/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	65	23 - 122	11/19/19 08:12	
2-Fluorobiphenyl	74	15 - 117	11/19/19 08:12	
2-Fluorophenol	49	10 - 85	11/19/19 08:12	
Nitrobenzene-d5	66	10 - 110	11/19/19 08:12	
Phenol-d6	44	7 - 60	11/19/19 08:12	
p-Terphenyl-d14	98	40 - 125	11/19/19 08:12	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/25/19 09:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone A	**Units:**	ug/Kg
Lab Code:	J1906537-001	**Basis:**	Dry

Base Neutral Semivolatile Organic Compounds by GC/MS SIM

Analysis Method: 8270D SIM
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1-Methylnaphthalene	300	U	377	300	10	11/07/19 02:37	10/31/19	
2-Methylnaphthalene	256	U	377	256	10	11/07/19 02:37	10/31/19	
Acenaphthene	344	U	754	344	10	11/07/19 02:37	10/31/19	
Acenaphthylene	245	U	754	245	10	11/07/19 02:37	10/31/19	
Anthracene	178	U	377	178	10	11/07/19 02:37	10/31/19	
Benz(a)anthracene	**281**	**J**	377	211	10	11/07/19 02:37	10/31/19	
Benzo(a)pyrene	**168**	**J**	377	111	10	11/07/19 02:37	10/31/19	
Benzo(b)fluoranthene	222	U	377	222	10	11/07/19 02:37	10/31/19	
Benzo(g,h,i)perylene	245	U	377	245	10	11/07/19 02:37	10/31/19	
Benzo(k)fluoranthene	267	U	377	267	10	11/07/19 02:37	10/31/19	
Chrysene	211	U	377	211	10	11/07/19 02:37	10/31/19	
Dibenz(a,h)anthracene	300	U	377	300	10	11/07/19 02:37	10/31/19	
Fluoranthene	**235**	**J**	377	222	10	11/07/19 02:37	10/31/19	
Fluorene	245	U	377	245	10	11/07/19 02:37	10/31/19	
Indeno(1,2,3-cd)pyrene	245	U	377	245	10	11/07/19 02:37	10/31/19	
Naphthalene	344	U	377	344	10	11/07/19 02:37	10/31/19	
Phenanthrene	189	U	754	189	10	11/07/19 02:37	10/31/19	
Pyrene	**231**	**J**	377	222	10	11/07/19 02:37	10/31/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	57	30 - 118	11/07/19 02:37	
p-Terphenyl-d14	77	41 - 146	11/07/19 02:37	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 15:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Upstream	**Units:**	ug/Kg
Lab Code:	J1906537-002	**Basis:**	Dry

Base Neutral Semivolatile Organic Compounds by GC/MS SIM

Analysis Method: 8270D SIM
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1-Methylnaphthalene	37.5	U	47.1	37.5	10	11/07/19 03:02	10/31/19	
2-Methylnaphthalene	31.9	U	47.1	31.9	10	11/07/19 03:02	10/31/19	
Acenaphthene	43.0	U	94.3	43.0	10	11/07/19 03:02	10/31/19	
Acenaphthylene	30.6	U	94.3	30.6	10	11/07/19 03:02	10/31/19	
Anthracene	22.2	U	47.1	22.2	10	11/07/19 03:02	10/31/19	
Benz(a)anthracene	**76.4**		47.1	26.4	10	11/07/19 03:02	10/31/19	
Benzo(a)pyrene	**60.8**		47.1	13.9	10	11/07/19 03:02	10/31/19	
Benzo(b)fluoranthene	**115**		47.1	27.8	10	11/07/19 03:02	10/31/19	
Benzo(g,h,i)perylene	**51.1**		47.1	30.6	10	11/07/19 03:02	10/31/19	
Benzo(k)fluoranthene	**37.4**	**J**	47.1	33.3	10	11/07/19 03:02	10/31/19	
Chrysene	**59.6**		47.1	26.4	10	11/07/19 03:02	10/31/19	
Dibenz(a,h)anthracene	37.5	U	47.1	37.5	10	11/07/19 03:02	10/31/19	
Fluoranthene	**104**		47.1	27.8	10	11/07/19 03:02	10/31/19	
Fluorene	30.6	U	47.1	30.6	10	11/07/19 03:02	10/31/19	
Indeno(1,2,3-cd)pyrene	**46.2**	**J**	47.1	30.6	10	11/07/19 03:02	10/31/19	
Naphthalene	43.0	U	47.1	43.0	10	11/07/19 03:02	10/31/19	
Phenanthrene	23.6	U	94.3	23.6	10	11/07/19 03:02	10/31/19	
Pyrene	**97.6**		47.1	27.8	10	11/07/19 03:02	10/31/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	50	30 - 118	11/07/19 03:02	
p-Terphenyl-d14	54	41 - 146	11/07/19 03:02	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 10:24
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Downstream	**Units:**	ug/Kg
Lab Code:	J1906537-003	**Basis:**	Dry

Base Neutral Semivolatile Organic Compounds by GC/MS SIM

Analysis Method: 8270D SIM
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1-Methylnaphthalene	351	U	442	351	10	11/07/19 03:26	10/31/19	
2-Methylnaphthalene	299	U	442	299	10	11/07/19 03:26	10/31/19	
Acenaphthene	403	U	883	403	10	11/07/19 03:26	10/31/19	
Acenaphthylene	286	U	883	286	10	11/07/19 03:26	10/31/19	
Anthracene	208	U	442	208	10	11/07/19 03:26	10/31/19	
Benz(a)anthracene	**481**		442	247	10	11/07/19 03:26	10/31/19	
Benzo(a)pyrene	**307**	**J**	442	130	10	11/07/19 03:26	10/31/19	
Benzo(b)fluoranthene	**509**		442	260	10	11/07/19 03:26	10/31/19	
Benzo(g,h,i)perylene	286	U	442	286	10	11/07/19 03:26	10/31/19	
Benzo(k)fluoranthene	312	U	442	312	10	11/07/19 03:26	10/31/19	
Chrysene	**247**	**J**	442	247	10	11/07/19 03:26	10/31/19	
Dibenz(a,h)anthracene	351	U	442	351	10	11/07/19 03:26	10/31/19	
Fluoranthene	**598**		442	260	10	11/07/19 03:26	10/31/19	
Fluorene	286	U	442	286	10	11/07/19 03:26	10/31/19	
Indeno(1,2,3-cd)pyrene	286	U	442	286	10	11/07/19 03:26	10/31/19	
Naphthalene	403	U	442	403	10	11/07/19 03:26	10/31/19	
Phenanthrene	221	U	883	221	10	11/07/19 03:26	10/31/19	
Pyrene	**584**		442	260	10	11/07/19 03:26	10/31/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	66	30 - 118	11/07/19 03:26	
p-Terphenyl-d14	82	41 - 146	11/07/19 03:26	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/23/19 16:10
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone C	**Units:**	ug/Kg
Lab Code:	J1906537-004	**Basis:**	Dry

Base Neutral Semivolatile Organic Compounds by GC/MS SIM

Analysis Method: 8270D SIM
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1-Methylnaphthalene	42.5	U	53.4	42.5	1	11/08/19 17:02	10/31/19	
2-Methylnaphthalene	36.2	U	53.4	36.2	1	11/08/19 17:02	10/31/19	
Acenaphthene	48.8	U	107	48.8	1	11/08/19 17:02	10/31/19	
Acenaphthylene	34.6	U	107	34.6	1	11/08/19 17:02	10/31/19	
Anthracene	25.2	U	53.4	25.2	1	11/08/19 17:02	10/31/19	
Benz(a)anthracene	**117**		53.4	29.9	1	11/08/19 17:02	10/31/19	
Benzo(a)pyrene	**97.0**		53.4	15.8	1	11/08/19 17:02	10/31/19	
Benzo(b)fluoranthene	**186**		53.4	31.5	1	11/08/19 17:02	10/31/19	
Benzo(g,h,i)perylene	**91.7**		53.4	34.6	1	11/08/19 17:02	10/31/19	
Benzo(k)fluoranthene	**55.3**		53.4	37.8	1	11/08/19 17:02	10/31/19	
Chrysene	**84.5**		53.4	29.9	1	11/08/19 17:02	10/31/19	
Dibenz(a,h)anthracene	42.5	U	53.4	42.5	1	11/08/19 17:02	10/31/19	
Fluoranthene	**189**		53.4	31.5	1	11/08/19 17:02	10/31/19	
Fluorene	34.6	U	53.4	34.6	1	11/08/19 17:02	10/31/19	
Indeno(1,2,3-cd)pyrene	**77.9**		53.4	34.6	1	11/08/19 17:02	10/31/19	
Naphthalene	48.8	U	53.4	48.8	1	11/08/19 17:02	10/31/19	
Phenanthrene	**42.0**	**J**	107	26.8	1	11/08/19 17:02	10/31/19	
Pyrene	**193**		53.4	31.5	1	11/08/19 17:02	10/31/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	60	30 - 118	11/08/19 17:02	
p-Terphenyl-d14	77	41 - 146	11/08/19 17:02	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/22/19 17:25
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone D	**Units:**	ug/Kg
Lab Code:	J1906537-005	**Basis:**	Dry

Base Neutral Semivolatile Organic Compounds by GC/MS SIM

Analysis Method: 8270D SIM
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1-Methylnaphthalene	38.1	U	47.9	38.1	10	11/07/19 04:15	10/31/19	
2-Methylnaphthalene	32.4	U	47.9	32.4	10	11/07/19 04:15	10/31/19	
Acenaphthene	43.7	U	95.7	43.7	10	11/07/19 04:15	10/31/19	
Acenaphthylene	31.0	U	95.7	31.0	10	11/07/19 04:15	10/31/19	
Anthracene	22.6	U	47.9	22.6	10	11/07/19 04:15	10/31/19	
Benz(a)anthracene	**73.5**		47.9	26.8	10	11/07/19 04:15	10/31/19	
Benzo(a)pyrene	**59.7**		47.9	14.1	10	11/07/19 04:15	10/31/19	
Benzo(b)fluoranthene	**108**		47.9	28.2	10	11/07/19 04:15	10/31/19	
Benzo(g,h,i)perylene	**55.9**		47.9	31.0	10	11/07/19 04:15	10/31/19	
Benzo(k)fluoranthene	33.8	U	47.9	33.8	10	11/07/19 04:15	10/31/19	
Chrysene	**52.7**		47.9	26.8	10	11/07/19 04:15	10/31/19	
Dibenz(a,h)anthracene	38.1	U	47.9	38.1	10	11/07/19 04:15	10/31/19	
Fluoranthene	**112**		47.9	28.2	10	11/07/19 04:15	10/31/19	
Fluorene	31.0	U	47.9	31.0	10	11/07/19 04:15	10/31/19	
Indeno(1,2,3-cd)pyrene	**50.4**		47.9	31.0	10	11/07/19 04:15	10/31/19	
Naphthalene	43.7	U	47.9	43.7	10	11/07/19 04:15	10/31/19	
Phenanthrene	**29.8**	**J**	95.7	24.0	10	11/07/19 04:15	10/31/19	
Pyrene	**104**		47.9	28.2	10	11/07/19 04:15	10/31/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	50	30 - 118	11/07/19 04:15	
p-Terphenyl-d14	61	41 - 146	11/07/19 04:15	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/23/19 16:10
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone C	**Units:**	ug/Kg
Lab Code:	J1906537-006	**Basis:**	As Received

Base Neutral Semivolatile Organic Compounds by GC/MS SIM

Analysis Method: 8270D SIM
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1-Methylnaphthalene	**45.6**		34.4	27.4	10	11/07/19 04:40	10/31/19	
2-Methylnaphthalene	**87.5**		34.4	23.3	10	11/07/19 04:40	10/31/19	
Acenaphthene	31.5	U	68.9	31.5	10	11/07/19 04:40	10/31/19	
Acenaphthylene	22.3	U	68.9	22.3	10	11/07/19 04:40	10/31/19	
Anthracene	16.3	U	34.4	16.3	10	11/07/19 04:40	10/31/19	
Benz(a)anthracene	**69.5**		34.4	19.3	10	11/07/19 04:40	10/31/19	
Benzo(a)pyrene	**64.3**		34.4	10.2	10	11/07/19 04:40	10/31/19	
Benzo(b)fluoranthene	**131**		34.4	20.3	10	11/07/19 04:40	10/31/19	
Benzo(g,h,i)perylene	**65.2**		34.4	22.3	10	11/07/19 04:40	10/31/19	
Benzo(k)fluoranthene	**38.8**		34.4	24.4	10	11/07/19 04:40	10/31/19	
Chrysene	**54.5**		34.4	19.3	10	11/07/19 04:40	10/31/19	
Dibenz(a,h)anthracene	27.4	U	34.4	27.4	10	11/07/19 04:40	10/31/19	
Fluoranthene	**104**		34.4	20.3	10	11/07/19 04:40	10/31/19	
Fluorene	22.3	U	34.4	22.3	10	11/07/19 04:40	10/31/19	
Indeno(1,2,3-cd)pyrene	**57.7**		34.4	22.3	10	11/07/19 04:40	10/31/19	
Naphthalene	31.5	U	34.4	31.5	10	11/07/19 04:40	10/31/19	
Phenanthrene	**35.9**	**J**	68.9	17.3	10	11/07/19 04:40	10/31/19	
Pyrene	**99.6**		34.4	20.3	10	11/07/19 04:40	10/31/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	62	30 - 118	11/07/19 04:40	
p-Terphenyl-d14	58	41 - 146	11/07/19 04:40	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/22/19 17:25
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone D	**Units:**	ug/Kg
Lab Code:	J1906537-007	**Basis:**	As Received

Base Neutral Semivolatile Organic Compounds by GC/MS SIM

Analysis Method: 8270D SIM
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1-Methylnaphthalene	17.8	U	22.4	17.8	1	11/07/19 05:04	10/31/19	
2-Methylnaphthalene	15.2	U	22.4	15.2	1	11/07/19 05:04	10/31/19	
Acenaphthene	20.5	U	44.8	20.5	1	11/07/19 05:04	10/31/19	
Acenaphthylene	14.5	U	44.8	14.5	1	11/07/19 05:04	10/31/19	
Anthracene	10.6	U	22.4	10.6	1	11/07/19 05:04	10/31/19	
Benz(a)anthracene	**41.6**		22.4	12.6	1	11/07/19 05:04	10/31/19	
Benzo(a)pyrene	**40.6**		22.4	6.60	1	11/07/19 05:04	10/31/19	
Benzo(b)fluoranthene	**69.3**		22.4	13.2	1	11/07/19 05:04	10/31/19	
Benzo(g,h,i)perylene	**38.7**		22.4	14.5	1	11/07/19 05:04	10/31/19	
Benzo(k)fluoranthene	**21.2**	**J**	22.4	15.9	1	11/07/19 05:04	10/31/19	
Chrysene	**31.3**		22.4	12.6	1	11/07/19 05:04	10/31/19	
Dibenz(a,h)anthracene	17.8	U	22.4	17.8	1	11/07/19 05:04	10/31/19	
Fluoranthene	**60.5**		22.4	13.2	1	11/07/19 05:04	10/31/19	
Fluorene	14.5	U	22.4	14.5	1	11/07/19 05:04	10/31/19	
Indeno(1,2,3-cd)pyrene	**33.2**		22.4	14.5	1	11/07/19 05:04	10/31/19	
Naphthalene	20.5	U	22.4	20.5	1	11/07/19 05:04	10/31/19	
Phenanthrene	**13.5**	**J**	44.8	11.3	1	11/07/19 05:04	10/31/19	
Pyrene	**65.9**		22.4	13.2	1	11/07/19 05:04	10/31/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	56	30 - 118	11/07/19 05:04	
p-Terphenyl-d14	85	41 - 146	11/07/19 05:04	

Semivolatile Organic Compounds by GC

ALS Environmental—Jacksonville Laboratory
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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/23/19 16:10
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone C	**Units:**	mg/L
Lab Code:	J1906537-006	**Basis:**	As Received

TCLP Organochlorine Pesticides by Gas Chromatography

Analysis Method:	8081A	**Pre-Prep Method:**	EPA 1311
Prep Method:	EPA 3510C	**Pre-Prep Date:**	11/4/19

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Chlordane, TCLP	0.00259	U	0.00500	0.00259	1	11/07/19 11:42	11/6/19	
Endrin, TCLP	0.0000900	U	0.000200	0.0000900	1	11/07/19 11:42	11/6/19	
gamma-BHC (Lindane), TCLP	0.000130	U	0.000200	0.000130	1	11/07/19 11:42	11/6/19	
Heptachlor, TCLP	0.000150	U	0.000200	0.000150	1	11/07/19 11:42	11/6/19	
Heptachlor Epoxide, TCLP	0.000100	U	0.000200	0.000100	1	11/07/19 11:42	11/6/19	
Methoxychlor, TCLP	0.0000900	U	0.000400	0.0000900	1	11/07/19 11:42	11/6/19	
Toxaphene, TCLP	0.00256	U	0.00500	0.00256	1	11/07/19 11:42	11/6/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	78	10 - 290	11/07/19 11:42	
Tetrachloro-m-xylene	77	23 - 125	11/07/19 11:42	

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/22/19 17:25
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone D	**Units:**	mg/L
Lab Code:	J1906537-007	**Basis:**	As Received

TCLP Organochlorine Pesticides by Gas Chromatography

Analysis Method:	8081A	**Pre-Prep Method:**	EPA 1311
Prep Method:	EPA 3510C	**Pre-Prep Date:**	11/4/19

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Chlordane, TCLP	0.00259	U	0.00500	0.00259	1	11/07/19 11:55	11/6/19	
Endrin, TCLP	0.0000900	U	0.000200	0.0000900	1	11/07/19 11:55	11/6/19	
gamma-BHC (Lindane), TCLP	0.000130	U	0.000200	0.000130	1	11/07/19 11:55	11/6/19	
Heptachlor, TCLP	0.000150	U	0.000200	0.000150	1	11/07/19 11:55	11/6/19	
Heptachlor Epoxide, TCLP	0.000100	U	0.000200	0.000100	1	11/07/19 11:55	11/6/19	
Methoxychlor, TCLP	0.0000900	U	0.000400	0.0000900	1	11/07/19 11:55	11/6/19	
Toxaphene, TCLP	0.00256	U	0.00500	0.00256	1	11/07/19 11:55	11/6/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	75	10 - 290	11/07/19 11:55	
Tetrachloro-m-xylene	82	23 - 125	11/07/19 11:55	

Metals

ALS Environmental—Jacksonville Laboratory
9143 Philips Highway, Suite 200, Jacksonville, FL 32256
Phone (904)739-2277 Fax (904)739-2011
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Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/25/19 09:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone A	**Basis:**	Dry
Lab Code:	J1906537-001		

Inorganic Parameters

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Aluminum, Total	6020B	**1550**		mg/Kg	25	2	10	11/04/19 17:37	11/01/19	
Antimony, Total	6020B	**0.09**	**J**	mg/Kg	0.50	0.007	10	11/04/19 17:37	11/01/19	
Arsenic, Total	6020B	**0.60**		mg/Kg	0.50	0.05	10	11/04/19 17:37	11/01/19	
Barium, Total	6020B	**14.1**		mg/Kg	1.0	0.02	10	11/04/19 17:37	11/01/19	
Beryllium, Total	6020B	**0.12**	**J**	mg/Kg	0.25	0.03	10	11/04/19 17:37	11/01/19	
Boron, Total	6020B	**5**	**BJ**	mg/Kg	50	0.8	10	11/04/19 17:37	11/01/19	
Cadmium, Total	6020B	**0.11**	**J**	mg/Kg	0.20	0.03	10	11/04/19 17:37	11/01/19	
Calcium, Total	6020B	**16800**		mg/Kg	50	8	10	11/04/19 17:37	11/01/19	
Chromium, Total	6020B	**3.49**		mg/Kg	0.50	0.04	10	11/04/19 17:37	11/01/19	
Cobalt, Total	6020B	**0.52**		mg/Kg	0.50	0.007	10	11/04/19 17:37	11/01/19	
Copper, Total	6020B	**3.11**		mg/Kg	0.50	0.02	10	11/04/19 17:37	11/01/19	
Iron, Total	6020B	**2230**		mg/Kg	50	0.2	10	11/04/19 17:37	11/01/19	
Lead, Total	6020B	**30.6**		mg/Kg	0.25	0.007	10	11/04/19 17:37	11/01/19	
Magnesium, Total	6020B	**414**		mg/Kg	50	0.6	10	11/04/19 17:37	11/01/19	
Manganese, Total	6020B	**37.5**		mg/Kg	1.0	0.2	10	11/04/19 17:37	11/01/19	
Mercury, Total	7471B	**0.0186**		mg/Kg	0.0086	0.0015	1	11/06/19 14:45	11/06/19	
Molybdenum, Total	6020B	**0.4**	**J**	mg/Kg	1.0	0.06	10	11/04/19 17:37	11/01/19	
Nickel, Total	6020B	**1.5**		mg/Kg	1.0	0.08	10	11/04/19 17:37	11/01/19	
Potassium, Total	6020B	**155**		mg/Kg	50	3	10	11/04/19 17:37	11/01/19	
Selenium, Total	6020B	**0.1**	**J**	mg/Kg	1.0	0.08	10	11/04/19 17:37	11/01/19	
Silver, Total	6020B	**0.02**	**J**	mg/Kg	0.25	0.009	10	11/04/19 17:37	11/01/19	
Sodium, Total	6020B	**489**		mg/Kg	50	2	10	11/04/19 17:37	11/01/19	
Strontium, Total	6020B	**34.9**		mg/Kg	1.0	0.07	10	11/04/19 17:37	11/01/19	
Thallium, Total	6020B	**0.03**	**J**	mg/Kg	0.10	0.007	10	11/04/19 17:37	11/01/19	
Tin, Total	6020B	**1.9**	**BJ**	mg/Kg	2.5	0.03	10	11/04/19 17:37	11/01/19	
Titanium, Total	6020B	**23.4**		mg/Kg	2.5	0.5	10	11/04/19 17:37	11/01/19	
Vanadium, Total	6020B	**3.2**		mg/Kg	1.0	0.08	10	11/04/19 17:37	11/01/19	
Zinc, Total	6020B	**27.9**		mg/Kg	2.5	0.4	10	11/04/19 17:37	11/01/19	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 15:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Upstream	**Basis:**	Dry
Lab Code:	J1906537-002		

Inorganic Parameters

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Aluminum, Total	6020B	**525**		mg/Kg	24	2	10	11/04/19 17:40	11/01/19	
Antimony, Total	6020B	**0.08**	**BJ**	mg/Kg	0.48	0.006	10	11/04/19 17:40	11/01/19	
Arsenic, Total	6020B	**0.33**	**J**	mg/Kg	0.48	0.05	10	11/04/19 17:40	11/01/19	
Barium, Total	6020B	**4.97**		mg/Kg	0.97	0.02	10	11/04/19 17:40	11/01/19	
Beryllium, Total	6020B	**0.03**	**J**	mg/Kg	0.24	0.03	10	11/04/19 17:40	11/01/19	
Boron, Total	6020B	**3**	**BJ**	mg/Kg	48	0.8	10	11/04/19 17:40	11/01/19	
Cadmium, Total	6020B	**0.09**	**J**	mg/Kg	0.19	0.03	10	11/04/19 17:40	11/01/19	
Calcium, Total	6020B	**7120**		mg/Kg	48	8	10	11/04/19 17:40	11/01/19	
Chromium, Total	6020B	**1.83**		mg/Kg	0.48	0.04	10	11/04/19 17:40	11/01/19	
Cobalt, Total	6020B	**0.19**	**J**	mg/Kg	0.48	0.006	10	11/04/19 17:40	11/01/19	
Copper, Total	6020B	**1.98**		mg/Kg	0.48	0.02	10	11/04/19 17:40	11/01/19	
Iron, Total	6020B	**735**		mg/Kg	48	0.2	10	11/04/19 17:40	11/01/19	
Lead, Total	6020B	**19.2**		mg/Kg	0.24	0.006	10	11/04/19 17:40	11/01/19	
Magnesium, Total	6020B	**213**		mg/Kg	48	0.6	10	11/04/19 17:40	11/01/19	
Manganese, Total	6020B	**8.42**		mg/Kg	0.97	0.16	10	11/04/19 17:40	11/01/19	
Mercury, Total	7471B	**0.0107**		mg/Kg	0.0088	0.0015	1	11/06/19 14:47	11/06/19	
Molybdenum, Total	6020B	**0.16**	**J**	mg/Kg	0.97	0.06	10	11/04/19 17:40	11/01/19	
Nickel, Total	6020B	**0.64**	**J**	mg/Kg	0.97	0.08	10	11/04/19 17:40	11/01/19	
Potassium, Total	6020B	**61**	**B**	mg/Kg	48	3	10	11/04/19 17:40	11/01/19	
Selenium, Total	6020B	0.08	U	mg/Kg	0.97	0.08	10	11/04/19 17:40	11/01/19	
Silver, Total	6020B	**0.01**	**J**	mg/Kg	0.24	0.009	10	11/04/19 17:40	11/01/19	
Sodium, Total	6020B	**310**		mg/Kg	48	2	10	11/04/19 17:40	11/01/19	
Strontium, Total	6020B	**10.4**		mg/Kg	0.97	0.07	10	11/04/19 17:40	11/01/19	
Thallium, Total	6020B	**0.012**	**J**	mg/Kg	0.097	0.007	10	11/04/19 17:40	11/01/19	
Tin, Total	6020B	**1.6**	**BJ**	mg/Kg	2.4	0.03	10	11/04/19 17:40	11/01/19	
Titanium, Total	6020B	**27.4**		mg/Kg	2.4	0.5	10	11/04/19 17:40	11/01/19	
Vanadium, Total	6020B	**1.46**		mg/Kg	0.97	0.08	10	11/04/19 17:40	11/01/19	
Zinc, Total	6020B	**20.7**		mg/Kg	2.4	0.4	10	11/04/19 17:40	11/01/19	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 10:24
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Downstream	**Basis:**	Dry
Lab Code:	J1906537-003		

Inorganic Parameters

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Aluminum, Total	6020B	**1480**		mg/Kg	31	2	10	11/04/19 17:42	11/01/19	
Antimony, Total	6020B	**0.24**	**J**	mg/Kg	0.61	0.008	10	11/04/19 17:42	11/01/19	
Arsenic, Total	6020B	**1.48**		mg/Kg	0.61	0.06	10	11/04/19 17:42	11/01/19	
Barium, Total	6020B	**11.3**		mg/Kg	1.2	0.02	10	11/04/19 17:42	11/01/19	
Beryllium, Total	6020B	**0.09**	**J**	mg/Kg	0.31	0.03	10	11/04/19 17:42	11/01/19	
Boron, Total	6020B	**9**	**BJ**	mg/Kg	61	1.0	10	11/04/19 17:42	11/01/19	
Cadmium, Total	6020B	**0.28**		mg/Kg	0.25	0.03	10	11/04/19 17:42	11/01/19	
Calcium, Total	6020B	**3710**		mg/Kg	61	9	10	11/04/19 17:42	11/01/19	
Chromium, Total	6020B	**5.92**		mg/Kg	0.61	0.04	10	11/04/19 17:42	11/01/19	
Cobalt, Total	6020B	**0.72**		mg/Kg	0.61	0.008	10	11/04/19 17:42	11/01/19	
Copper, Total	6020B	**9.14**		mg/Kg	0.61	0.02	10	11/04/19 17:42	11/01/19	
Iron, Total	6020B	**3980**		mg/Kg	61	0.2	10	11/04/19 17:42	11/01/19	
Lead, Total	6020B	**63.7**		mg/Kg	0.31	0.008	10	11/04/19 17:42	11/01/19	
Magnesium, Total	6020B	**934**		mg/Kg	61	0.8	10	11/04/19 17:42	11/01/19	
Manganese, Total	6020B	**19.3**		mg/Kg	1.2	0.2	10	11/04/19 17:42	11/01/19	
Mercury, Total	7471B	**0.0359**		mg/Kg	0.0085	0.0014	1	11/06/19 17:27	11/06/19	
Molybdenum, Total	6020B	**0.9**	**J**	mg/Kg	1.2	0.08	10	11/04/19 17:42	11/01/19	
Nickel, Total	6020B	**2.4**		mg/Kg	1.2	0.09	10	11/04/19 17:42	11/01/19	
Potassium, Total	6020B	**159**		mg/Kg	61	4	10	11/04/19 17:42	11/01/19	
Selenium, Total	6020B	**0.3**	**J**	mg/Kg	1.2	0.10	10	11/04/19 17:42	11/01/19	
Silver, Total	6020B	**0.06**	**J**	mg/Kg	0.31	0.02	10	11/04/19 17:42	11/01/19	
Sodium, Total	6020B	**494**		mg/Kg	61	2	10	11/04/19 17:42	11/01/19	
Strontium, Total	6020B	**22.2**		mg/Kg	1.2	0.09	10	11/04/19 17:42	11/01/19	
Thallium, Total	6020B	**0.03**	**J**	mg/Kg	0.12	0.008	10	11/04/19 17:42	11/01/19	
Tin, Total	6020B	**2.3**	**BJ**	mg/Kg	3.1	0.04	10	11/04/19 17:42	11/01/19	
Titanium, Total	6020B	**46.7**		mg/Kg	3.1	0.6	10	11/04/19 17:42	11/01/19	
Vanadium, Total	6020B	**5.7**		mg/Kg	1.2	0.09	10	11/04/19 17:42	11/01/19	
Zinc, Total	6020B	**78.4**		mg/Kg	3.1	0.4	10	11/04/19 17:42	11/01/19	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/23/19 16:10
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone C	**Basis:**	Dry
Lab Code:	J1906537-004		

Inorganic Parameters

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Aluminum, Total	6020B	**2780**		mg/Kg	33	2	10	11/04/19 17:44	11/01/19	
Antimony, Total	6020B	**0.11**	**J**	mg/Kg	0.65	0.008	10	11/04/19 17:44	11/01/19	
Arsenic, Total	6020B	**1.77**		mg/Kg	0.65	0.07	10	11/04/19 17:44	11/01/19	
Barium, Total	6020B	**16.3**		mg/Kg	1.3	0.02	10	11/04/19 17:44	11/01/19	
Beryllium, Total	6020B	**0.19**	**J**	mg/Kg	0.33	0.04	10	11/04/19 17:44	11/01/19	
Boron, Total	6020B	**7**	**BJ**	mg/Kg	65	2	10	11/04/19 17:44	11/01/19	
Cadmium, Total	6020B	**0.34**		mg/Kg	0.26	0.03	10	11/04/19 17:44	11/01/19	
Calcium, Total	6020B	**3580**		mg/Kg	65	10	10	11/04/19 17:44	11/01/19	
Chromium, Total	6020B	**8.52**		mg/Kg	0.65	0.04	10	11/04/19 17:44	11/01/19	
Cobalt, Total	6020B	**0.66**		mg/Kg	0.65	0.008	10	11/04/19 17:44	11/01/19	
Copper, Total	6020B	**7.96**		mg/Kg	0.65	0.02	10	11/04/19 17:44	11/01/19	
Iron, Total	6020B	**5130**		mg/Kg	65	0.3	10	11/04/19 17:44	11/01/19	
Lead, Total	6020B	**34.6**		mg/Kg	0.33	0.008	10	11/04/19 17:44	11/01/19	
Magnesium, Total	6020B	**961**		mg/Kg	65	0.8	10	11/04/19 17:44	11/01/19	
Manganese, Total	6020B	**29.6**		mg/Kg	1.3	0.2	10	11/04/19 17:44	11/01/19	
Mercury, Total	7471B	**0.105**		mg/Kg	0.013	0.003	1	11/06/19 14:50	11/06/19	
Molybdenum, Total	6020B	**1.1**	**J**	mg/Kg	1.3	0.08	10	11/04/19 17:44	11/01/19	
Nickel, Total	6020B	**2.5**		mg/Kg	1.3	0.10	10	11/04/19 17:44	11/01/19	
Potassium, Total	6020B	**260**		mg/Kg	65	4	10	11/04/19 17:44	11/01/19	
Selenium, Total	6020B	**0.4**	**J**	mg/Kg	1.3	0.10	10	11/04/19 17:44	11/01/19	
Silver, Total	6020B	**0.14**	**J**	mg/Kg	0.33	0.02	10	11/04/19 17:44	11/01/19	
Sodium, Total	6020B	**317**		mg/Kg	65	2	10	11/04/19 17:44	11/01/19	
Strontium, Total	6020B	**32.1**		mg/Kg	1.3	0.09	10	11/04/19 17:44	11/01/19	
Thallium, Total	6020B	**0.06**	**J**	mg/Kg	0.13	0.009	10	11/04/19 17:44	11/01/19	
Tin, Total	6020B	**2.5**	**BJ**	mg/Kg	3.3	0.04	10	11/04/19 17:44	11/01/19	
Titanium, Total	6020B	**58.0**		mg/Kg	3.3	0.6	10	11/04/19 17:44	11/01/19	
Vanadium, Total	6020B	**5.9**		mg/Kg	1.3	0.10	10	11/04/19 17:44	11/01/19	
Zinc, Total	6020B	**48.0**		mg/Kg	3.3	0.5	10	11/04/19 17:44	11/01/19	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/22/19 17:25
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone D	**Basis:**	Dry
Lab Code:	J1906537-005		

Inorganic Parameters

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Aluminum, Total	6020B	**515**		mg/Kg	23	2	10	11/04/19 17:46	11/01/19	
Antimony, Total	6020B	**0.07**	**BJ**	mg/Kg	0.47	0.006	10	11/04/19 17:46	11/01/19	
Arsenic, Total	6020B	**0.26**	**J**	mg/Kg	0.47	0.05	10	11/04/19 17:46	11/01/19	
Barium, Total	6020B	**2.93**		mg/Kg	0.93	0.02	10	11/04/19 17:46	11/01/19	
Beryllium, Total	6020B	0.03	U	mg/Kg	0.23	0.03	10	11/04/19 17:46	11/01/19	
Boron, Total	6020B	**3**	**BJ**	mg/Kg	47	0.8	10	11/04/19 17:46	11/01/19	
Cadmium, Total	6020B	**0.09**	**J**	mg/Kg	0.19	0.03	10	11/04/19 17:46	11/01/19	
Calcium, Total	6020B	**1500**		mg/Kg	47	8	10	11/04/19 17:46	11/01/19	
Chromium, Total	6020B	**1.86**		mg/Kg	0.47	0.04	10	11/04/19 17:46	11/01/19	
Cobalt, Total	6020B	**0.18**	**J**	mg/Kg	0.47	0.006	10	11/04/19 17:46	11/01/19	
Copper, Total	6020B	**3.14**		mg/Kg	0.47	0.02	10	11/04/19 17:46	11/01/19	
Iron, Total	6020B	**761**		mg/Kg	47	0.2	10	11/04/19 17:46	11/01/19	
Lead, Total	6020B	**15.3**		mg/Kg	0.23	0.006	10	11/04/19 17:46	11/01/19	
Magnesium, Total	6020B	**259**		mg/Kg	47	0.6	10	11/04/19 17:46	11/01/19	
Manganese, Total	6020B	**6.32**		mg/Kg	0.93	0.16	10	11/04/19 17:46	11/01/19	
Mercury, Total	7471B	**0.0089**		mg/Kg	0.0065	0.0011	1	11/06/19 14:51	11/06/19	
Molybdenum, Total	6020B	**0.20**	**J**	mg/Kg	0.93	0.06	10	11/04/19 17:46	11/01/19	
Nickel, Total	6020B	**0.65**	**J**	mg/Kg	0.93	0.08	10	11/04/19 17:46	11/01/19	
Potassium, Total	6020B	**63**	**B**	mg/Kg	47	3	10	11/04/19 17:46	11/01/19	
Selenium, Total	6020B	0.08	U	mg/Kg	0.93	0.08	10	11/04/19 17:46	11/01/19	
Silver, Total	6020B	**0.01**	**J**	mg/Kg	0.23	0.009	10	11/04/19 17:46	11/01/19	
Sodium, Total	6020B	**333**		mg/Kg	47	2	10	11/04/19 17:46	11/01/19	
Strontium, Total	6020B	**6.39**		mg/Kg	0.93	0.07	10	11/04/19 17:46	11/01/19	
Thallium, Total	6020B	**0.009**	**J**	mg/Kg	0.093	0.007	10	11/04/19 17:46	11/01/19	
Tin, Total	6020B	**1.3**	**BJ**	mg/Kg	2.3	0.03	10	11/04/19 17:46	11/01/19	
Titanium, Total	6020B	**39.7**		mg/Kg	2.3	0.5	10	11/04/19 17:46	11/01/19	
Vanadium, Total	6020B	**1.53**		mg/Kg	0.93	0.08	10	11/04/19 17:46	11/01/19	
Zinc, Total	6020B	**22.5**		mg/Kg	2.3	0.4	10	11/04/19 17:46	11/01/19	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/23/19 16:10
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone C	**Basis:**	As Received
Lab Code:	J1906537-006		

Toxicity Characteristics Leachate Procedure (TCLP)

Inorganic Parameters

Pre-Prep Method: EPA 1311

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic, TCLP	6010D	0.02	U	mg/L	0.10	0.02	1	11/13/19 01:36	11/11/19	
Barium, TCLP	6010D	**0.09**	**J**	mg/L	0.10	0.002	1	11/13/19 01:36	11/11/19	
Cadmium, TCLP	6010D	0.002	U	mg/L	0.050	0.002	1	11/13/19 01:36	11/11/19	
Chromium, TCLP	6010D	0.006	U	mg/L	0.10	0.006	1	11/13/19 01:36	11/11/19	
Lead, TCLP	6010D	**0.04**	**J**	mg/L	0.10	0.006	1	11/13/19 01:36	11/11/19	
Mercury, TCLP	7470A	0.0010	U	mg/L	0.0010	0.0010	1	11/06/19 16:18	11/06/19	
Selenium, TCLP	6010D	0.04	U	mg/L	0.10	0.04	1	11/13/19 01:36	11/11/19	
Silver, TCLP	6010D	0.008	U	mg/L	0.10	0.008	1	11/13/19 01:36	11/11/19	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/22/19 17:25
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone D	**Basis:**	As Received
Lab Code:	J1906537-007		

Toxicity Characteristics Leachate Procedure (TCLP)

Inorganic Parameters

Pre-Prep Method: EPA 1311

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic, TCLP	6010D	**0.02**	**J**	mg/L	0.10	0.02	1	11/13/19 02:37	11/11/19	
Barium, TCLP	6010D	**0.13**		mg/L	0.10	0.002	1	11/13/19 02:37	11/11/19	
Cadmium, TCLP	6010D	0.002	U	mg/L	0.050	0.002	1	11/13/19 02:37	11/11/19	
Chromium, TCLP	6010D	0.006	U	mg/L	0.10	0.006	1	11/13/19 02:37	11/11/19	
Lead, TCLP	6010D	0.006	U	mg/L	0.10	0.006	1	11/13/19 02:37	11/11/19	
Mercury, TCLP	7470A	0.0010	U	mg/L	0.0010	0.0010	1	11/06/19 16:20	11/06/19	
Selenium, TCLP	6010D	0.04	U	mg/L	0.10	0.04	1	11/13/19 02:37	11/11/19	
Silver, TCLP	6010D	0.008	U	mg/L	0.10	0.008	1	11/13/19 02:36	11/11/19	

General Chemistry

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Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/25/19 09:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone A	**Basis:**	As Received
Lab Code:	J1906537-001		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Solids, Total	160.3 Modified	**59.3**	Percent	-	-	1	01/13/20 10:18	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 15:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Upstream	**Basis:**	As Received
Lab Code:	J1906537-002		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Solids, Total	160.3 Modified	**74.5**	Percent	-	-	1	01/13/20 10:18	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 10:24
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Downstream	**Basis:**	As Received
Lab Code:	J1906537-003		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Solids, Total	160.3 Modified	**56.5**	Percent	-	-	1	01/13/20 10:18	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/23/19 16:10
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone C	**Basis:**	As Received
Lab Code:	J1906537-004		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Solids, Total	160.3 Modified	**45.2**	Percent	-	-	1	01/13/20 10:18	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/22/19 17:25
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone D	**Basis:**	As Received
Lab Code:	J1906537-005		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Solids, Total	160.3 Modified	**71.6**	Percent	-	-	1	01/13/20 10:18	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/23/19 16:10
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone C	**Basis:**	As Received
Lab Code:	J1906537-006		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Solids, Total	160.3 Modified	**65.4**	Percent	-	-	1	01/13/20 10:18	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/22/19 17:25
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone D	**Basis:**	As Received
Lab Code:	J1906537-007		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Solids, Total	160.3 Modified	**43.2**	Percent	-	-	1	01/13/20 10:18	

QC Summary Forms

ALS Environmental - Jacksonville Laboratory
9143 Philips Highway, Suite 200, Jacksonville, FL 32256
Phone (904) 739-2277 Fax (904) 739-2011
www.alsglobal.com

Semivolatile Organic Compounds by GC/MS

ALS Environmental—Jacksonville Laboratory
9143 Philips Highway, Suite 200, Jacksonville, FL 32256
Phone (904)739-2277 Fax (904)739-2011
www.alsglobal.com

Client: Water and Air Research **Service Request:** J1906537
Project: USACE Big Fishweir Creek
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Extraction Method: EPA 3546

Sample Name	Lab Code	2,4,6-Tribromophenol 30-136	2-Fluorobiphenyl 20-115	2-Fluorophenol 10-110
VB-BFWC19-Zone A	J1906537-001	54	66	53
VB-BFWC19-Zone B Upstream	J1906537-002	48	60	47
VB-BFWC19-Zone B Downstream	J1906537-003	38	53	34
VB-BFWC19-Zone C	J1906537-004	34	45	37
VB-BFWC19-Zone D	J1906537-005	44	46	37
Method Blank	JQ1906431-01	56	67	65
Lab Control Sample	JQ1906431-02	89	83	78
VB-BFWC19-Zone B Upstream	JQ1906431-03	58	70	44
VB-BFWC19-Zone B Upstream	JQ1906431-04	59	65	45

Client: Water and Air Research **Service Request:** J1906537
Project: USACE Big Fishweir Creek
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Extraction Method: EPA 3546

Sample Name	Lab Code	Nitrobenzene-d5 20-110	Phenol-d6 14-100	p-Terphenyl-d14 32-119
VB-BFWC19-Zone A	J1906537-001	57	62	78
VB-BFWC19-Zone B Upstream	J1906537-002	49	58	73
VB-BFWC19-Zone B Downstream	J1906537-003	37	38	63
VB-BFWC19-Zone C	J1906537-004	37	37	72
VB-BFWC19-Zone D	J1906537-005	39	36	66
Method Blank	JQ1906431-01	70	70	102
Lab Control Sample	JQ1906431-02	81	84	105
VB-BFWC19-Zone B Upstream	JQ1906431-03	51	51	95
VB-BFWC19-Zone B Upstream	JQ1906431-04	51	56	83

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QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19
Sample Matrix:	Sediment	**Date Received:**	10/30/19
		Date Analyzed:	11/19/19
		Date Extracted:	10/31/19

Duplicate Matrix Spike Summary
Semivolatile Organic Compounds by GC/MS

Sample Name:	VB-BFWC19-Zone B Upstream	**Units:**	ug/Kg
Lab Code:	J1906537-002	**Basis:**	Dry
Analysis Method:	8270D		
Prep Method:	EPA 3546		

		Matrix Spike JQ1906431-03			**Duplicate Matrix Spike** JQ1906431-04					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
1,2,4-Trichlorobenzene	857 U	1150 J	1810	64	1180 J	1820	64	31-110	2	30
1,2-Dichlorobenzene	435 U	1000 J	1810	55	981 J	1820	54	30-110	2	30
1,3-Dichlorobenzene	517 U	992 J	1810	55	963 J	1820	53	30-110	3	30
1,4-Dichlorobenzene	558 U	965 J	1810	53	935 J	1820	51	29-110	3	30
1-Methylnaphthalene	897 U	1390 J	1810	77	1390 J	1820	76	39-112	<1	30
2,4,5-Trichlorophenol	775 U	1450 J	1810	80	781 U	1820	0 *	59-115	NC	30
2,4,6-Trichlorophenol	680 U	1400 J	1810	77	1650 J	1820	90	49-115	17	30
2,4-Dichlorophenol	857 U	1250 J	1810	69	1330 J	1820	73	44-110	6	30
2,4-Dimethylphenol	1130 U	1270 J	1810	70	1360 J	1820	74	40-112	6	30
2,4-Dinitrophenol	313 U	2290 J	1810	126 *	2410 J	1820	132 *	21-117	5	30
2,4-Dinitrotoluene	558 U	978 J	1810	54	1160 J	1820	64	49-119	17	30
2,6-Dinitrotoluene	653 U	1090 J	1810	60	1200 J	1820	66	56-116	9	30
2-Chloronaphthalene	585 U	1290 J	1810	71	1260 J	1820	69	42-111	2	30
2-Chlorophenol	476 U	919 J	1810	51	958 J	1820	53	26-110	4	30
2-Methylnaphthalene	802 U	1370 J	1810	76	1360 J	1820	74	38-110	<1	30
2-Methylphenol	653 U	1000 J	1810	55	1090 J	1820	60	32-113	9	30
2-Nitroaniline	693 U	1060 J	1810	59	1130 J	1820	62	49-131	7	30
2-Nitrophenol	707 U	919 J	1810	51	958 J	1820	53	33-111	4	30
3- and 4-Methylphenol Coelution	585 U	1080 J	1810	60	1160 J	1820	64	34-110	7	30
3,3'-Dichlorobenzidine	1160 U	1570 J	1810	87	1750 J	1820	96	37-150	11	30
3-Nitroaniline	693 U	1250 J	1810	69	1390 J	1820	76	59-124	10	30
4,6-Dinitro-2-methylphenol	653 U	1980 J	1810	109	2190 J	1820	120 *	44-112	10	30
4-Bromophenyl Phenyl Ether	707 U	1270 J	1810	70	1270 J	1820	70	56-114	<1	30
4-Chloro-3-methylphenol	721 U	1470 J	1810	81	1650 J	1820	90	53-116	11	30
4-Chloroaniline	938 U	1300 J	1810	72	1370 J	1820	75	42-118	5	30
4-Chlorophenyl Phenyl Ether	707 U	1440 J	1810	79	1410 J	1820	77	52-113	2	30
4-Nitroaniline	748 U	1440 J	1810	79	1550 J	1820	85	56-134	7	30
4-Nitrophenol	761 U	983 J	1810	54	1170 J	1820	64	42-133	18	30
Acenaphthene	721 U	1450 J	1810	80	1430 J	1820	78	47-111	1	30
Acenaphthylene	639 U	1360 J	1810	75	1360 J	1820	75	49-112	<1	30
Acetophenone	626 U	1040 J	1810	58	1070 J	1820	59	30-113	3	30
Anthracene	585 U	1420 J	1810	79	1430 J	1820	78	54-116	<1	30
Benz(a)anthracene	639 U	1570 J	1810	87	1630 J	1820	90	54-117	4	30
Benzo(a)pyrene	503 U	1610 J	1810	89	1670 J	1820	92	54-120	4	30
Benzo(b)fluoranthene	354 U	1600 J	1810	88	1880 J	1820	103	53-118	16	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19
Sample Matrix:	Sediment	**Date Received:**	10/30/19
		Date Analyzed:	11/19/19
		Date Extracted:	10/31/19

Duplicate Matrix Spike Summary
Semivolatile Organic Compounds by GC/MS

Sample Name:	VB-BFWC19-Zone B Upstream	**Units:**	ug/Kg
Lab Code:	J1906537-002	**Basis:**	Dry
Analysis Method:	8270D		
Prep Method:	EPA 3546		

		Matrix Spike JQ1906431-03			**Duplicate Matrix Spike** JQ1906431-04					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Benzo(g,h,i)perylene	707 U	1460 J	1810	81	1580 J	1820	86	54-123	8	30
Benzo(k)fluoranthene	802 U	1510 J	1810	83	1350 J	1820	74	47-122	11	30
Benzyl Alcohol	517 U	924 J	1810	51	976 J	1820	54	27-111	6	30
Bis(2-chloroethoxy)methane	721 U	1180 J	1810	65	1240 J	1820	68	30-112	4	30
Bis(2-chloroethyl) Ether	571 U	1040 J	1810	57	1040 J	1820	57	21-110	<1	30
Bis(2-ethylhexyl) Phthalate	598 U	2390	1810	132 *	2550	1820	140 *	45-122	6	30
Butyl Benzyl Phthalate	639 U	1590 J	1810	88	1650 J	1820	90	47-119	4	30
Carbazole	775 U	1480 J	1810	82	1530 J	1820	84	51-120	3	30
Chrysene	612 U	1670 J	1810	92	1690 J	1820	93	53-118	1	30
Dibenz(a,h)anthracene	626 U	1420 J	1810	78	1440 J	1820	79	54-119	2	30
Dibenzofuran	626 U	1470 J	1810	81	1470 J	1820	81	46-113	<1	30
Diethyl Phthalate	693 U	1500 J	1810	83	1500 J	1820	82	54-118	<1	30
Dimethyl Phthalate	721 U	1440 J	1810	79	1450 J	1820	80	53-115	1	30
Di-n-butyl Phthalate	462 U	1300 J	1810	72	1360 J	1820	75	46-120	5	30
Di-n-octyl Phthalate	707 U	2860 J	1810	158 *	2940 J	1820	161 *	42-115	3	30
Fluoranthene	653 U	1440 J	1810	79	1470 J	1820	81	53-120	3	30
Fluorene	639 U	1470 J	1810	81	1500 J	1820	82	51-115	2	30
Hexachlorobenzene	653 U	1310 J	1810	72	1270 J	1820	70	58-116	3	30
Hexachlorobutadiene	748 U	1140 J	1810	63	1130 J	1820	62	21-122	<1	30
Hexachlorocyclopentadiene	462 U	462 U	1810	0 *	466 U	1820	0 *	27-110	NC	30
Hexachloroethane	422 U	879 J	1810	49	908 J	1820	50	20-110	3	30
Indeno(1,2,3-cd)pyrene	558 U	1480 J	1810	82	1540 J	1820	84	54-120	4	30
Isophorone	789 U	1230 J	1810	68	1250 J	1820	68	36-116	2	30
Naphthalene	666 U	1290 J	1810	71	1270 J	1820	70	30-111	1	30
Nitrobenzene	530 U	974 J	1810	54	1030 J	1820	56	30-114	5	30
N-Nitrosodi-n-propylamine	680 U	1020 J	1810	56	1060 J	1820	58	25-117	4	30
Pentachlorophenol (PCP)	476 U	2220 J	1810	123	2280 J	1820	125	20-126	3	30
Phenanthrene	571 U	1560 J	1810	86	1550 J	1820	85	54-115	1	30
Phenol	626 U	960 J	1810	53	1080 J	1820	59	34-115	11	30
Pyrene	626 U	1770 J	1810	98	1880 J	1820	103	50-117	6	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	JQ1906431-01	**Basis:**	Dry

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	63.0	U	170	63.0	1	11/06/19 01:44	10/31/19	
1,2-Dichlorobenzene	32.0	U	170	32.0	1	11/06/19 01:44	10/31/19	
1,3-Dichlorobenzene	38.0	U	170	38.0	1	11/06/19 01:44	10/31/19	
1,4-Dichlorobenzene	41.0	U	170	41.0	1	11/06/19 01:44	10/31/19	
1-Methylnaphthalene	66.0	U	170	66.0	1	11/06/19 01:44	10/31/19	
2,4,5-Trichlorophenol	57.0	U	170	57.0	1	11/06/19 01:44	10/31/19	
2,4,6-Trichlorophenol	50.0	U	170	50.0	1	11/06/19 01:44	10/31/19	
2,4-Dichlorophenol	63.0	U	170	63.0	1	11/06/19 01:44	10/31/19	
2,4-Dimethylphenol	83.0	U	170	83.0	1	11/06/19 01:44	10/31/19	
2,4-Dinitrophenol	23.0	U	670	23.0	1	11/06/19 01:44	10/31/19	
2,4-Dinitrotoluene	41.0	U	170	41.0	1	11/06/19 01:44	10/31/19	
2,6-Dinitrotoluene	48.0	U	170	48.0	1	11/06/19 01:44	10/31/19	
2-Chloronaphthalene	43.0	U	170	43.0	1	11/06/19 01:44	10/31/19	
2-Chlorophenol	35.0	U	170	35.0	1	11/06/19 01:44	10/31/19	
2-Methylnaphthalene	59.0	U	170	59.0	1	11/06/19 01:44	10/31/19	
2-Methylphenol	48.0	U	170	48.0	1	11/06/19 01:44	10/31/19	
2-Nitroaniline	51.0	U	170	51.0	1	11/06/19 01:44	10/31/19	
2-Nitrophenol	52.0	U	670	52.0	1	11/06/19 01:44	10/31/19	
3- and 4-Methylphenol Coelution	43.0	U	170	43.0	1	11/06/19 01:44	10/31/19	
3,3'-Dichlorobenzidine	85.0	U	670	85.0	1	11/06/19 01:44	10/31/19	
3-Nitroaniline	51.0	U	170	51.0	1	11/06/19 01:44	10/31/19	
4,6-Dinitro-2-methylphenol	48.0	U	670	48.0	1	11/06/19 01:44	10/31/19	
4-Bromophenyl Phenyl Ether	52.0	U	170	52.0	1	11/06/19 01:44	10/31/19	
4-Chloro-3-methylphenol	53.0	U	170	53.0	1	11/06/19 01:44	10/31/19	
4-Chloroaniline	69.0	U	170	69.0	1	11/06/19 01:44	10/31/19	
4-Chlorophenyl Phenyl Ether	52.0	U	170	52.0	1	11/06/19 01:44	10/31/19	
4-Nitroaniline	55.0	U	170	55.0	1	11/06/19 01:44	10/31/19	
4-Nitrophenol	56.0	U	670	56.0	1	11/06/19 01:44	10/31/19	
Acenaphthene	53.0	U	170	53.0	1	11/06/19 01:44	10/31/19	
Acenaphthylene	47.0	U	170	47.0	1	11/06/19 01:44	10/31/19	
Acetophenone	46.0	U	340	46.0	1	11/06/19 01:44	10/31/19	
Anthracene	43.0	U	170	43.0	1	11/06/19 01:44	10/31/19	
Benz(a)anthracene	47.0	U	170	47.0	1	11/06/19 01:44	10/31/19	
Benzo(a)pyrene	37.0	U	170	37.0	1	11/06/19 01:44	10/31/19	
Benzo(b)fluoranthene	26.0	U	170	26.0	1	11/06/19 01:44	10/31/19	
Benzo(g,h,i)perylene	52.0	U	170	52.0	1	11/06/19 01:44	10/31/19	
Benzo(k)fluoranthene	59.0	U	170	59.0	1	11/06/19 01:44	10/31/19	
Benzyl Alcohol	38.0	U	340	38.0	1	11/06/19 01:44	10/31/19	
Bis(2-chloroethoxy)methane	53.0	U	170	53.0	1	11/06/19 01:44	10/31/19	
Bis(2-chloroethyl) Ether	42.0	U	170	42.0	1	11/06/19 01:44	10/31/19	
Bis(2-ethylhexyl) Phthalate	44.0	U	170	44.0	1	11/06/19 01:44	10/31/19	
Butyl Benzyl Phthalate	47.0	U	340	47.0	1	11/06/19 01:44	10/31/19	
Carbazole	57.0	U	170	57.0	1	11/06/19 01:44	10/31/19	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	JQ1906431-01	**Basis:**	Dry

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Chrysene	45.0	U	170	45.0	1	11/06/19 01:44	10/31/19	
Dibenz(a,h)anthracene	46.0	U	170	46.0	1	11/06/19 01:44	10/31/19	
Dibenzofuran	46.0	U	170	46.0	1	11/06/19 01:44	10/31/19	
Diethyl Phthalate	51.0	U	170	51.0	1	11/06/19 01:44	10/31/19	
Dimethyl Phthalate	53.0	U	170	53.0	1	11/06/19 01:44	10/31/19	
Di-n-butyl Phthalate	34.0	U	170	34.0	1	11/06/19 01:44	10/31/19	
Di-n-octyl Phthalate	52.0	U	340	52.0	1	11/06/19 01:44	10/31/19	
Fluoranthene	48.0	U	170	48.0	1	11/06/19 01:44	10/31/19	
Fluorene	47.0	U	170	47.0	1	11/06/19 01:44	10/31/19	
Hexachlorobenzene	48.0	U	170	48.0	1	11/06/19 01:44	10/31/19	
Hexachlorobutadiene	55.0	U	170	55.0	1	11/06/19 01:44	10/31/19	
Hexachlorocyclopentadiene	34.0	U	170	34.0	1	11/06/19 01:44	10/31/19	
Hexachloroethane	31.0	U	170	31.0	1	11/06/19 01:44	10/31/19	
Indeno(1,2,3-cd)pyrene	41.0	U	170	41.0	1	11/06/19 01:44	10/31/19	
Isophorone	58.0	U	170	58.0	1	11/06/19 01:44	10/31/19	
Naphthalene	49.0	U	170	49.0	1	11/06/19 01:44	10/31/19	
Nitrobenzene	39.0	U	170	39.0	1	11/06/19 01:44	10/31/19	
N-Nitrosodi-n-propylamine	50.0	U	170	50.0	1	11/06/19 01:44	10/31/19	
Pentachlorophenol (PCP)	35.0	U	670	35.0	1	11/06/19 01:44	10/31/19	
Phenanthrene	42.0	U	170	42.0	1	11/06/19 01:44	10/31/19	
Phenol	46.0	U	170	46.0	1	11/06/19 01:44	10/31/19	
Pyrene	46.0	U	170	46.0	1	11/06/19 01:44	10/31/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	56	30 - 136	11/06/19 01:44	
2-Fluorobiphenyl	67	20 - 115	11/06/19 01:44	
2-Fluorophenol	65	10 - 110	11/06/19 01:44	
Nitrobenzene-d5	70	20 - 110	11/06/19 01:44	
Phenol-d6	70	14 - 100	11/06/19 01:44	
p-Terphenyl-d14	102	32 - 119	11/06/19 01:44	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Analyzed:**	11/06/19
Sample Matrix:	Sediment	**Date Extracted:**	10/31/19

Lab Control Sample Summary
Semivolatile Organic Compounds by GC/MS

Analysis Method:	8270D	**Units:**	ug/Kg
Prep Method:	EPA 3546	**Basis:**	Dry
		Analysis Lot:	658500

Lab Control Sample
JQ1906431-02

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
1,2,4-Trichlorobenzene	1070	1330	80	31-110
1,2-Dichlorobenzene	1070	1330	80	30-110
1,3-Dichlorobenzene	1070	1330	80	30-110
1,4-Dichlorobenzene	1070	1330	80	29-110
1-Methylnaphthalene	1130	1330	85	39-112
2,4,5-Trichlorophenol	1170	1330	88	59-115
2,4,6-Trichlorophenol	1150	1330	86	49-115
2,4-Dichlorophenol	1130	1330	85	44-110
2,4-Dimethylphenol	1150	1330	86	40-112
2,4-Dinitrophenol	1120	1330	84	21-117
2,4-Dinitrotoluene	1200	1330	90	49-119
2,6-Dinitrotoluene	1150	1330	86	56-116
2-Chloronaphthalene	1090	1330	82	42-111
2-Chlorophenol	1070	1330	80	26-110
2-Methylnaphthalene	1120	1330	84	38-110
2-Methylphenol	1090	1330	82	32-113
2-Nitroaniline	1180	1330	88	49-131
2-Nitrophenol	1160	1330	87	33-111
3- and 4-Methylphenol Coelution	1110	1330	83	34-110
3,3'-Dichlorobenzidine	1550	1330	116	37-150
3-Nitroaniline	1290	1330	97	59-124
4,6-Dinitro-2-methylphenol	1150	1330	86	44-112
4-Bromophenyl Phenyl Ether	1060	1330	80	56-114
4-Chloro-3-methylphenol	1210	1330	90	53-116
4-Chloroaniline	1220	1330	91	42-118
4-Chlorophenyl Phenyl Ether	1080	1330	81	52-113
4-Nitroaniline	1290	1330	97	56-134
4-Nitrophenol	1060	1330	79	42-133
Acenaphthene	1130	1330	85	47-111
Acenaphthylene	1130	1330	85	49-112
Acetophenone	1050	1330	79	30-113
Anthracene	1140	1330	85	54-116
Benz(a)anthracene	1190	1330	89	54-117
Benzo(a)pyrene	1250	1330	94	54-120
Benzo(b)fluoranthene	1270	1330	95	53-118
Benzo(g,h,i)perylene	1250	1330	93	54-123
Benzo(k)fluoranthene	1170	1330	88	47-122
Benzyl Alcohol	1100	1330	82	27-111
Bis(2-chloroethoxy)methane	1130	1330	85	30-112
Bis(2-chloroethyl) Ether	1130	1330	84	21-110
Bis(2-ethylhexyl) Phthalate	1230	1330	92	45-122

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Analyzed:**	11/06/19
Sample Matrix:	Sediment	**Date Extracted:**	10/31/19

Lab Control Sample Summary
Semivolatile Organic Compounds by GC/MS

Analysis Method:	8270D	**Units:**	ug/Kg
Prep Method:	EPA 3546	**Basis:**	Dry
		Analysis Lot:	658500

Lab Control Sample
JQ1906431-02

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Butyl Benzyl Phthalate	1280	1330	96	47-119
Carbazole	1210	1330	91	51-120
Chrysene	1200	1330	90	53-118
Dibenz(a,h)anthracene	1260	1330	95	54-119
Dibenzofuran	1120	1330	84	46-113
Diethyl Phthalate	1150	1330	86	54-118
Dimethyl Phthalate	1130	1330	85	53-115
Di-n-butyl Phthalate	1220	1330	91	46-120
Di-n-octyl Phthalate	1200	1330	90	42-115
Fluoranthene	1190	1330	89	53-120
Fluorene	1150	1330	87	51-115
Hexachlorobenzene	1100	1330	83	58-116
Hexachlorobutadiene	1030	1330	77	21-122
Hexachlorocyclopentadiene	1010	1330	76	27-110
Hexachloroethane	1040	1330	78	20-110
Indeno(1,2,3-cd)pyrene	1260	1330	95	54-120
Isophorone	1140	1330	86	36-116
Naphthalene	1120	1330	84	30-111
Nitrobenzene	1060	1330	79	30-114
N-Nitrosodi-n-propylamine	1070	1330	80	25-117
Pentachlorophenol (PCP)	991	1330	74	20-126
Phenanthrene	1140	1330	85	54-115
Phenol	1230	1330	92	34-115
Pyrene	1170	1330	88	50-117

Client: Water and Air Research **Service Request:** J1906537
Project: USACE Big Fishweir Creek
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
TCLP Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Extraction Method: EPA 3510C

Sample Name	Lab Code	2,4,6-Tribromophenol 23-122	2-Fluorobiphenyl 15-117	2-Fluorophenol 10-85
VB-BFWC19-Zone C	J1906537-006	66	70	46
VB-BFWC19-Zone D	J1906537-007	65	74	49
Method Blank	JQ1906534-01	57	63	47
Lab Control Sample	JQ1906534-02	67	74	53
Duplicate Lab Control Sample	JQ1906534-03	74	84	60

Client: Water and Air Research **Service Request:** J1906537
Project: USACE Big Fishweir Creek
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
TCLP Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Extraction Method: EPA 3510C

Sample Name	Lab Code	Nitrobenzene-d5 10-110	Phenol-d6 7-60	p-Terphenyl-d14 40-125
VB-BFWC19-Zone C	J1906537-006	64	42	103
VB-BFWC19-Zone D	J1906537-007	66	44	98
Method Blank	JQ1906534-01	58	43	88
Lab Control Sample	JQ1906534-02	68	45	89
Duplicate Lab Control Sample	JQ1906534-03	79	50	93

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	mg/L
Lab Code:	JQ1906534-01	**Basis:**	As Received

TCLP Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3510C

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
o-Cresol, TCLP	0.0130	U	0.0500	0.0130	1	11/15/19 14:31	11/6/19	
2,4-Dinitrotoluene, TCLP	0.0130	U	0.0500	0.0130	1	11/15/19 14:31	11/6/19	
2,4,5-Trichlorophenol, TCLP	0.0130	U	0.0500	0.0130	1	11/15/19 14:31	11/6/19	
2,4,6-Trichlorophenol, TCLP	0.00890	U	0.0500	0.00890	1	11/15/19 14:31	11/6/19	
m,p-Cresols, TCLP	0.0100	U	0.0500	0.0100	1	11/15/19 14:31	11/6/19	
Hexachlorobenzene, TCLP	0.0170	U	0.0500	0.0170	1	11/15/19 14:31	11/6/19	
Hexachlorobutadiene, TCLP	0.0120	U	0.0500	0.0120	1	11/15/19 14:31	11/6/19	
Hexachloroethane, TCLP	0.00810	U	0.0500	0.00810	1	11/15/19 14:31	11/6/19	
Nitrobenzene, TCLP	0.0210	U	0.0500	0.0210	1	11/15/19 14:31	11/6/19	
Pentachlorophenol (PCP), TCLP	0.0110	U	0.200	0.0110	1	11/15/19 14:31	11/6/19	
Pyridine, TCLP	0.0110	U	0.200	0.0110	1	11/15/19 14:31	11/6/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	57	23 - 122	11/15/19 14:31	
2-Fluorobiphenyl	63	15 - 117	11/15/19 14:31	
2-Fluorophenol	47	10 - 85	11/15/19 14:31	
Nitrobenzene-d5	58	10 - 110	11/15/19 14:31	
Phenol-d6	43	7 - 60	11/15/19 14:31	
p-Terphenyl-d14	88	40 - 125	11/15/19 14:31	

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QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Analyzed:**	11/15/19
Sample Matrix:	Sediment	**Date Extracted:**	11/06/19

Duplicate Lab Control Sample Summary
TCLP Semivolatile Organic Compounds by GC/MS

Analysis Method:	8270D	**Units:**	mg/L
Prep Method:	EPA 3510C	**Basis:**	As Received
		Analysis Lot:	660111

	Lab Control Sample JQ1906534-02			Duplicate Lab Control Sample JQ1906534-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
2,4,5-Trichlorophenol, TCLP	0.350	0.400	87	0.370	0.400	92	43-116	6	30
2,4,6-Trichlorophenol, TCLP	0.331	0.400	83	0.364	0.400	91	34-119	9	30
2,4-Dinitrotoluene, TCLP	0.336	0.400	84	0.361	0.400	90	49-117	7	30
Hexachlorobenzene, TCLP	0.273	0.400	68	0.294	0.400	73	50-117	7	30
Hexachlorobutadiene, TCLP	0.242	0.400	61	0.293	0.400	73	25-110	19	30
Hexachloroethane, TCLP	0.206	0.400	52	0.251	0.400	63	21-115	19	30
m,p-Cresols, TCLP	0.284	0.400	71	0.319	0.400	80	29-110	12	30
Nitrobenzene, TCLP	0.285	0.400	71	0.326	0.400	82	25-118	13	30
o-Cresol, TCLP	0.291	0.400	73	0.321	0.400	80	29-112	10	30
Pentachlorophenol (PCP), TCLP	0.265	0.400	66	0.283	0.400	71	36-110	7	30
Pyridine, TCLP	0.122 J	0.400	31	0.146 J	0.400	36	10-80	18	30

Client: Water and Air Research **Service Request:** J1906537
Project: USACE Big Fishweir Creek
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Base Neutral Semivolatile Organic Compounds by GC/MS SIM

Analysis Method: 8270D SIM
Extraction Method: EPA 3546

Sample Name	Lab Code	2-Fluorobiphenyl 30-118	p-Terphenyl-d14 41-146
VB-BFWC19-Zone A	J1906537-001	57	77
VB-BFWC19-Zone B Upstream	J1906537-002	50	54
VB-BFWC19-Zone B Downstream	J1906537-003	66	82
VB-BFWC19-Zone C	J1906537-004	60	77
VB-BFWC19-Zone D	J1906537-005	50	61
VB-BFWC19-Zone C	J1906537-006	62	58
VB-BFWC19-Zone D	J1906537-007	56	85
Method Blank	JQ1906427-01	67	76
Lab Control Sample	JQ1906427-02	72	75

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	JQ1906427-01	**Basis:**	Dry

Base Neutral Semivolatile Organic Compounds by GC/MS SIM

Analysis Method: 8270D SIM
Prep Method: EPA 3546

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1-Methylnaphthalene	2.70 U	3.40	2.70	1	11/05/19 21:09	10/31/19	
2-Methylnaphthalene	2.30 U	3.40	2.30	1	11/05/19 21:09	10/31/19	
Acenaphthene	3.10 U	6.80	3.10	1	11/05/19 21:09	10/31/19	
Acenaphthylene	2.20 U	6.80	2.20	1	11/05/19 21:09	10/31/19	
Anthracene	1.60 U	3.40	1.60	1	11/05/19 21:09	10/31/19	
Benz(a)anthracene	1.90 U	3.40	1.90	1	11/05/19 21:09	10/31/19	
Benzo(a)pyrene	1.00 U	3.40	1.00	1	11/05/19 21:09	10/31/19	
Benzo(b)fluoranthene	2.00 U	3.40	2.00	1	11/05/19 21:09	10/31/19	
Benzo(g,h,i)perylene	2.20 U	3.40	2.20	1	11/05/19 21:09	10/31/19	
Benzo(k)fluoranthene	2.40 U	3.40	2.40	1	11/05/19 21:09	10/31/19	
Chrysene	1.90 U	3.40	1.90	1	11/05/19 21:09	10/31/19	
Dibenz(a,h)anthracene	2.70 U	3.40	2.70	1	11/05/19 21:09	10/31/19	
Fluoranthene	2.00 U	3.40	2.00	1	11/05/19 21:09	10/31/19	
Fluorene	2.20 U	3.40	2.20	1	11/05/19 21:09	10/31/19	
Indeno(1,2,3-cd)pyrene	2.20 U	3.40	2.20	1	11/05/19 21:09	10/31/19	
Naphthalene	3.10 U	3.40	3.10	1	11/05/19 21:09	10/31/19	
Phenanthrene	1.70 U	6.80	1.70	1	11/05/19 21:09	10/31/19	
Pyrene	2.00 U	3.40	2.00	1	11/05/19 21:09	10/31/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	67	30 - 118	11/05/19 21:09	
p-Terphenyl-d14	76	41 - 146	11/05/19 21:09	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Analyzed:**	11/05/19
Sample Matrix:	Sediment	**Date Extracted:**	10/31/19

Lab Control Sample Summary
Base Neutral Semivolatile Organic Compounds by GC/MS SIM

Analysis Method:	8270D SIM	**Units:**	ug/Kg
Prep Method:	EPA 3546	**Basis:**	Dry
		Analysis Lot:	658510

Lab Control Sample
JQ1906427-02

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
1-Methylnaphthalene	45.9	66.7	69	31-108
2-Methylnaphthalene	45.8	66.7	69	32-105
Acenaphthene	46.4	66.7	70	35-108
Acenaphthylene	43.1	66.7	65	34-105
Anthracene	42.5	66.7	64	44-105
Benz(a)anthracene	48.7	66.7	73	54-115
Benzo(a)pyrene	48.1	66.7	72	48-116
Benzo(b)fluoranthene	52.4	66.7	79	53-118
Benzo(g,h,i)perylene	53.5	66.7	80	60-110
Benzo(k)fluoranthene	51.8	66.7	78	60-116
Chrysene	52.5	66.7	79	60-115
Dibenz(a,h)anthracene	55.2	66.7	83	55-113
Fluoranthene	46.6	66.7	70	58-112
Fluorene	45.2	66.7	68	35-108
Indeno(1,2,3-cd)pyrene	54.2	66.7	81	55-110
Naphthalene	47.2	66.7	71	32-107
Phenanthrene	45.1	66.7	68	40-105
Pyrene	48.1	66.7	72	56-115

Semivolatile Organic Compounds by GC

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Client: Water and Air Research **Service Request:** J1906537
Project: USACE Big Fishweir Creek
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
TCLP Organochlorine Pesticides by Gas Chromatography

Analysis Method: 8081A
Extraction Method: EPA 3510C

Sample Name	Lab Code	Decachlorobiphenyl 10-290	Tetrachloro-m-xylene 23-125
VB-BFWC19-Zone C	J1906537-006	78	77
VB-BFWC19-Zone D	J1906537-007	75	82
Method Blank	JQ1906538-01	89	76
Lab Control Sample	JQ1906538-02	87	69
Duplicate Lab Control Sample	JQ1906538-03	77	72

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	mg/L
Lab Code:	JQ1906538-01	**Basis:**	As Received

TCLP Organochlorine Pesticides by Gas Chromatography

Analysis Method: 8081A
Prep Method: EPA 3510C

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Chlordane, TCLP	0.00259	U	0.00500	0.00259	1	11/07/19 11:29	11/6/19	
Endrin, TCLP	0.0000900	U	0.000200	0.0000900	1	11/07/19 11:29	11/6/19	
gamma-BHC (Lindane), TCLP	0.000130	U	0.000200	0.000130	1	11/07/19 11:29	11/6/19	
Heptachlor, TCLP	0.000150	U	0.000200	0.000150	1	11/07/19 11:29	11/6/19	
Heptachlor Epoxide, TCLP	0.000100	U	0.000200	0.000100	1	11/07/19 11:29	11/6/19	
Methoxychlor, TCLP	0.0000900	U	0.000400	0.0000900	1	11/07/19 11:29	11/6/19	
Toxaphene, TCLP	0.00256	U	0.00500	0.00256	1	11/07/19 11:29	11/6/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	89	10 - 290	11/07/19 11:29	
Tetrachloro-m-xylene	76	23 - 125	11/07/19 11:29	

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QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Analyzed:**	11/07/19
Sample Matrix:	Sediment	**Date Extracted:**	11/06/19

Duplicate Lab Control Sample Summary
TCLP Organochlorine Pesticides by Gas Chromatography

Analysis Method:	8081A	**Units:**	mg/L
Prep Method:	EPA 3510C	**Basis:**	As Received
		Analysis Lot:	658911

	Lab Control Sample JQ1906538-02			Duplicate Lab Control Sample JQ1906538-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Endrin, TCLP	0.000944	0.00100	94	0.000986	0.00100	99	30-140	4	30
gamma-BHC (Lindane), TCLP	0.000845	0.00100	84	0.000881	0.00100	88	25-126	4	30
Heptachlor Epoxide, TCLP	0.000884	0.00100	88	0.000923	0.00100	92	34-122	4	30
Heptachlor, TCLP	0.000804	0.00100	80	0.000852	0.00100	85	25-118	6	30
Methoxychlor, TCLP	0.000796	0.00100	80	0.00102	0.00100	102	47-130	25	30

Metals

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Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	Dry
Lab Code:	J1906537-MB		

Inorganic Parameters

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Aluminum, Total	6020B	**2**	**J**	mg/Kg	25	2	10	11/04/19 17:33	11/01/19	
Antimony, Total	6020B	**0.009**	**J**	mg/Kg	0.50	0.006	10	11/04/19 17:33	11/01/19	
Arsenic, Total	6020B	0.05	U	mg/Kg	0.50	0.05	10	11/04/19 17:33	11/01/19	
Barium, Total	6020B	**0.09**	**J**	mg/Kg	1.0	0.02	10	11/04/19 17:33	11/01/19	
Beryllium, Total	6020B	0.03	U	mg/Kg	0.25	0.03	10	11/04/19 17:33	11/01/19	
Boron, Total	6020B	**3**	**J**	mg/Kg	50	0.8	10	11/04/19 17:33	11/01/19	
Cadmium, Total	6020B	0.03	U	mg/Kg	0.20	0.03	10	11/04/19 17:33	11/01/19	
Calcium, Total	6020B	8	U	mg/Kg	50	8	10	11/04/19 17:33	11/01/19	
Chromium, Total	6020B	**0.13**	**J**	mg/Kg	0.50	0.04	10	11/04/19 17:33	11/01/19	
Cobalt, Total	6020B	0.006	U	mg/Kg	0.50	0.006	10	11/04/19 17:33	11/01/19	
Copper, Total	6020B	**0.03**	**J**	mg/Kg	0.50	0.02	10	11/04/19 17:33	11/01/19	
Iron, Total	6020B	**1**	**J**	mg/Kg	50	0.2	10	11/04/19 17:33	11/01/19	
Lead, Total	6020B	0.006	U	mg/Kg	0.25	0.006	10	11/04/19 17:33	11/01/19	
Magnesium, Total	6020B	**4**	**J**	mg/Kg	50	0.6	10	11/04/19 17:33	11/01/19	
Manganese, Total	6020B	0.2	U	mg/Kg	1.0	0.2	10	11/04/19 17:33	11/01/19	
Mercury, Total	7471B	0.0011	U	mg/Kg	0.0067	0.0011	1	11/06/19 14:27	11/06/19	
Molybdenum, Total	6020B	0.06	U	mg/Kg	1.0	0.06	10	11/04/19 17:33	11/01/19	
Nickel, Total	6020B	0.08	U	mg/Kg	1.0	0.08	10	11/04/19 17:33	11/01/19	
Potassium, Total	6020B	**7**	**J**	mg/Kg	50	3	10	11/04/19 17:33	11/01/19	
Selenium, Total	6020B	0.08	U	mg/Kg	1.0	0.08	10	11/04/19 17:33	11/01/19	
Silver, Total	6020B	0.009	U	mg/Kg	0.25	0.009	10	11/04/19 17:33	11/01/19	
Sodium, Total	6020B	**6**	**J**	mg/Kg	50	2	10	11/04/19 17:33	11/01/19	
Strontium, Total	6020B	0.07	U	mg/Kg	1.0	0.07	10	11/04/19 17:33	11/01/19	
Thallium, Total	6020B	0.007	U	mg/Kg	0.10	0.007	10	11/04/19 17:33	11/01/19	
Tin, Total	6020B	**1.1**	**J**	mg/Kg	2.5	0.03	10	11/04/19 17:33	11/01/19	
Titanium, Total	6020B	0.5	U	mg/Kg	2.5	0.5	10	11/04/19 17:33	11/01/19	
Vanadium, Total	6020B	0.08	U	mg/Kg	1.0	0.08	10	11/04/19 17:33	11/01/19	
Zinc, Total	6020B	**1.2**	**J**	mg/Kg	2.5	0.4	10	11/04/19 17:33	11/01/19	

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	As Received
Lab Code:	J1906537-MB		

Inorganic Parameters

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic, TCLP	6010D	0.02	U	mg/L	0.10	0.02	1	11/13/19 01:20	11/11/19	
Barium, TCLP	6010D	**0.01**	**J**	mg/L	0.10	0.002	1	11/13/19 01:20	11/11/19	
Cadmium, TCLP	6010D	0.002	U	mg/L	0.050	0.002	1	11/13/19 01:20	11/11/19	
Chromium, TCLP	6010D	0.006	U	mg/L	0.10	0.006	1	11/13/19 01:20	11/11/19	
Lead, TCLP	6010D	**0.01**	**J**	mg/L	0.10	0.006	1	11/13/19 01:20	11/11/19	
Mercury, TCLP	7470A	0.0010	U	mg/L	0.0010	0.0010	1	11/06/19 15:52	11/06/19	
Selenium, TCLP	6010D	0.04	U	mg/L	0.10	0.04	1	11/13/19 01:20	11/11/19	
Silver, TCLP	6010D	0.008	U	mg/L	0.10	0.008	1	11/13/19 01:19	11/11/19	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/23/19
Sample Matrix:	Sediment	**Date Received:**	10/30/19
		Date Analyzed:	11/13/19
		Date Extracted:	11/11/19

Duplicate Matrix Spike Summary
Inorganic Parameters

Sample Name:	VB-BFWC19-Zone C	**Units:**	mg/L
Lab Code:	J1906537-006	**Basis:**	As Received
Analysis Method:	6010D		
Prep Method:	EPA 3005A		

		Matrix Spike J1906537-006MS			Duplicate Matrix Spike J1906537-006DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Arsenic, TCLP	0.02 U	4.73	5.00	95	4.81	5.00	96	75-125	2	20
Barium, TCLP	0.09 J	4.84	5.00	95	4.95	5.00	97	75-125	2	20
Cadmium, TCLP	0.002 U	2.45	2.50	98	2.48	2.50	99	75-125	1	20
Chromium, TCLP	0.006 U	4.89	5.00	98	4.97	5.00	99	75-125	2	20
Lead, TCLP	0.04 J	4.84	5.00	96	4.92	5.00	98	75-125	2	20
Selenium, TCLP	0.04 U	4.80	5.00	96	4.91	5.00	98	75-125	2	20
Silver, TCLP	0.008 U	4.94	5.00	99	5.05	5.00	101	75-125	2	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Water and Air Research
Project: USACE Big Fishweir Creek
Sample Matrix: Sediment

Service Request: J1906537
Date Analyzed: 11/04/19 - 11/06/19

Lab Control Sample Summary
Inorganic Parameters

Units:mg/Kg
Basis: Dry

Lab Control Sample
J1906537-LCS

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Aluminum, Total	6020B	270	250	108	80-120
Antimony, Total	6020B	27.6	25.0	110	80-120
Arsenic, Total	6020B	25.9	25.0	103	80-120
Barium, Total	6020B	25.8	25.0	103	80-120
Beryllium, Total	6020B	10.5	10.0	105	80-120
Boron, Total	6020B	132	125	105	80-120
Cadmium, Total	6020B	13.3	12.5	107	80-120
Calcium, Total	6020B	266	250	107	80-120
Chromium, Total	6020B	26.8	25.0	107	80-120
Cobalt, Total	6020B	26.9	25.0	108	80-120
Copper, Total	6020B	27.5	25.0	110	80-120
Iron, Total	6020B	260	250	104	80-120
Lead, Total	6020B	26.4	25.0	106	80-120
Magnesium, Total	6020B	259	250	103	80-120
Manganese, Total	6020B	26.6	25.0	106	80-120
Mercury, Total	7471B	0.0840	0.0833	101	80-120
Molybdenum, Total	6020B	26.3	25.0	105	80-120
Nickel, Total	6020B	27.2	25.0	109	80-120
Potassium, Total	6020B	5380	5000	108	80-120
Selenium, Total	6020B	26.1	25.0	104	80-120
Silver, Total	6020B	27.8	25.0	111	80-120
Sodium, Total	6020B	1340	1250	107	80-120
Strontium, Total	6020B	27.3	25.0	109	80-120
Thallium, Total	6020B	25.9	25.0	103	80-120
Tin, Total	6020B	105	100	105	80-120
Titanium, Total	6020B	129	125	103	80-120
Vanadium, Total	6020B	52.3	50.0	105	80-120
Zinc, Total	6020B	54.3	50.0	109	80-120

Client: Water and Air Research
Project: USACE Big Fishweir Creek
Sample Matrix: Sediment

Service Request: J1906537
Date Analyzed: 11/06/19 - 11/13/19

Lab Control Sample Summary
Inorganic Parameters

Units:mg/L
Basis: As Received

Lab Control Sample
J1906537-LCS

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Arsenic, TCLP	6010D	4.74	5.00	95	80-120
Barium, TCLP	6010D	4.82	5.00	96	80-120
Cadmium, TCLP	6010D	2.47	2.50	99	80-120
Chromium, TCLP	6010D	4.91	5.00	98	80-120
Lead, TCLP	6010D	4.84	5.00	97	80-120
Mercury, TCLP	7470A	0.0120	0.0125	96	80-120
Selenium, TCLP	6010D	4.83	5.00	97	80-120
Silver, TCLP	6010D	5.03	5.00	101	80-120

General Chemistry

ALS Environmental—Jacksonville Laboratory
9143 Philips Highway, Suite 200, Jacksonville, FL 32256
Phone (904)739-2277 Fax (904)739-2011
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project	USACE Big Fishweir Creek	**Date Collected:**	10/23/19
Sample Matrix:	Sediment	**Date Received:**	10/30/19
		Date Analyzed:	01/13/20

Replicate Sample Summary
Inorganic Parameters

Sample Name:	VB-BFWC19-Zone C	**Units:**	Percent
Lab Code:	J1906537-004	**Basis:**	As Received

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample J1906537-004DUP Result	Average	RPD	RPD Limit
Solids, Total	160.3 Modified	-	-	45.2	45.2	45.2	<1	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Subcontracted Analytical Parameters

ALS Environmental—Jacksonville Laboratory
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January 22, 2020 Service Request No:J1906537

Mr. Bryan Cotter
Water and Air Research
6821 S.W. Archer Road.
Gainesville, FL 32608

Laboratory Results for: USACE Big Fishweir Creek

Dear Mr.Cotter,

Enclosed are the results of the sample(s) submitted to our laboratory October 30, 2019
For your reference, these analyses have been assigned our service request number **J1906537.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and except as noted in the laboratory case narrative provided. All results are intended to be considered in their entirety and ALS Environmental is not responsible for use of less than the complete final report. Results apply only to the items submitted to the laboratory, as received for analysis. In accordance with the current TNI Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Revision I - This report was revised to dry-weight correct the results.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Corey Grandits
Project Manager

ADDRESS 10450 Stancliff Rd., Suite 210, Houston, TX 77099
PHONE +1 281 530 5656 | FAX +1 281 530 5887
ALS Group USA, Corp.
dba ALS Environmental

Certificate of Analysis

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
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www.alsglobal.com

ALS Environmental

Client:	Water & Air Research	**Service Request No.:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Received:**	11/01/19
Sample Matrix:	Sediment		

CASE NARRATIVE

This report was revised on January 22nd, 2020 to dry weight correct the dioxin/furan results.

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Five samples were received for analysis at ALS Environmental in Houston on 11/01/19.

The samples were received at 0.5°C in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

Precision and Accuracy:

EQ1900369: A Laboratory Control Spike (LCS) sample was analyzed and reported in addition to a MS/MSD for this extraction batch. The batch precision (MS/DMS) measurements were determined on another order in the extraction batch. The MS/DMS results are not included in this report. The LCS recoveries are within QC limits.

B flags – Method Blank

The Method Blank EQ1900369-01 contained low levels of dioxin and furan compounds above the EDL however below the Method Reporting Limit (MRL).

The associated compounds in the samples are flagged with 'B' flags where the sample result is less than ten times the level detected in the method blank

Y flag – Labeled Standards – (13C-1,2,3,4,6,7,8-HpCDF in J1906537-003)

Quantification of the native 2,3,7,8-substituted congeners is based on isotopic dilution, which automatically corrects for variation in extraction efficiency and provides accurate values even with poor recovery. Samples that had recoveries of labeled standards outside the acceptance limits are qualified with 'Y' flags on the Labeled Compound summary pages. In all cases, the signal-to-noise ratios are greater than 10:1 and detection limits were below the Method Reporting Limits.

K flags

EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

2378-TCDF

Samples analyzed on the DB-5MSUI column were analyzed under conditions where sufficient separation between 2,3,7,8-TCDF and its closest eluter was achieved. Confirmation of this result was not required.

Detection Limits

Detection limits are calculated for each analyte in each sample by measuring the height of the noise level for each quantitation ion for the associated labeled standard. The concentration equivalent to 2.5 times the height of the noise is then calculated using the appropriate response factor and the weight of the sample. The calculated concentration equals the detection limit.

The TEQ Summary results for each sample have been calculated by ALS/Houston to include:

- WHO-2005 TEFs, The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds (M. Van den Berg et al., Toxicological Sciences 93(2):223-241, 2006)
- 2378-TCDF from the DB-225 column, when confirmation required
- Non-detected compounds are not included in the 'Total'

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS group USA Corp dba ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
J1906537-001	VB-BFWC19-Zone A	10/25/2019	0935
J1906537-002	VB-BFWC19-Zone B Upstream	10/24/2019	1535
J1906537-003	VB-BFWC19-Zone B Downstream	10/24/2019	1024
J1906537-004	VB-BFWC19-Zone C	10/23/2019	1610
J1906537-005	VB-BFWC19-Zone D	10/22/2019	1725
J1906537-006	VB-BFWC19-Zone C	10/23/2019	1610
J1906537-007	VB-BFWC19-Zone D	10/22/2019	1725

Service Request Summary

Folder #: **J1906537**
Client Name: Water and Air Research
Project Name: USACE Big Fishweir Creek
Project Number:

Report To: Bryan Cotter
Water and Air Research
6821 S.W. Archer Road.
Gainesville, FL 32608
USA
Phone Number: 352-372-1500
Cell Number:
Fax Number:
E-mail: bcotter@waterandair.com

Project Chemist: Mandy Sullivan
Originating Lab: JAX
Logged By: LMASON
Date Received: 10/30/19
Internal Due Date: 11/20/2019
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number:
EDD: No EDD Specified

5 8 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
10 4 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
5 16 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
2 16 oz-Glass Jar WM Unpreserved

Location: R-002, EHRMS-WIC 8B, K-DELILAH, J-006-O1

Pressure Gas:

				JAX				KELSO		ROCHESTER	JAX			HOUSTON	JAX
Lab Samp No.	**Client Samp No**	**Matrix**	**Collected**	Hg TCLP/7470A	Hg/7471B	Metals T/6020B	Metals TCLP/6010D	PCB Congeners/8082A	Pest OC LL/8081B	HERB/8151A	SVO SIM BN/8270D SIM	SVO TCLP/8270D	SVO/8270D	Dioxins Furans/1613B	PEST_OC_TCLP/8081A
J1906537-001	VB-BFWC19-Zone A	Sediment	10/25/19 0935		II	II		II	II	II	II		II	II	
J1906537-002	VB-BFWC19-Zone B Upstream	Sediment	10/24/19 1535		II	II		II	II	II	II		II	II	
J1906537-003	VB-BFWC19-Zone B Downstream	Sediment	10/24/19 1024		II	II		II	II	II	II		II	II	
J1906537-004	VB-BFWC19-Zone C	Sediment	10/23/19 1610		II	II		II	II	II	II		II	II	
J1906537-005	VB-BFWC19-Zone D	Sediment	10/22/19 1725		II	II		II	II	II	II		II	II	
J1906537-006	VB-BFWC19-Zone C	Sediment	10/23/19 1610	II			II				II	II			II
J1906537-007	VB-BFWC19-Zone D	Sediment	10/22/19 1725	II			II				II	II			II

Service Request Summary

Folder #:	**J1906537**
Client Name:	Water and Air Research
Project Name:	USACE Big Fishweir Creek
Project Number:	
Report To:	Bryan Cotter Water and Air Research 6821 S.W. Archer Road. Gainesville, FL 32608 USA
Phone Number:	352-372-1500
Cell Number:	
Fax Number:	
E-mail:	bcotter@waterandair.com

Project Chemist:	Mandy Sullivan
Originating Lab:	JAX
Logged By:	LMASON
Date Received:	10/30/19
Internal Due Date:	11/20/2019
QAP:	LAB QAP
Qualifier Set:	Lab Standard
Formset:	Lab Standard
Merged?:	Y
Report to MDL?:	Y
P.O. Number:	
EDD:	No EDD Specified

5	8 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
10	4 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
5	16 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
2	16 oz-Glass Jar WM Unpreserved

Location: R-002, EHRMS-WIC 8B, K-DELILAH, J-006-O1

Pressure Gas:

Test Comments:

Group	Test/Method	Samples	Comments
Semivoa GC	PCB Congeners/8082A	10	See Folder Attachment tab for Project Analytes and Detection Limits.
Semivoa GC	Pest OC LL/8081B	11	See Folder Attachment tab for Project Analytes and Detection Limits.

Data Qualifiers

HRMS Qualifier Set

B Indicates the associated analyte was found in the method blank at >1/10th the reported value.
E Estimated value. The reported concentration is above the calibration range of the instrument.
H Sample extracted and/or analyzed out of suggested holding time.
J Estimated value. The reported concentration is below the MRL.
K The ion abundance ratio between the primary and secondary ions were outside of theoretical acceptance limits.The concentration of this analyte should be considered as an estimate.
P Chlorodiphenyl ether interference was present at the retention time of the target analyte. Reported result should be considered an estimate.
Q Monitored lock-mass indicates matrix-interference. Reported result is estimated.
S Signal saturated detector. Result reported from dilution.
U Compound was analyzed for, but was not detected (ND).
X See Case Narrative.
Y Isotopically Labeled Standard recovery outside of acceptance limits. In all cases, the signal-to-nois ratios are greater than 10:1, making the recoveries acceptable.
i The MDL/MRL have been elevated due to a matrix interference.

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
American Association for Laboratory Accreditation	2897.01	11/30/2019
Arizona Department of Health Services	AZ0793	5/27/2020
Arkansas Department of Environmental Quality	19-028-0	3/27/2020
California Department of Health Services	2919	4/30/2020
Department of Defense	A2LA 2897.01	11/30/2019
Florida Department of Health	E87611	6/30/2020
Hawaii Department of Health	TX02694	4/30/2020
Illinois Environmental Protection Agency	2000322019-2	5/9/2020
Kansas Department of Health and Environment	E-10352	7/31/2020
Louisiana Department of Environmental Quality	03087	6/30/2020
Louisiana Department of Health and Hospitals	LA028	12/31/2019
Maine Center for Disease Control and Prevention	201815	6/5/2020
Maryland Department of the Environment	343	6/30/2020
Minnesota Department of Health	1556965	12/31/2019
Nebraska Department of Health and Human Services	NE-OS-25-13	4/30/2020
Nevada Department of Concervation and Natural Resources	TX026932019-1	7/31/2020
New Hampshire Environmental Laboratory Accreditation Program	209419	4/24/2020
New Jersey Department of Environmental Protection	NLC190001	6/30/2020
New York Department of Health	11707	3/31/2020
Oklahoma Department of Environmental Quality	2019-067	8/31/2020
Pennsylvania Department of Environmental Protection	68-03441-013	6/30/2020
Tennessee Department of Environment and Concervation	04016	6/30/2020
Texas Commision on Environmental Quality	TX104704231-19-25	4/30/2020
United States Department of Agriculture	P330-18-00368	12/14/2019
Utah Department of Health Environmental Laboratory Certification	TX026932019-9	7/31/2020
West Virginia Department of Environmental Protection	347	6/30/2020

ALS ENVIRONMENTAL – Houston
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID J1906537 DB-5MSUI SPB-Octyl

First Level - Data Processing - to be filled by person generating the forms

Date:	Analyst:	Samples:
11/18/19	JC	001-005

Second Level - Data Review – to be filled by person doing peer review

Date:	Analyst:	Samples:
11/19/19	LKL	001_005

Chain of Custody

ALS Environmental - Houston HRMS
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Phone (713)266-1599 Fax (713)266-0130
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Intra-Network Chain of Custody

9143 Philips Highway, Suite 200 • Jacksonville, FL 32256 • 904-739-2277 • FAX 904-739-2011

ALS Contact: Mandy Sullivan

Project Name: USACE Big Fishweir Creek
Project Number:
Project Manager: Bryan Cotter
Company: Water and Air Research
QAP: LAB QAP

J1906537 5
Water and Air Research
USACE Big Fishweir Creek

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Date Received	Send To	Dioxins Furans 1613B
J1906537-001	VB-BFWC19-Zone A		Sediment	10/25/19	0935	10/30/19	HOUSTON	II
J1906537-002	VB-BFWC19-Zone B Upstream		Sediment	10/24/19	1535	10/30/19	HOUSTON	II
J1906537-003	VB-BFWC19-Zone B		Sediment	10/24/19	1024	10/30/19	HOUSTON	II
J1906537-004	VB-BFWC19-Zone C		Sediment	10/23/19	1610	10/30/19	HOUSTON	II
J1906537-005	VB-BFWC19-Zone D		Sediment	10/22/19	1725	10/30/19	HOUSTON	II

Special Instructions/Comments

pH Checked _____

Turnaround Requirements

_____ **RUSH** (Surcharges Apply)

PLEASE CIRCLE WORK DAYS
1 2 3 4 5

____ **STANDARD**

Requested FAX Date: _____

Requested Report Date: 11/20/19

Report Requirements

____ I. Results Only

____ II. Results + QC Summaries

____ III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

PQL/MDL/J Y
EDD N

Invoice Information

PO# 53J1906537

Bill to

Relinquished By: _____ Received By: _____ 11/1/19 0900 Airbill Number: _____

Cooler Receipt Form

ALS Environmental

Project Chemist: CG

Client/Project: ALS-J

Thermometer ID: SM04

Date/Time Received: 11/1/19 Initials: CG Date/Time Logged in: 11/1/19 Initials: CG

1. Method of delivery: ○ US Mail ☑ Fed Ex ○ UPS ○ DHL ○ Courier ○ Client
2. Samples received in: ☑ Cooler ○ Box ○ Envelope ○ Other
3. Were custody seals on coolers? ○ Yes ☑ No
   Were they intact? ○ Yes ○ No ☑ N/A
   Were they signed and dated? ○ Yes ○ No ☑ N/A
   If yes, how many and where?
4. Packing Material: ○ Inserts ☑ Baggies ☑ Bubble Wrap ○ Gel Packs ☑ Wet Ice ○ Sleeves ○ Other
5. Foreign or Regulated Soil? ○ Yes ○ No Location of Sampling:

Cooler Tracking Number	COC ID	Date Opened	Time Opened	Opened By	Temp. °C	Temp Blank?
TRK# 0201 6666 8257 6325		11/1/19	0900	CG	0.1/0.5	☐
						☐
						☐
						☐

6. Were custody papers properly filled out (ink, signed, dated, etc)? ☑ Yes ○ No
7. Did all bottles arrive in good condition (not broken, no signs of leakage)? ☑ Yes ○ No
8. Were all sample labels complete (i.e., sample ID, analysis, preservation, etc)? ☑ Yes ○ No
9. Were appropriate bottles/containers and volumes received for the requested tests? ☑ Yes ○ No
10. Did sample labels and tags agree with custody documents? ☑ Yes ○ No

Notes, Discrepancies, & Resolutions:

Service request Label: J1906537 5
Water and Air Research
USACE Big Fishweir Creek

10450 Stancliff Rd., Suite 210
Houston, TX 77099
T: +1 713 266 1599
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www.alsglobal.com

SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6ºC.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10ºC.
- ✓ Air samples are shipped and stored cold, at 0 to 6ºC
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

Preparation Information Benchsheets

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Preparation Information Benchsheet

Prep Run#: 348233 **Prep WorkFlow:** OrgExtS(365) **Status:** Prepped
Team: Semivoa GCMS/DBOTROS **Prep Method:** Method Soxhlet **Prep Date/Time:** 11/7/19 10:30

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E1900773-001	EV19100202-01	.01	1613B/Dioxins Furans			Soil	10.322g	graysand with rocks
2	EQ1900369-01	MB		1613B/Dioxins Furans			Solid	10.670g	
3	EQ1900369-02	LCS		1613B/Dioxins Furans			Solid	10.864g	
4	EQ1900369-03	MR #7 Composite 2 MS	.01	1613B/Dioxins Furans			Solid	10.712g	
5	EQ1900369-04	MR #7 Composite 2 DMS	.01	1613B/Dioxins Furans			Solid	10.495g	
6	J1906424-001	Stab-4	.07	1613B/Dioxins Furans			Soil	10.671g	brown wet soil
7	J1906424-002	Stab-5	.07	1613B/Dioxins Furans			Soil	10.603g	brown wet soil
8	J1906424-003	Stab-5D	.07	1613B/Dioxins Furans			Soil	10.595g	brown wet soil
9	J1906424-004	Cell 1-6	.07	1613B/Dioxins Furans			Soil	10.231g	brown soil
10	J1906424-005	Cell 1-5	.07	1613B/Dioxins Furans			Soil	10.366g	brown soil
11	J1906424-006	Cell 1-4	.07	1613B/Dioxins Furans			Soil	10.251g	brown soil
12	J1906424-007	Cell 1-3	.07	1613B/Dioxins Furans			Soil	10.132g	brown soil
13	J1906424-008	Cell 1-2	.07	1613B/Dioxins Furans			Soil	10.293g	brown soil
14	J1906424-009	Cell 1-1	.07	1613B/Dioxins Furans			Soil	10.044g	brown soil
15	J1906537-001	VB-BFWC19-Zone A	.01	1613B/Dioxins Furans			Sediment	10.063g	brown wet soil
16	J1906537-002	VB-BFWC19-Zone B Upstream	.01	1613B/Dioxins Furans			Sediment	10.134g	brown wet soil
17	J1906537-003	VB-BFWC19-Zone B Downstream	.03	1613B/Dioxins Furans			Sediment	10.218g	brown wet soil
18	J1906537-004	VB-BFWC19-Zone C	.03	1613B/Dioxins Furans			Sediment	10.396g	brown wet soil
19	J1906537-005	VB-BFWC19-Zone D	.03	1613B/Dioxins Furans			Sediment	10.130g	brown wet soil
20	K1910195-008	MR #7 Composite 2	.01	1613B/Dioxins Furans			Sediment	10.944g	gray wet sand
21	K1910195-009	MR #7 Composite 3	.02	1613B/Dioxins Furans			Sediment	10.308g	gray wet sand
22	K1910195-010	MR #8 Composite 1	.01	1613B/Dioxins Furans			Sediment	10.838g	gray wet sand
23	K1910195-011	MR #8 Composite 2	.01	1613B/Dioxins Furans			Sediment	10.554g	gray wet sand
24	K1910195-012	MR #8 Composite 3	.01	1613B/Dioxins Furans			Sediment	10.033g	gray wet sand

Spiking Solutions

Name: 8290/1613B Cleanup Working Standard Inventory ID 204071 Logbook Ref: 204071 tw 10/24/19 8ng/ml Expires On: 03/16/2020

E1900773-001	100.00µL	EQ1900369-01	100.00µL	EQ1900369-02	100.00µL	EQ1900369-03	100.00µL	EQ1900369-04	100.00µL	J1906424-001	100.00µL
J1906424-002	100.00µL	J1906424-003	100.00µL	J1906424-004	100.00µL	J1906424-005	100.00µL	J1906424-006	100.00µL	J1906424-007	100.00µL
J1906424-008	100.00µL	J1906424-009	100.00µL	J1906537-001	100.00µL	J1906537-002	100.00µL	J1906537-003	100.00µL	J1906537-004	100.00µL
J1906537-005	100.00µL	K1910195-008	100.00µL	K1910195-009	100.00µL	K1910195-010	100.00µL	K1910195-011	100.00µL	K1910195-012	100.00µL

Name: 1613B Matrix Working Standard Inventory ID 204428 Logbook Ref: 204428 db 11/04/19 2-20ng/ml Expires On: 04/05/2020

EQ1900369-02	100.00µL	EQ1900369-03	100.00µL	EQ1900369-04	100.00µL

Preparation Information Benchsheet

Prep Run#: 348233 **Prep WorkFlow:** OrgExtS(365) **Status:** Prepped
Team: Semivoa GCMS/DBOTROS **Prep Method:** Method Soxhlet **Prep Date/Time:** 11/7/19 10:30

Name:	1613B Labeled Working Standard	Inventory ID	204519	Logbook Ref:	204519 DB 110619 2-4ng/ml	Expires On:	03/24/2020

E1900773-001	1,000.00µL	EQ1900369-01	1,000.00µL	EQ1900369-02	1,000.00µL	EQ1900369-03	1,000.00µL	EQ1900369-04	1,000.00µL	J1906424-001	1,000.00µL
J1906424-002	1,000.00µL	J1906424-003	1,000.00µL	J1906424-004	1,000.00µL	J1906424-005	1,000.00µL	J1906424-006	1,000.00µL	J1906424-007	1,000.00µL
J1906424-008	1,000.00µL	J1906424-009	1,000.00µL	J1906537-001	1,000.00µL	J1906537-002	1,000.00µL	J1906537-003	1,000.00µL	J1906537-004	1,000.00µL
J1906537-005	1,000.00µL	K1910195-008	1,000.00µL	K1910195-009	1,000.00µL	K1910195-010	1,000.00µL	K1910195-011	1,000.00µL	K1910195-012	1,000.00µL

Preparation Materials

Sodium Sulfate Anhydrous Reagent Grade Na2SO4	JG 8/14/19 (202064)	Tridecane (n-Tridecane)	tw 10/28/19 (204201)	Toluene 99.9% Minimum	tw 09/29/19 (203281)

Preparation Steps

Step:	Extraction	Step:	Acid Clean	Step:	Silica Gel Clean	Step:	Final Volume
Started:	11/7/19 10:30	Started:	11/8/19 13:00	Started:	11/8/19 14:00	Started:	11/11/19 09:00
Finished:	11/8/19 09:00	Finished:	11/8/19 14:00	Finished:	11/8/19 17:00	Finished:	11/11/19 12:00
By:	DBOTROS	By:	DBOTROS	By:	DBOTROS	By:	DBOTROS
Comments		Comments		Comments		Comments	

Comments: _____

Reviewed By: LKL Date: 11/14/19

Chain of Custody

Relinquished By: _____ Date: _____ Extracts Examined

Received By: _____ Date: _____ Yes No

Analytical Results

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/25/19 09:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone A	**Units:**	ng/Kg
Lab Code:	J1906537-001	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/14/19 00:16
Prep Method:	Method Soxhlet	**Date Extracted:**	11/7/19
Sample Amount:	10.063g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P620032	**Blank File Name:**	P620005
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P620028

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.221	0.838			1
1,2,3,7,8-PeCDD	0.830**J**		0.0671	4.19	1.46	1.001	1
1,2,3,4,7,8-HxCDD	4.48		0.0805	4.19	1.33	1.000	1
1,2,3,6,7,8-HxCDD	4.16**J**		0.0766	4.19	1.20	1.000	1
1,2,3,7,8,9-HxCDD	2.42**J**		0.0724	4.19	1.21	1.007	1
1,2,3,4,6,7,8-HpCDD	102		0.228	4.19	1.04	1.000	1
OCDD	595		0.173	8.38	0.90	1.000	1
2,3,7,8-TCDF	0.608**J**		0.102	0.838	0.78	1.001	1
1,2,3,7,8-PeCDF	0.322**J**		0.125	4.19	1.66	1.000	1
2,3,4,7,8-PeCDF	6.06		0.137	4.19	1.54	1.002	1
1,2,3,4,7,8-HxCDF	1.25**JP**		0.0683	4.19	1.20	1.000	1
1,2,3,6,7,8-HxCDF	2.46**J**		0.0785	4.19	1.34	1.000	1
1,2,3,7,8,9-HxCDF	0.487**JK**		0.0748	4.19	1.54	1.000	1
2,3,4,6,7,8-HxCDF	4.70		0.0828	4.19	1.31	1.000	1
1,2,3,4,6,7,8-HpCDF	18.1		0.135	4.19	1.03	1.000	1
1,2,3,4,7,8,9-HpCDF	0.923**JK**		0.151	4.19	0.87	1.000	1
OCDF	30.4		0.165	8.38	0.87	1.005	1

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/25/19 09:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone A	**Units:**	ng/Kg
Lab Code:	J1906537-001	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/14/19 00:16
Prep Method:	Method Soxhlet	**Date Extracted:**	11/7/19
Sample Amount:	10.063g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P620032	**Blank File Name:**	P620005
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P620028

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.221	0.838			1
Total Penta-Dioxins	18.3		0.0671	4.19	1.62		1
Total Hexa-Dioxins	118		0.0765	4.19	1.27		1
Total Hepta-Dioxins	293		0.228	4.19	1.05		1
Total Tetra-Furans	16.0		0.102	0.838	0.77		1
Total Penta-Furans	80.3		0.131	4.19	1.49		1
Total Hexa-Furans	66.8		0.0760	4.19	1.17		1
Total Hepta-Furans	49.9		0.143	4.19	1.03		1

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/25/19 09:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone A	**Units:**	Percent
Lab Code:	J1906537-001	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/14/19 00:16
Prep Method:	Method Soxhlet	**Date Extracted:**	11/7/19
Sample Amount:	10.063g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P620032	**Blank File Name:**	P620005
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P620028

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	731.514	37		25-164	0.78	1.019
13C-1,2,3,7,8-PeCDD	2000	937.212	47		25-181	1.60	1.171
13C-1,2,3,4,7,8-HxCDD	2000	758.443	38		32-141	1.27	0.991
13C-1,2,3,6,7,8-HxCDD	2000	829.993	41		28-130	1.30	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	642.976	32		23-140	1.06	1.065
13C-OCDD	4000	955.516	24		17-157	0.91	1.140
13C-2,3,7,8-TCDF	2000	634.440	32		24-169	0.81	0.993
13C-1,2,3,7,8-PeCDF	2000	857.713	43		24-185	1.59	1.132
13C-2,3,4,7,8-PeCDF	2000	790.415	40		21-178	1.60	1.162
13C-1,2,3,4,7,8-HxCDF	2000	815.826	41		26-152	0.52	0.972
13C-1,2,3,6,7,8-HxCDF	2000	710.245	36		26-123	0.53	0.975
13C-1,2,3,7,8,9-HxCDF	2000	762.040	38		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	698.922	35		28-136	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	531.331	27	**Y**	28-143	0.44	1.040
13C-1,2,3,4,7,8,9-HpCDF	2000	610.819	31		26-138	0.46	1.078
37Cl-2,3,7,8-TCDD	800	419.127	52		35-197	NA	1.019

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/25/19 09:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone A	**Units:**	ng/Kg
Lab Code:	J1906537-001	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.221	0.838	1	1	
1,2,3,7,8-PeCDD	**0.830**	0.0671	4.19	1	1	0.830
1,2,3,4,7,8-HxCDD	**4.48**	0.0805	4.19	1	0.1	0.448
1,2,3,6,7,8-HxCDD	**4.16**	0.0766	4.19	1	0.1	0.416
1,2,3,7,8,9-HxCDD	**2.42**	0.0724	4.19	1	0.1	0.242
1,2,3,4,6,7,8-HpCDD	**102**	0.228	4.19	1	0.01	1.02
OCDD	**595**	0.173	8.38	1	0.0003	0.179
2,3,7,8-TCDF	**0.608**	0.102	0.838	1	0.1	0.0608
1,2,3,7,8-PeCDF	**0.322**	0.125	4.19	1	0.03	0.00966
2,3,4,7,8-PeCDF	**6.06**	0.137	4.19	1	0.3	1.82
1,2,3,4,7,8-HxCDF	**1.25**	0.0683	4.19	1	0.1	0.125
1,2,3,6,7,8-HxCDF	**2.46**	0.0785	4.19	1	0.1	0.246
1,2,3,7,8,9-HxCDF	**0.487**	0.0748	4.19	1	0.1	0.0487
2,3,4,6,7,8-HxCDF	**4.70**	0.0828	4.19	1	0.1	0.470
1,2,3,4,6,7,8-HpCDF	**18.1**	0.135	4.19	1	0.01	0.181
1,2,3,4,7,8,9-HpCDF	**0.923**	0.151	4.19	1	0.01	0.00923
OCDF	**30.4**	0.165	8.38	1	0.0003	0.00912
		Total TEQ				6.11

2005 WHO TEFs, ND = 0

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 15:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Upstream	**Units:**	ng/Kg
Lab Code:	J1906537-002	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/14/19 01:06
Prep Method:	Method Soxhlet	**Date Extracted:**	11/7/19
Sample Amount:	10.134g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P620033	**Blank File Name:**	P620005
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P620028

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.107	0.662			1
1,2,3,7,8-PeCDD	0.196**BJK**		0.0353	3.31	0.85	1.000	1
1,2,3,4,7,8-HxCDD	0.372**J**		0.0463	3.31	1.31	1.000	1
1,2,3,6,7,8-HxCDD	1.20**J**		0.0430	3.31	1.27	1.000	1
1,2,3,7,8,9-HxCDD	0.876**J**		0.0411	3.31	1.39	1.007	1
1,2,3,4,6,7,8-HpCDD	26.3		0.0595	3.31	1.02	1.000	1
OCDD	235		0.0966	6.62	0.89	1.000	1
2,3,7,8-TCDF	0.308**JK**		0.0718	0.662	1.24	1.001	1
1,2,3,7,8-PeCDF	0.189**BJK**		0.0703	3.31	1.07	1.000	1
2,3,4,7,8-PeCDF	5.03		0.0762	3.31	1.57	1.001	1
1,2,3,4,7,8-HxCDF	0.749**J**		0.0640	3.31	1.39	1.000	1
1,2,3,6,7,8-HxCDF	1.82**J**		0.0708	3.31	1.20	1.000	1
1,2,3,7,8,9-HxCDF	0.390**BJ**		0.0722	3.31	1.42	1.001	1
2,3,4,6,7,8-HxCDF	3.67		0.0729	3.31	1.23	1.000	1
1,2,3,4,6,7,8-HpCDF	10.5		0.0394	3.31	1.05	1.000	1
1,2,3,4,7,8,9-HpCDF	0.473**J**		0.0448	3.31	1.14	1.000	1
OCDF	16.5		0.0831	6.62	0.91	1.005	1

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 15:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Upstream	**Units:**	ng/Kg
Lab Code:	J1906537-002	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/14/19 01:06
Prep Method:	Method Soxhlet	**Date Extracted:**	11/7/19
Sample Amount:	10.134g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P620033	**Blank File Name:**	P620005
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P620028

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	0.631**J**		0.107	0.662	0.82		1
Total Penta-Dioxins	2.16**J**		0.0353	3.31	1.72		1
Total Hexa-Dioxins	14.1		0.0434	3.31	1.25		1
Total Hepta-Dioxins	60.9		0.0595	3.31	1.03		1
Total Tetra-Furans	20.3		0.0718	0.662	0.75		1
Total Penta-Furans	72.8		0.0732	3.31	1.67		1
Total Hexa-Furans	51.8		0.0699	3.31	1.18		1
Total Hepta-Furans	25.5		0.0419	3.31	1.05		1

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 15:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Upstream	**Units:**	Percent
Lab Code:	J1906537-002	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/14/19 01:06
Prep Method:	Method Soxhlet	**Date Extracted:**	11/7/19
Sample Amount:	10.134g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P620033	**Blank File Name:**	P620005
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P620028

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1109.525	55		25-164	0.79	1.019
13C-1,2,3,7,8-PeCDD	2000	1329.957	66		25-181	1.58	1.172
13C-1,2,3,4,7,8-HxCDD	2000	1278.411	64		32-141	1.28	0.992
13C-1,2,3,6,7,8-HxCDD	2000	1418.847	71		28-130	1.28	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1122.714	56		23-140	1.06	1.065
13C-OCDD	4000	1810.197	45		17-157	0.91	1.141
13C-2,3,7,8-TCDF	2000	1076.736	54		24-169	0.79	0.993
13C-1,2,3,7,8-PeCDF	2000	1284.577	64		24-185	1.57	1.132
13C-2,3,4,7,8-PeCDF	2000	1165.040	58		21-178	1.58	1.163
13C-1,2,3,4,7,8-HxCDF	2000	1358.633	68		26-152	0.52	0.972
13C-1,2,3,6,7,8-HxCDF	2000	1198.766	60		26-123	0.53	0.975
13C-1,2,3,7,8,9-HxCDF	2000	1242.584	62		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1193.026	60		28-136	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1009.569	50		28-143	0.45	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	1162.543	58		26-138	0.45	1.079
37Cl-2,3,7,8-TCDD	800	459.528	57		35-197	NA	1.020

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 15:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Upstream	**Units:**	ng/Kg
Lab Code:	J1906537-002	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.107	0.662	1	1	
1,2,3,7,8-PeCDD	**0.196**	0.0353	3.31	1	1	0.196
1,2,3,4,7,8-HxCDD	**0.372**	0.0463	3.31	1	0.1	0.0372
1,2,3,6,7,8-HxCDD	**1.20**	0.0430	3.31	1	0.1	0.120
1,2,3,7,8,9-HxCDD	**0.876**	0.0411	3.31	1	0.1	0.0876
1,2,3,4,6,7,8-HpCDD	**26.3**	0.0595	3.31	1	0.01	0.263
OCDD	**235**	0.0966	6.62	1	0.0003	0.0705
2,3,7,8-TCDF	**0.308**	0.0718	0.662	1	0.1	0.0308
1,2,3,7,8-PeCDF	**0.189**	0.0703	3.31	1	0.03	0.00567
2,3,4,7,8-PeCDF	**5.03**	0.0762	3.31	1	0.3	1.51
1,2,3,4,7,8-HxCDF	**0.749**	0.0640	3.31	1	0.1	0.0749
1,2,3,6,7,8-HxCDF	**1.82**	0.0708	3.31	1	0.1	0.182
1,2,3,7,8,9-HxCDF	**0.390**	0.0722	3.31	1	0.1	0.0390
2,3,4,6,7,8-HxCDF	**3.67**	0.0729	3.31	1	0.1	0.367
1,2,3,4,6,7,8-HpCDF	**10.5**	0.0394	3.31	1	0.01	0.105
1,2,3,4,7,8,9-HpCDF	**0.473**	0.0448	3.31	1	0.01	0.00473
OCDF	**16.5**	0.0831	6.62	1	0.0003	0.00495
		Total TEQ				3.10

2005 WHO TEFs, ND = 0

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 10:24
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Downstream	**Units:**	ng/Kg
Lab Code:	J1906537-003	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/14/19 01:55
Prep Method:	Method Soxhlet	**Date Extracted:**	11/7/19
Sample Amount:	10.218g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P620034	**Blank File Name:**	P620005
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P620028

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	0.242	**JK**	0.0993	0.866	0.49	1.001	1
1,2,3,7,8-PeCDD	0.820	**J**	0.0373	4.33	1.61	1.000	1
1,2,3,4,7,8-HxCDD	1.52	**J**	0.0562	4.33	1.27	1.000	1
1,2,3,6,7,8-HxCDD	4.61		0.0525	4.33	1.25	1.000	1
1,2,3,7,8,9-HxCDD	2.82	**J**	0.0499	4.33	1.37	1.007	1
1,2,3,4,6,7,8-HpCDD	103		0.112	4.33	1.05	1.000	1
OCDD	890		0.134	8.66	0.89	1.000	1
2,3,7,8-TCDF	1.15		0.0546	0.866	0.76	1.001	1
1,2,3,7,8-PeCDF	0.816	**J**	0.0799	4.33	1.52	1.001	1
2,3,4,7,8-PeCDF	11.7		0.0861	4.33	1.65	1.001	1
1,2,3,4,7,8-HxCDF	2.43	**J**	0.0764	4.33	1.27	1.000	1
1,2,3,6,7,8-HxCDF	5.11		0.0875	4.33	1.16	1.000	1
1,2,3,7,8,9-HxCDF	1.04	**J**	0.0834	4.33	1.08	1.001	1
2,3,4,6,7,8-HxCDF	10.0		0.0910	4.33	1.26	1.000	1
1,2,3,4,6,7,8-HpCDF	30.3		0.0721	4.33	1.00	1.000	1
1,2,3,4,7,8,9-HpCDF	1.98	**J**	0.0825	4.33	1.15	1.000	1
OCDF	237		0.110	8.66	0.89	1.005	1

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 10:24
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Downstream	**Units:**	ng/Kg
Lab Code:	J1906537-003	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/14/19 01:55
Prep Method:	Method Soxhlet	**Date Extracted:**	11/7/19
Sample Amount:	10.218g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P620034	**Blank File Name:**	P620005
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P620028

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	2.38		0.0993	0.866	0.82		1
Total Penta-Dioxins	5.69		0.0373	4.33	1.67		1
Total Hexa-Dioxins	40.6		0.0527	4.33	1.22		1
Total Hepta-Dioxins	223		0.112	4.33	1.04		1
Total Tetra-Furans	45.6		0.0546	0.866	0.66		1
Total Penta-Furans	166		0.0828	4.33	1.39		1
Total Hexa-Furans	141		0.0846	4.33	1.28		1
Total Hepta-Furans	76.6		0.0771	4.33	1.00		1

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 10:24
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Downstream	**Units:**	Percent
Lab Code:	J1906537-003	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/14/19 01:55
Prep Method:	Method Soxhlet	**Date Extracted:**	11/7/19
Sample Amount:	10.218g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P620034	**Blank File Name:**	P620005
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P620028

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1206.305	60		25-164	0.78	1.019
13C-1,2,3,7,8-PeCDD	2000	1475.445	74		25-181	1.57	1.172
13C-1,2,3,4,7,8-HxCDD	2000	1428.408	71		32-141	1.30	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1602.291	80		28-130	1.27	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1200.408	60		23-140	1.06	1.064
13C-OCDD	4000	1863.649	47		17-157	0.91	1.140
13C-2,3,7,8-TCDF	2000	1115.648	56		24-169	0.79	0.993
13C-1,2,3,7,8-PeCDF	2000	1391.888	70		24-185	1.58	1.132
13C-2,3,4,7,8-PeCDF	2000	1287.790	64		21-178	1.57	1.163
13C-1,2,3,4,7,8-HxCDF	2000	1524.398	76		26-152	0.53	0.971
13C-1,2,3,6,7,8-HxCDF	2000	1350.712	68		26-123	0.53	0.975
13C-1,2,3,7,8,9-HxCDF	2000	1400.630	70		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1336.930	67		28-136	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1067.739	53		28-143	0.45	1.040
13C-1,2,3,4,7,8,9-HpCDF	2000	1232.031	62		26-138	0.44	1.078
37Cl-2,3,7,8-TCDD	800	499.855	62		35-197	NA	1.020

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 10:24
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Downstream	**Units:**	ng/Kg
Lab Code:	J1906537-003	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	**0.242**	0.0993	0.866	1	1	0.242
1,2,3,7,8-PeCDD	**0.820**	0.0373	4.33	1	1	0.820
1,2,3,4,7,8-HxCDD	**1.52**	0.0562	4.33	1	0.1	0.152
1,2,3,6,7,8-HxCDD	**4.61**	0.0525	4.33	1	0.1	0.461
1,2,3,7,8,9-HxCDD	**2.82**	0.0499	4.33	1	0.1	0.282
1,2,3,4,6,7,8-HpCDD	**103**	0.112	4.33	1	0.01	1.03
OCDD	**890**	0.134	8.66	1	0.0003	0.267
2,3,7,8-TCDF	**1.15**	0.0546	0.866	1	0.1	0.115
1,2,3,7,8-PeCDF	**0.816**	0.0799	4.33	1	0.03	0.0245
2,3,4,7,8-PeCDF	**11.7**	0.0861	4.33	1	0.3	3.51
1,2,3,4,7,8-HxCDF	**2.43**	0.0764	4.33	1	0.1	0.243
1,2,3,6,7,8-HxCDF	**5.11**	0.0875	4.33	1	0.1	0.511
1,2,3,7,8,9-HxCDF	**1.04**	0.0834	4.33	1	0.1	0.104
2,3,4,6,7,8-HxCDF	**10.0**	0.0910	4.33	1	0.1	1.00
1,2,3,4,6,7,8-HpCDF	**30.3**	0.0721	4.33	1	0.01	0.303
1,2,3,4,7,8,9-HpCDF	**1.98**	0.0825	4.33	1	0.01	0.0198
OCDF	**237**	0.110	8.66	1	0.0003	0.0711
		Total TEQ				9.16

2005 WHO TEFs, ND = 0

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/23/19 16:10
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone C	**Units:**	ng/Kg
Lab Code:	J1906537-004	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/14/19 02:44
Prep Method:	Method Soxhlet	**Date Extracted:**	11/7/19
Sample Amount:	10.396g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P620035	**Blank File Name:**	P620005
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P620028

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	0.372	**JK**	0.175	1.06	0.98	1.001	1
1,2,3,7,8-PeCDD	0.780	**J**	0.101	5.32	1.42	1.000	1
1,2,3,4,7,8-HxCDD	1.29	**J**	0.0875	5.32	1.14	1.000	1
1,2,3,6,7,8-HxCDD	4.44	**J**	0.0856	5.32	1.28	1.000	1
1,2,3,7,8,9-HxCDD	3.00	**J**	0.0799	5.32	1.34	1.007	1
1,2,3,4,6,7,8-HpCDD	101		0.182	5.32	1.03	1.000	1
OCDD	901		0.139	10.6	0.90	1.000	1
2,3,7,8-TCDF	1.25	**K**	0.0564	1.06	1.08	1.001	1
1,2,3,7,8-PeCDF	0.816	**J**	0.162	5.32	1.53	1.001	1
2,3,4,7,8-PeCDF	11.1		0.172	5.32	1.53	1.001	1
1,2,3,4,7,8-HxCDF	2.34	**JP**	0.144	5.32	1.19	1.000	1
1,2,3,6,7,8-HxCDF	4.38	**J**	0.153	5.32	1.11	1.000	1
1,2,3,7,8,9-HxCDF	0.907	**J**	0.151	5.32	1.33	1.000	1
2,3,4,6,7,8-HxCDF	8.46		0.160	5.32	1.25	1.001	1
1,2,3,4,6,7,8-HpCDF	26.7		0.107	5.32	1.08	1.000	1
1,2,3,4,7,8,9-HpCDF	1.48	**J**	0.119	5.32	1.00	1.000	1
OCDF	48.5		0.166	10.6	0.93	1.005	1

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/23/19 16:10
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone C	**Units:**	ng/Kg
Lab Code:	J1906537-004	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/14/19 02:44
Prep Method:	Method Soxhlet	**Date Extracted:**	11/7/19
Sample Amount:	10.396g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P620035	**Blank File Name:**	P620005
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P620028

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	4.80		0.175	1.06	0.76		1
Total Penta-Dioxins	10.9		0.101	5.32	1.49		1
Total Hexa-Dioxins	58.7		0.0841	5.32	1.20		1
Total Hepta-Dioxins	252		0.182	5.32	1.05		1
Total Tetra-Furans	43.7		0.0564	1.06	0.75		1
Total Penta-Furans	137		0.166	5.32	1.66		1
Total Hexa-Furans	108		0.152	5.32	1.27		1
Total Hepta-Furans	70.2		0.112	5.32	1.08		1

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/23/19 16:10
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone C	**Units:**	Percent
Lab Code:	J1906537-004	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/14/19 02:44
Prep Method:	Method Soxhlet	**Date Extracted:**	11/7/19
Sample Amount:	10.396g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P620035	**Blank File Name:**	P620005
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P620028

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1009.166	50		25-164	0.78	1.019
13C-1,2,3,7,8-PeCDD	2000	1192.624	60		25-181	1.59	1.172
13C-1,2,3,4,7,8-HxCDD	2000	1078.074	54		32-141	1.34	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1181.701	59		28-130	1.23	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	851.792	43		23-140	1.07	1.065
13C-OCDD	4000	1319.063	33		17-157	0.90	1.140
13C-2,3,7,8-TCDF	2000	969.913	48		24-169	0.80	0.994
13C-1,2,3,7,8-PeCDF	2000	1174.748	59		24-185	1.60	1.132
13C-2,3,4,7,8-PeCDF	2000	1077.026	54		21-178	1.59	1.163
13C-1,2,3,4,7,8-HxCDF	2000	1117.632	56		26-152	0.52	0.972
13C-1,2,3,6,7,8-HxCDF	2000	1003.310	50		26-123	0.52	0.975
13C-1,2,3,7,8,9-HxCDF	2000	1054.585	53		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1000.920	50		28-136	0.53	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	761.051	38		28-143	0.46	1.040
13C-1,2,3,4,7,8,9-HpCDF	2000	921.629	46		26-138	0.44	1.078
37Cl-2,3,7,8-TCDD	800	445.793	56		35-197	NA	1.020

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/23/19 16:10
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone C	**Units:**	ng/Kg
Lab Code:	J1906537-004	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	**0.372**	0.175	1.06	1	1	0.372
1,2,3,7,8-PeCDD	**0.780**	0.101	5.32	1	1	0.780
1,2,3,4,7,8-HxCDD	**1.29**	0.0875	5.32	1	0.1	0.129
1,2,3,6,7,8-HxCDD	**4.44**	0.0856	5.32	1	0.1	0.444
1,2,3,7,8,9-HxCDD	**3.00**	0.0799	5.32	1	0.1	0.300
1,2,3,4,6,7,8-HpCDD	**101**	0.182	5.32	1	0.01	1.01
OCDD	**901**	0.139	10.6	1	0.0003	0.270
2,3,7,8-TCDF	**1.25**	0.0564	1.06	1	0.1	0.125
1,2,3,7,8-PeCDF	**0.816**	0.162	5.32	1	0.03	0.0245
2,3,4,7,8-PeCDF	**11.1**	0.172	5.32	1	0.3	3.33
1,2,3,4,7,8-HxCDF	**2.34**	0.144	5.32	1	0.1	0.234
1,2,3,6,7,8-HxCDF	**4.38**	0.153	5.32	1	0.1	0.438
1,2,3,7,8,9-HxCDF	**0.907**	0.151	5.32	1	0.1	0.0907
2,3,4,6,7,8-HxCDF	**8.46**	0.160	5.32	1	0.1	0.846
1,2,3,4,6,7,8-HpCDF	**26.7**	0.107	5.32	1	0.01	0.267
1,2,3,4,7,8,9-HpCDF	**1.48**	0.119	5.32	1	0.01	0.0148
OCDF	**48.5**	0.166	10.6	1	0.0003	0.0146
		Total TEQ				8.69

2005 WHO TEFs, ND = 0

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/22/19 17:25
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone D	**Units:**	ng/Kg
Lab Code:	J1906537-005	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/14/19 03:33
Prep Method:	Method Soxhlet	**Date Extracted:**	11/7/19
Sample Amount:	10.130g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P620036	**Blank File Name:**	P620005
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P620028

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.122	0.689			1
1,2,3,7,8-PeCDD	0.396**J**		0.0460	3.45	1.34	1.000	1
1,2,3,4,7,8-HxCDD	0.538**JK**		0.0302	3.45	1.56	1.000	1
1,2,3,6,7,8-HxCDD	1.91**J**		0.0280	3.45	1.28	1.000	1
1,2,3,7,8,9-HxCDD	0.788**J**		0.0268	3.45	1.18	1.007	1
1,2,3,4,6,7,8-HpCDD	43.7		0.0930	3.45	1.03	1.000	1
OCDD	378		0.115	6.89	0.89	1.000	1
2,3,7,8-TCDF	0.328**JK**		0.0472	0.689	0.58	1.001	1
1,2,3,7,8-PeCDF	0.283**JK**		0.0649	3.45	1.12	1.000	1
2,3,4,7,8-PeCDF	0.393**BJK**		0.0624	3.45	2.35	1.001	1
1,2,3,4,7,8-HxCDF	0.560**J**		0.0483	3.45	1.11	1.000	1
1,2,3,6,7,8-HxCDF	0.919**J**		0.0537	3.45	1.15	1.000	1
1,2,3,7,8,9-HxCDF	0.266**BJ**		0.0527	3.45	1.29	1.000	1
2,3,4,6,7,8-HxCDF	1.24**J**		0.0541	3.45	1.12	1.000	1
1,2,3,4,6,7,8-HpCDF	8.55		0.0570	3.45	1.03	1.000	1
1,2,3,4,7,8,9-HpCDF	0.510**J**		0.0603	3.45	1.06	1.000	1
OCDF	21.2		0.0726	6.89	0.90	1.005	1

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/22/19 17:25
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone D	**Units:**	ng/Kg
Lab Code:	J1906537-005	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/14/19 03:33
Prep Method:	Method Soxhlet	**Date Extracted:**	11/7/19
Sample Amount:	10.130g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P620036	**Blank File Name:**	P620005
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P620028

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.122	0.689			1
Total Penta-Dioxins	2.49**J**		0.0460	3.45	1.66		1
Total Hexa-Dioxins	14.1		0.0283	3.45	1.32		1
Total Hepta-Dioxins	107		0.0930	3.45	1.01		1
Total Tetra-Furans	1.49		0.0472	0.689	0.76		1
Total Penta-Furans	11.0		0.0636	3.45	1.59		1
Total Hexa-Furans	17.6		0.0522	3.45	1.25		1
Total Hepta-Furans	24.8		0.0585	3.45	1.03		1

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/22/19 17:25
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone D	**Units:**	Percent
Lab Code:	J1906537-005	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/14/19 03:33
Prep Method:	Method Soxhlet	**Date Extracted:**	11/7/19
Sample Amount:	10.130g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P620036	**Blank File Name:**	P620005
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P620028

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	797.414	40		25-164	0.78	1.019
13C-1,2,3,7,8-PeCDD	2000	1295.383	65		25-181	1.58	1.171
13C-1,2,3,4,7,8-HxCDD	2000	2061.175	103		32-141	1.28	0.991
13C-1,2,3,6,7,8-HxCDD	2000	2276.913	114		28-130	1.28	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1715.517	86		23-140	1.05	1.065
13C-OCDD	4000	2622.897	66		17-157	0.92	1.140
13C-2,3,7,8-TCDF	2000	753.369	38		24-169	0.80	0.993
13C-1,2,3,7,8-PeCDF	2000	1163.474	58		24-185	1.60	1.132
13C-2,3,4,7,8-PeCDF	2000	1181.322	59		21-178	1.56	1.162
13C-1,2,3,4,7,8-HxCDF	2000	2132.725	107		26-152	0.52	0.972
13C-1,2,3,6,7,8-HxCDF	2000	1886.988	94		26-123	0.52	0.975
13C-1,2,3,7,8,9-HxCDF	2000	2005.155	100		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1965.334	98		28-136	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1542.411	77		28-143	0.44	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	1846.737	92		26-138	0.45	1.078
37Cl-2,3,7,8-TCDD	800	326.959	41		35-197	NA	1.019

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/22/19 17:25
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone D	**Units:**	ng/Kg
Lab Code:	J1906537-005	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.122	0.689	1	1	
1,2,3,7,8-PeCDD	**0.396**	0.0460	3.45	1	1	0.396
1,2,3,4,7,8-HxCDD	**0.538**	0.0302	3.45	1	0.1	0.0538
1,2,3,6,7,8-HxCDD	**1.91**	0.0280	3.45	1	0.1	0.191
1,2,3,7,8,9-HxCDD	**0.788**	0.0268	3.45	1	0.1	0.0788
1,2,3,4,6,7,8-HpCDD	**43.7**	0.0930	3.45	1	0.01	0.437
OCDD	**378**	0.115	6.89	1	0.0003	0.113
2,3,7,8-TCDF	**0.328**	0.0472	0.689	1	0.1	0.0328
1,2,3,7,8-PeCDF	**0.283**	0.0649	3.45	1	0.03	0.00849
2,3,4,7,8-PeCDF	**0.393**	0.0624	3.45	1	0.3	0.118
1,2,3,4,7,8-HxCDF	**0.560**	0.0483	3.45	1	0.1	0.0560
1,2,3,6,7,8-HxCDF	**0.919**	0.0537	3.45	1	0.1	0.0919
1,2,3,7,8,9-HxCDF	**0.266**	0.0527	3.45	1	0.1	0.0266
2,3,4,6,7,8-HxCDF	**1.24**	0.0541	3.45	1	0.1	0.124
1,2,3,4,6,7,8-HpCDF	**8.55**	0.0570	3.45	1	0.01	0.0855
1,2,3,4,7,8,9-HpCDF	**0.510**	0.0603	3.45	1	0.01	0.00510
OCDF	**21.2**	0.0726	6.89	1	0.0003	0.00636
		Total TEQ				1.82

2005 WHO TEFs, ND = 0

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1900369-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/12/19 21:48
Prep Method:	Method Soxhlet	**Date Extracted:**	11/7/19
Sample Amount:	10.670g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P620005	**Blank File Name:**	P620005
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P620003

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.0491	0.469			1
1,2,3,7,8-PeCDD	0.0350**JK**		0.0189	2.34	2.16	1.000	1
1,2,3,4,7,8-HxCDD	ND	U	0.0142	2.34			1
1,2,3,6,7,8-HxCDD	ND	U	0.0135	2.34			1
1,2,3,7,8,9-HxCDD	0.0227**JK**		0.0128	2.34	0.83	1.006	1
1,2,3,4,6,7,8-HpCDD	0.0372**JK**		0.0218	2.34	0.56	1.000	1
OCDD	0.161**J**		0.0312	4.69	0.80	1.000	1
2,3,7,8-TCDF	ND	U	0.0331	0.469			1
1,2,3,7,8-PeCDF	0.0193**JK**		0.0163	2.34	0.70	1.000	1
2,3,4,7,8-PeCDF	0.0558**JK**		0.0159	2.34	1.19	1.001	1
1,2,3,4,7,8-HxCDF	ND	U	0.00938	2.34			1
1,2,3,6,7,8-HxCDF	0.0152**JK**		0.0104	2.34	0.75	1.000	1
1,2,3,7,8,9-HxCDF	0.0390**JK**		0.0108	2.34	1.01	1.000	1
2,3,4,6,7,8-HxCDF	0.0262**JK**		0.0104	2.34	1.64	1.000	1
1,2,3,4,6,7,8-HpCDF	0.0227**JK**		0.0134	2.34	0.82	1.000	1
1,2,3,4,7,8,9-HpCDF	0.0417**J**		0.0174	2.34	1.14	1.000	1
OCDF	0.0688**JK**		0.0304	4.69	0.73	1.006	1

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1900369-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/12/19 21:48
Prep Method:	Method Soxhlet	**Date Extracted:**	11/7/19
Sample Amount:	10.670g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P620005	**Blank File Name:**	P620005
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P620003

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.0491	0.469			1
Total Penta-Dioxins	ND	U	0.0189	2.34			1
Total Hexa-Dioxins	ND	U	0.0135	2.34			1
Total Hepta-Dioxins	ND	U	0.0218	2.34			1
Total Tetra-Furans	ND	U	0.0331	0.469			1
Total Penta-Furans	ND	U	0.0161	2.34			1
Total Hexa-Furans	ND	U	0.0103	2.34			1
Total Hepta-Furans	0.0417**J**		0.0152	2.34	1.14		1

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	Percent
Lab Code:	EQ1900369-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/12/19 21:48
Prep Method:	Method Soxhlet	**Date Extracted:**	11/7/19
Sample Amount:	10.670g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P620005	**Blank File Name:**	P620005
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P620003

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	890.591	45		25-164	0.79	1.019
13C-1,2,3,7,8-PeCDD	2000	1378.054	69		25-181	1.59	1.172
13C-1,2,3,4,7,8-HxCDD	2000	1543.697	77		32-141	1.27	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1723.889	86		28-130	1.28	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1486.745	74		23-140	1.07	1.065
13C-OCDD	4000	2676.423	67		17-157	0.90	1.140
13C-2,3,7,8-TCDF	2000	742.730	37		24-169	0.78	0.994
13C-1,2,3,7,8-PeCDF	2000	1130.079	57		24-185	1.55	1.133
13C-2,3,4,7,8-PeCDF	2000	1117.964	56		21-178	1.55	1.163
13C-1,2,3,4,7,8-HxCDF	2000	1503.577	75		26-152	0.52	0.972
13C-1,2,3,6,7,8-HxCDF	2000	1347.722	67		26-123	0.52	0.975
13C-1,2,3,7,8,9-HxCDF	2000	1480.640	74		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1397.414	70		28-136	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1401.718	70		28-143	0.44	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	1399.274	70		26-138	0.45	1.078
37Cl-2,3,7,8-TCDD	800	310.564	39		35-197	NA	1.020

Accuracy & Precision

ALS Environmental - Houston HRMS
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Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Analyzed:**	11/13/19
Sample Matrix:	Sediment	**Date Extracted:**	11/07/19

Lab Control Sample Summary
Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Units:**	ng/Kg
Prep Method:	Method Soxhlet	**Basis:**	Dry
		Analysis Lot:	660040

Lab Control Sample
EQ1900369-02

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
1,2,3,4,6,7,8-HpCDD	87.7	92.0	95	70-140
1,2,3,4,7,8-HxCDD	94.4	92.0	103	70-164
1,2,3,6,7,8-HxCDD	82.2	92.0	89	76-134
1,2,3,7,8,9-HxCDD	84.7	92.0	92	64-162
1,2,3,7,8-PeCDD	85.4	92.0	93	70-142
2,3,7,8-TCDD	18.1	18.4	98	67-158
OCDD	183	184	99	78-144
1,2,3,4,6,7,8-HpCDF	86.1	92.0	94	82-122
1,2,3,4,7,8,9-HpCDF	88.0	92.0	96	78-138
1,2,3,4,7,8-HxCDF	80.0	92.0	87	72-134
1,2,3,6,7,8-HxCDF	89.5	92.0	97	84-130
1,2,3,7,8,9-HxCDF	87.7	92.0	95	78-130
1,2,3,7,8-PeCDF	80.3	92.0	87	80-134
2,3,4,6,7,8-HxCDF	90.1	92.0	98	70-156
2,3,4,7,8-PeCDF	90.2	92.0	98	68-160
2,3,7,8-TCDF	17.2	18.4	94	75-158
OCDF	188	184	102	63-170

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1900369-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/13/19 16:39
Prep Method:	Method Soxhlet	**Date Extracted:**	11/7/19
Sample Amount:	10.864g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P620024	**Blank File Name:**	P620005
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P620017

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	18.1		0.159	0.460	0.75	1.001	1
1,2,3,7,8-PeCDD	85.4		0.0336	2.30	1.58	1.000	1
1,2,3,4,7,8-HxCDD	94.4		0.0144	2.30	1.24	1.000	1
1,2,3,6,7,8-HxCDD	82.2		0.0130	2.30	1.25	1.000	1
1,2,3,7,8,9-HxCDD	84.7		0.0127	2.30	1.25	1.007	1
1,2,3,4,6,7,8-HpCDD	87.7		0.0431	2.30	1.05	1.000	1
OCDD	183		0.0714	4.60	0.90	1.000	1
2,3,7,8-TCDF	17.2		0.0894	0.460	0.74	1.001	1
1,2,3,7,8-PeCDF	80.3		0.0311	2.30	1.54	1.001	1
2,3,4,7,8-PeCDF	90.2		0.0300	2.30	1.54	1.000	1
1,2,3,4,7,8-HxCDF	80.0		0.0209	2.30	1.22	1.000	1
1,2,3,6,7,8-HxCDF	89.5		0.0242	2.30	1.22	1.000	1
1,2,3,7,8,9-HxCDF	87.7		0.0249	2.30	1.24	1.000	1
2,3,4,6,7,8-HxCDF	90.1		0.0225	2.30	1.23	1.000	1
1,2,3,4,6,7,8-HpCDF	86.1		0.0801	2.30	1.04	1.000	1
1,2,3,4,7,8,9-HpCDF	88.0		0.0865	2.30	1.04	1.000	1
OCDF	188		0.0702	4.60	0.91	1.005	1

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1900369-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/13/19 16:39
Prep Method:	Method Soxhlet	**Date Extracted:**	11/7/19
Sample Amount:	10.864g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P620024	**Blank File Name:**	P620005
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P620017

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	18.1		0.159	0.460	0.75		1
Total Penta-Dioxins	85.4		0.0336	2.30	1.58		1
Total Hexa-Dioxins	261		0.0133	2.30	1.24		1
Total Hepta-Dioxins	89.5		0.0431	2.30	0.97		1
Total Tetra-Furans	17.3		0.0894	0.460	0.74		1
Total Penta-Furans	171		0.0305	2.30	1.54		1
Total Hexa-Furans	347		0.0231	2.30	1.22		1
Total Hepta-Furans	174		0.0831	2.30	1.04		1

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1900369-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/13/19 16:39
Prep Method:	Method Soxhlet	**Date Extracted:**	11/7/19
Sample Amount:	10.864g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P620024	**Blank File Name:**	P620005
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P620017

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	732.159	37		25-164	0.80	1.019
13C-1,2,3,7,8-PeCDD	2000	1086.884	54		25-181	1.58	1.172
13C-1,2,3,4,7,8-HxCDD	2000	1079.510	54		32-141	1.33	0.992
13C-1,2,3,6,7,8-HxCDD	2000	1214.703	61		28-130	1.22	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	952.456	48		23-140	1.07	1.066
13C-OCDD	4000	1451.121	36		17-157	0.91	1.141
13C-2,3,7,8-TCDF	2000	659.664	33		24-169	0.78	0.994
13C-1,2,3,7,8-PeCDF	2000	916.310	46		24-185	1.59	1.132
13C-2,3,4,7,8-PeCDF	2000	935.666	47		21-178	1.59	1.163
13C-1,2,3,4,7,8-HxCDF	2000	1083.835	54		26-152	0.52	0.972
13C-1,2,3,6,7,8-HxCDF	2000	942.379	47		26-123	0.52	0.975
13C-1,2,3,7,8,9-HxCDF	2000	1010.904	51		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1036.285	52		28-136	0.53	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	822.892	41		28-143	0.45	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	981.061	49		26-138	0.45	1.079
37Cl-2,3,7,8-TCDD	800	281.997	35		35-197	NA	1.020

January 22, 2020 Service Request No:J1906537

Mr. Bryan Cotter
Water and Air Research
6821 S.W. Archer Road.
Gainesville, FL 32608

Laboratory Results for: USACE Big Fishweir Creek

Dear Mr.Cotter,

Enclosed are the results of the sample(s) submitted to our laboratory October 30, 2019
For your reference, these analyses have been assigned our service request number **J1906537.**

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 7475. You may also contact me via email at Meghan.Pedro@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Meghan Pedro
Project Manager

ADDRESS 1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
PHONE +1 585 288 5380 | FAX +1 585 288 8475
ALS Group USA, Corp.
dba ALS Environmental

Narrative Documents

ALS Environmental—Rochester Laboratory
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1565 Jefferson Rd, Building 300, Rochester, NY 14623 | 585-288-5380 | www.alsglobal.com

Client: Water and Air Research
Project: USACE Big Fishweir Creek
Sample Matrix: Sediment

Service Request: J1906537
Date Received: 10/30/2019

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Five sediment samples were received for analysis at ALS Environmental on 10/30/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivoa GC:

Method 8151A, 11/06/2019: The lower control limit was exceeded for one or more analytes in the closing Continuing Calibration Verification (CCV). Since there were no detections of the analyte(s) above the MRL in the associated field samples, the quantitation is not affected. The data quality was not significantly affected and no further corrective action was taken.

Method 8151A, 11/06/2019: The control limit was exceeded for one or more surrogates in the closing Continuing Calibration Verification (CCV). The surrogates were within acceptance limits for the associated field samples. The data quality was not significantly affected and no further corrective action was taken.

Approved by A. Juell Date 01/22/2020

Sample Receipt Information

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Client: Water and Air Research **Service Request:**J1906537
Project: USACE Big Fishweir Creek

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
J1906537-001	VB-BFWC19-Zone A	10/25/2019	0935
J1906537-002	VB-BFWC19-Zone B Upstream	10/24/2019	1535
J1906537-003	VB-BFWC19-Zone B Downstream	10/24/2019	1024
J1906537-004	VB-BFWC19-Zone C	10/23/2019	1610
J1906537-005	VB-BFWC19-Zone D	10/22/2019	1725
J1906537-006	VB-BFWC19-Zone C	10/23/2019	1610
J1906537-007	VB-BFWC19-Zone D	10/22/2019	1725

Intra-Network Chain of Custody

9143 Philips Highway, Suite 200 • Jacksonville, FL 32256 • 904-739-2277 • FAX 904-739-2011

ALS Contact: Mandy Sullivan

Project Name: USACE Big Fishweir Creek
Project Number:
Project Manager: Bryan Cotter
Company: Water and Air Research
QAP: LAB QAP

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Date Received	Send To	HERB 8151A
J1906537-001	VB-BFWC19-Zone A		Sediment	10/25/19	0935	10/30/19	ROCHESTER	II
J1906537-002	VB-BFWC19-Zone B Upstream		Sediment	10/24/19	1535	10/30/19	ROCHESTER	II
J1906537-003	VB-BFWC19-Zone B		Sediment	10/24/19	1024	10/30/19	ROCHESTER	II
J1906537-004	VB-BFWC19-Zone C		Sediment	10/23/19	1610	10/30/19	ROCHESTER	II
J1906537-005	VB-BFWC19-Zone D		Sediment	10/22/19	1725	10/30/19	ROCHESTER	II

Special Instructions/Comments

pH Checked _____

Turnaround Requirements

____ **RUSH** (Surcharges Apply)

PLEASE CIRCLE WORK DAYS
1 2 3 4 5

____ **STANDARD**

Requested FAX Date: _____

Requested Report Date: 11/20/19

Report Requirements

____ I. Results Only

____ II. Results + QC Summaries

____ III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

PQL/MDL/J Y
EDD N

Invoice Information

PO# 53J1906537

Bill to

Relinquished By: _____

Received By: _____ 11-1-19 09:25

Airbill Number: _____

J1906537 5
Water and Air Research
USACE Big Fishweir Creek

J1906537

____ **Ship To: ROCHESTER**
ALS Environmental
1565 Jefferson Rd, Building 300
Suite 360
Rochester, NY 14623

PC _____ Date _____

SMO _____ Date _____

Instructions:

Ice _____

Dry Ice _____

No Ice _____

Shipping:

Overnight _____

2nd Day _____

Ground _____

Bill to Client Account _____

Comments:

J1906537 5
Water and Air Research
USACE Big Fishweir Creek

J1906537 5
Water and Air Research
USACE Big Fishweir Creek

Cooler Receipt and Preservation Check Form

Project/Client ALS-Jacksonville Folder Number _____.

Cooler received on 11-1-19 by: RE

COURIER: ALS UPS FEDEX VELOCITY CLIENT

1	Were **Custody seals** on outside of cooler?	Y N	5a	**Perchlorate** samples have required headspace?	Y N NA
2	**Custody papers** properly completed (ink, signed)?	Y N	5b	Did VOA vials, Alk,or Sulfide have sig* **bubbles**?	Y N NA
3	Did all bottles arrive in good **condition** (unbroken)?	Y N	6	Where did the bottles originate?	ALS/ROC CLIENT
4	Circle: **Wet Ice** **Dry Ice** **Gel packs** present?	Y N	7	Soil VOA received as: Bulk Encore 5035set	NA

8. Temperature Readings Date: 11-1-19 Time: 09:38 ID: IR#7 IR#10 From: Temp Blank Sample Bottle

Observed Temp (°C)	1.7						
Correction Factor (°C)	Ø						
Corrected Temp (°C)	1.7						
Temp from:Type of bottle	—						
Within 0-6°C?	Y N	Y N	Y N	Y N	Y N	Y N	Y N
If <0°C, were samples frozen?	Y N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: _____ Ice melted Poorly Packed (described below) Same Day Rule

&Client Approval to Run Samples: _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: R-OVR by RE on 11-1-19 at 09:44
5035 samples placed in storage location: _____ by _____ on _____ at _____

Cooler Breakdown/Preservation Check**: Date: _____ Time: _____ by: _____

9. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? YES NO
10. Did all bottle labels and tags agree with custody papers? YES NO
11. Were correct containers used for the tests indicated? YES NO
12. Were 5035 vials acceptable (no extra labels, not leaking)? YES NO N/A
13. Air Samples: Cassettes / Tubes Intact with MS? Canisters Pressurized Tedlar® Bags Inflated N/A

pH	Lot of test paper	Reagent	Preserved? Yes	Preserved? No	Lot Received	Exp	Sample ID Adjusted	Vol. Added	Lot Added	Final pH
≥12		NaOH								
≤2		HNO_3								
≤2		H_2SO_4								
<4		$NaHSO_4$								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN, Phenol, 625, 608pest, 522			If +, contact PM to add $Na_2S_2O_3$ (625, 608, CN), ascorbic (phenol).					
		$Na_2S_2O_3$								
		ZnAcetate	-	-						
		HCl	**	**						

**VOAs and 1664 Not to be tested before analysis. Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).

Bottle lot numbers: _____
Explain all Discrepancies/ Other Comments:

CLRES	BULK
DO	FLDT
HPROD	HGFB
HTR	LL3541
PH	SUB
SO3	MARRS
ALS	REV

Labels secondary reviewed by: _____
PC Secondary Review: _____

*significant air bubbles: VOA > 5-6 mm : WC > 1 in. diameter

Miscellaneous Forms

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

REPORT QUALIFIERS AND DEFINITIONS

U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.

J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).

B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.

E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.

E Organics- Concentration has exceeded the calibration range for that specific analysis.

D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.

* Indicates that a quality control parameter has exceeded laboratory limits. Under the "Notes" column of the Form I, this qualifier denotes analysis was performed out of Holding Time.

H Analysis was performed out of hold time for tests that have an "immediate" hold time criteria.

Spike was diluted out.

+ Correlation coefficient for MSA is <0.995.

N Inorganics- Matrix spike recovery was outside laboratory limits.

N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.

S Concentration has been determined using Method of Standard Additions (MSA).

W Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.

P Concentration >40% difference between the two GC columns.

C Confirmed by GC/MS

Q DoD reports: indicates a pesticide/Aroclor is not confirmed (≥100% Difference between two GC columns).

X See Case Narrative for discussion.

MRL Method Reporting Limit. Also known as:
LOQ Limit of Quantitation (LOQ)
The lowest concentration at which the method analyte may be reliably quantified under the method conditions.

MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).

LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.

ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

Rochester Lab ID # for State Certifications[1]

Connecticut ID # PH0556	Maine ID #NY0032	Pennsylvania ID# 68-786
Delaware Approved	New Hampshire ID # 2941	Rhode Island ID # 158
DoD ELAP #65817	New York ID # 10145	Virginia #460167
Florida ID # E87674	North Carolina #676	

[1] Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to https://www.alsglobal.com/locations/americas/north-america/usa/new-york/rochester-environmental

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Client: Water and Air Research **Service Request:** J1906537
Project: USACE Big Fishweir Creek/

Sample Name: VB-BFWC19-Zone A **Date Collected:** 10/25/19
Lab Code: J1906537-001 **Date Received:** 10/30/19
Sample Matrix: Sediment

Analysis Method	Extracted/Digested By	Analyzed By
160.3 Modified		MMASSEY
1613B	DBOTROS	LLUONG
6020B	MRUCKER	EGARDNER
7471B	MRUCKER	EGARDNER
8081B	TMIRENTA	SHERBELIN
8082A	BGREER	MCHAPPELLE
8151A	KSERCU	JMISIUREWICZ
8270D	ECOMOR	TYEREMYANTS
8270D SIM	ECOMOR	TYEREMYANTS

Sample Name: VB-BFWC19-Zone A **Date Collected:** 10/25/19
Lab Code: J1906537-001.R01 **Date Received:** 10/30/19
Sample Matrix: Sediment

Analysis Method	Extracted/Digested By	Analyzed By
8081B	TMIRENTA	SHERBELIN
8082A	BGREER	MCHAPPELLE

Sample Name: VB-BFWC19-Zone B Upstream **Date Collected:** 10/24/19
Lab Code: J1906537-002 **Date Received:** 10/30/19
Sample Matrix: Sediment

Analysis Method	Extracted/Digested By	Analyzed By
160.3 Modified		MMASSEY
1613B	DBOTROS	LLUONG
6020B	MRUCKER	EGARDNER
7471B	MRUCKER	EGARDNER
8081B	TMIRENTA	SHERBELIN
8082A	BGREER	MCHAPPELLE
8151A	KSERCU	JMISIUREWICZ
8270D	ECOMOR	TYEREMYANTS
8270D SIM	ECOMOR	TYEREMYANTS

Client: Water and Air Research **Service Request:** J1906537
Project: USACE Big Fishweir Creek/

Sample Name: VB-BFWC19-Zone B Upstream **Date Collected:** 10/24/19
Lab Code: J1906537-002.R01 **Date Received:** 10/30/19
Sample Matrix: Sediment

Analysis Method	Extracted/Digested By	Analyzed By
8081B	TMIRENTA	SHERBELIN
8082A	BGREER	MCHAPPELLE

Sample Name: VB-BFWC19-Zone B Upstream **Date Collected:** 10/24/19
Lab Code: J1906537-002.R02 **Date Received:** 10/30/19
Sample Matrix: Sediment

Analysis Method	Extracted/Digested By	Analyzed By
8081B	TMIRENTA	SHERBELIN

Sample Name: VB-BFWC19-Zone B Downstream **Date Collected:** 10/24/19
Lab Code: J1906537-003 **Date Received:** 10/30/19
Sample Matrix: Sediment

Analysis Method	Extracted/Digested By	Analyzed By
160.3 Modified		MMASSEY
1613B	DBOTROS	LLUONG
6020B	MRUCKER	EGARDNER
7471B	MRUCKER	EGARDNER
8081B	TMIRENTA	SHERBELIN
8082A	BGREER	MCHAPPELLE
8151A	KSERCU	JMISIUREWICZ
8270D	ECOMOR	TYEREMYANTS
8270D SIM	ECOMOR	TYEREMYANTS

Sample Name: VB-BFWC19-Zone B Downstream **Date Collected:** 10/24/19
Lab Code: J1906537-003.R01 **Date Received:** 10/30/19
Sample Matrix: Sediment

Analysis Method	Extracted/Digested By	Analyzed By
8081B	TMIRENTA	SHERBELIN

Client: Water and Air Research
Project: USACE Big Fishweir Creek/
Service Request: J1906537

Sample Name: VB-BFWC19-Zone B Downstream
Lab Code: J1906537-003.R01
Sample Matrix: Sediment
Date Collected: 10/24/19
Date Received: 10/30/19

Analysis Method	Extracted/Digested By	Analyzed By
8082A	BGREER	MCHAPPELLE

Sample Name: VB-BFWC19-Zone C
Lab Code: J1906537-004
Sample Matrix: Sediment
Date Collected: 10/23/19
Date Received: 10/30/19

Analysis Method	Extracted/Digested By	Analyzed By
160.3 Modified		MMASSEY
1613B	DBOTROS	LLUONG
6020B	MRUCKER	EGARDNER
7471B	MRUCKER	EGARDNER
8081B	TMIRENTA	SHERBELIN
8082A	BGREER	MCHAPPELLE
8151A	KSERCU	JMISIUREWICZ
8270D	ECOMOR	TYEREMYANTS
8270D SIM	ECOMOR	TYEREMYANTS

Sample Name: VB-BFWC19-Zone C
Lab Code: J1906537-004.R01
Sample Matrix: Sediment
Date Collected: 10/23/19
Date Received: 10/30/19

Analysis Method	Extracted/Digested By	Analyzed By
8081B	TMIRENTA	SHERBELIN
8082A	BGREER	MCHAPPELLE
8270D SIM	ECOMOR	TYEREMYANTS

Client: Water and Air Research **Service Request:** J1906537
Project: USACE Big Fishweir Creek/

Sample Name: VB-BFWC19-Zone D **Date Collected:** 10/22/19
Lab Code: J1906537-005 **Date Received:** 10/30/19
Sample Matrix: Sediment

Analysis Method	Extracted/Digested By	Analyzed By
160.3 Modified		MMASSEY
1613B	DBOTROS	LLUONG
6020B	MRUCKER	EGARDNER
7471B	MRUCKER	EGARDNER
8081B	TMIRENTA	SHERBELIN
8082A	BGREER	MCHAPPELLE
8151A	KSERCU	JMISIUREWICZ
8270D	ECOMOR	TYEREMYANTS
8270D SIM	ECOMOR	TYEREMYANTS

Sample Name: VB-BFWC19-Zone D **Date Collected:** 10/22/19
Lab Code: J1906537-005.R01 **Date Received:** 10/30/19
Sample Matrix: Sediment

Analysis Method	Extracted/Digested By	Analyzed By
8081B	TMIRENTA	SHERBELIN
8082A	BGREER	MCHAPPELLE

Sample Name: VB-BFWC19-Zone C **Date Collected:** 10/23/19
Lab Code: J1906537-006 **Date Received:** 10/30/19
Sample Matrix: Sediment

Analysis Method	Extracted/Digested By	Analyzed By
160.3 Modified		MMASSEY
6010D	MRUCKER	EGARDNER
7470A	MRUCKER	EGARDNER
8081A	ECOMOR	ECOMOR
8270D	ECOMOR	TYEREMYANTS
8270D SIM	ECOMOR	TYEREMYANTS

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek/		

Sample Name:	VB-BFWC19-Zone D	**Date Collected:**	10/22/19
Lab Code:	J1906537-007	**Date Received:**	10/30/19
Sample Matrix:	Sediment		

Analysis Method	Extracted/Digested By	Analyzed By
160.3 Modified		MMASSEY
6010D	MRUCKER	EGARDNER
7470A	MRUCKER	EGARDNER
8081A	ECOMOR	ECOMOR
8270D	ECOMOR	TYEREMYANTS
8270D SIM	ECOMOR	TYEREMYANTS

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9034 Sulfide Acid Soluble	9030B
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7199	3060A
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction
For analytical methods not listed, the preparation method is the same as the analytical method reference.	

Sample Results

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Semivolatile Organic Compounds by GC

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/25/19 09:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone A	**Units:**	ug/Kg
Lab Code:	J1906537-001	**Basis:**	Dry

Chlorinated Herbicides by GC

Analysis Method: 8151A
Prep Method: Method

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4,5-T	6.1	U	17	6.1	1	11/06/19 01:35	11/4/19	
2,4,5-TP	5.8	U	17	5.8	1	11/06/19 01:35	11/4/19	
2,4-D	9.5	U	17	9.5	1	11/06/19 01:35	11/4/19	
Dicamba	6.2	U	17	6.2	1	11/06/19 01:35	11/4/19	
Pentachlorophenol (PCP)	8.4	U	17	8.4	1	11/06/19 01:35	11/4/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4-Dichlorophenylacetic Acid	51	10 - 151	11/06/19 01:35	

ALS Group USA, Corp.
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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 15:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Upstream	**Units:**	ug/Kg
Lab Code:	J1906537-002	**Basis:**	Dry

Chlorinated Herbicides by GC

Analysis Method: 8151A
Prep Method: Method

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4,5-T	4.9	U	13	4.9	1	11/06/19 01:52	11/4/19	
2,4,5-TP	4.6	U	13	4.6	1	11/06/19 01:52	11/4/19	
2,4-D	7.6	U	13	7.6	1	11/06/19 01:52	11/4/19	
Dicamba	5.0	U	13	5.0	1	11/06/19 01:52	11/4/19	
Pentachlorophenol (PCP)	6.8	U	13	6.8	1	11/06/19 01:52	11/4/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4-Dichlorophenylacetic Acid	54	10 - 151	11/06/19 01:52	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 10:24
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Downstream	**Units:**	ug/Kg
Lab Code:	J1906537-003	**Basis:**	Dry

Chlorinated Herbicides by GC

Analysis Method: 8151A
Prep Method: Method

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4,5-T	6.5	U	18	6.5	1	11/06/19 02:09	11/4/19	
2,4,5-TP	6.1	U	18	6.1	1	11/06/19 02:09	11/4/19	
2,4-D	10	U	18	10	1	11/06/19 02:09	11/4/19	
Dicamba	6.5	U	18	6.5	1	11/06/19 02:09	11/4/19	
Pentachlorophenol (PCP)	8.9	U	18	8.9	1	11/06/19 02:09	11/4/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4-Dichlorophenylacetic Acid	48	10 - 151	11/06/19 02:09	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/23/19 16:10
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone C	**Units:**	ug/Kg
Lab Code:	J1906537-004	**Basis:**	Dry

Chlorinated Herbicides by GC

Analysis Method: 8151A
Prep Method: Method

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4,5-T	8.0	U	22	8.0	1	11/06/19 02:27	11/4/19	
2,4,5-TP	7.5	U	22	7.5	1	11/06/19 02:27	11/4/19	
2,4-D	13	U	22	13	1	11/06/19 02:27	11/4/19	
Dicamba	8.1	U	22	8.1	1	11/06/19 02:27	11/4/19	
Pentachlorophenol (PCP)	11	U	22	11	1	11/06/19 02:27	11/4/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4-Dichlorophenylacetic Acid	28	10 - 151	11/06/19 02:27	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/22/19 17:25
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone D	**Units:**	ug/Kg
Lab Code:	J1906537-005	**Basis:**	Dry

Chlorinated Herbicides by GC

Analysis Method: 8151A
Prep Method: Method

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4,5-T	5.1	U	14	5.1	1	11/06/19 02:43	11/4/19	
2,4,5-TP	4.8	U	14	4.8	1	11/06/19 02:43	11/4/19	
2,4-D	7.8	U	14	7.8	1	11/06/19 02:43	11/4/19	
Dicamba	5.1	U	14	5.1	1	11/06/19 02:43	11/4/19	
Pentachlorophenol (PCP)	7.0	U	14	7.0	1	11/06/19 02:43	11/4/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4-Dichlorophenylacetic Acid	48	10 - 151	11/06/19 02:43	

QC Summary Forms

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
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Semivolatile Organic Compounds by GC

ALS Environmental—Rochester Laboratory
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Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Client: Water and Air Research **Service Request:** J1906537
Project: USACE Big Fishweir Creek
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Chlorinated Herbicides by GC

Analysis Method: 8151A
Extraction Method: Method

Sample Name	Lab Code	2,4-Dichlorophenylacetic Acid 10-151
VB-BFWC19-Zone A	J1906537-001	51
VB-BFWC19-Zone B Upstream	J1906537-002	54
VB-BFWC19-Zone B Downstream	J1906537-003	48
VB-BFWC19-Zone C	J1906537-004	28
VB-BFWC19-Zone D	J1906537-005	48
Method Blank	RQ1912801-01	47
Lab Control Sample	RQ1912801-02	47
Duplicate Lab Control Sample	RQ1912801-03	50

ALS Group USA, Corp.
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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	RQ1912801-01	**Basis:**	Dry

Chlorinated Herbicides by GC

Analysis Method: 8151A
Prep Method: Method

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4,5-T	3.7	U	10	3.7	1	11/06/19 00:27	11/4/19	
2,4,5-TP	3.5	U	10	3.5	1	11/06/19 00:27	11/4/19	
2,4-D	5.7	U	10	5.7	1	11/06/19 00:27	11/4/19	
Dicamba	3.7	U	10	3.7	1	11/06/19 00:27	11/4/19	
Pentachlorophenol (PCP)	5.0	U	10	5.0	1	11/06/19 00:27	11/4/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4-Dichlorophenylacetic Acid	47	10 - 151	11/06/19 00:27	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Water and Air Research
Project: USACE Big Fishweir Creek
Sample Matrix: Sediment

Service Request: J1906537
Date Analyzed: 11/06/19

Duplicate Lab Control Sample Summary
Chlorinated Herbicides by GC

Units:ug/Kg
Basis: Dry

			Lab Control Sample RQ1912801-02		Duplicate Lab Control Sample RQ1912801-03					
Analyte Name	**Analytical Method**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
2,4,5-T	8151A	23.0	50.3	46	24.7	50.1	49	19-127	7	30
2,4,5-TP	8151A	20.8	50.3	41	22.8	50.1	46	18-122	9	30
2,4-D	8151A	23.1	50.3	46	24.5	50.1	49	24-165	6	30
Dicamba	8151A	20.5	50.3	41	21.4	50.1	43	26-128	4	30
Pentachlorophenol (PCP)	8151A	13.6	50.3	27	14.8	50.1	30	10-103	9	30

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January 27, 2020

Analytical Report for Service Request No: J1906537
Revised Service Request No: J1906537.01

Mr. Bryan Cotter
Water and Air Research
6821 S.W. Archer Road.
Gainesville, FL 32608

RE: USACE Big Fishweir Creek

Dear Mr.Cotter,

Enclosed is the revised report for the sample(s) submitted to our laboratory October 30, 2019
For your reference, these analyses have been assigned our service request number **J1906537.**

The samples have been reported on a dry weight basis per client request.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and ALS Environmental is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. In accordance with the TNI 2016 Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Please contact me if you have any questions. My extension is 3342. You may also contact me via email at Amanda.Juell@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Amanda Juell
Project Manager

REVISED
9:48 am, Jan 27, 2020

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

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Client: Water and Air Research
Project: USACE Big Fishweir Creek
Sample Matrix: Sediment

Service Request: J1906537
Date Received: 11/01/2019

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Five sediment samples were received for analysis at ALS Environmental on 11/01/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivoa GC:

Method 8081B, Low Level Organochlorine Pesticides by GC 11/13/2019: The upper control criterion was exceeded for toxaphene in Continuing Calibration Verification (CCV) KQ1916813-02.R01. The field samples analyzed in this sequence did not contain the analyte in question. Since the apparent problem indicated a potential high bias, the data quality was not affected. No further corrective action was required.
Method 8081B, Low Level Organochlorine Pesticides by GC 11/12/2019: The recoveries of Decachlorobiphenyl and Tetrachloro-m-xylene in most samples, several analytes in Laboratory Control Sample (LCS) KQ1916139-05, a few analytes in Matrix Spike (MS) KQ1916139-01, and all analytes in Duplicate Matrix Spike (DMS) KQ1916139-02 were outside the control limits listed in the results summary. The limits are default values temporarily in use until sufficient data points are generated to calculate statistical control limits. Based on the method and historic data, the recoveries observed were in the range expected for this procedure. No further corrective action was taken.
Method 8081B, Low Level Organochlorine Pesticides by GC 11/12/2019: The recoveries of all analytes in Duplicate Matrix Spike (DMS) KQ1916139-02 were outside the control limits listed in the results summary. The limits are default values temporarily in use until sufficient data points are generated to calculate statistical control limits. Based on the method and historic data, the recoveries observed were in the range expected for this procedure. No further corrective action was taken.
Method 8081B, Low Level Organochlorine Pesticides by GC 11/12/2019: The recovery of Endosulfan Sulfate in Matrix Spikes (MS/DMS) KQ1916139-01/02 is failing low due to suspected non-homogenous sample.

Method 8081B, Low Level Organochlorine Pesticides by GC 11/18/2019: Sample VB-BFWC19-Zone B Upstream required dilution due to the presence of elevated levels of target analyte. The reporting limits are adjusted to reflect the dilution.
Method 8082A, Polychlorinated Biphenyl (PCB) Congeners by GC/ECD 11/07/2019: The upper control criterion was exceeded for PCB 168, 77, 81, and 174 in Continuing Calibration Verifications (CCV) KQ1916435-01 and KQ1916623-01. The field samples analyzed in this sequence did not contain the analytes in question above the MRL. Since the apparent problem indicated a potential high bias, the data quality was not affected. No further corrective action was required.

Method 8082A, Polychlorinated Biphenyl (PCB) Congeners by GC/ECD 11/07/2019: The recoveries of PCB 97 and PCB 99 in Matrix Spikes (MS/DMS) KQ1916140-01/02 and PCB 1 in Laboratory Control Sample (LCS) KQ1916140-06 were outside the control limits listed in the results summary. The limits are default values temporarily in use until sufficient data points are generated to calculate statistical control limits. Based on the method and historic data, the recoveries observed were in the range expected for this procedure. No further corrective action was taken.

Approved by Amanda Juell Date 11/20/2019

Chain of Custody

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Intra-Network Chain of Custody

9143 Philips Highway, Suite 200 • Jacksonville, FL 32256 • 904-739-2277 • FAX 904-739-2011

ALS Contact: Mandy Sullivan

Project Name: USACE Big Fishweir Creek
Project Number:
Project Manager: Bryan Cotter
Company: Water and Air Research
QAP: LAB QAP

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Date Received	Send To	PCB Congeners 8082A	Pest OC LL 8081B
J1906537-001	VB-BFWC19-Zone A		Sediment	10/25/19	0935	10/30/19	KELSO	II	II
J1906537-002	VB-BFWC19-Zone B Upstream		Sediment	10/24/19	1535	10/30/19	KELSO	II	II
J1906537-003	VB-BFWC19-Zone B		Sediment	10/24/19	1024	10/30/19	KELSO	II	II
J1906537-004	VB-BFWC19-Zone C		Sediment	10/23/19	1610	10/30/19	KELSO	II	II
J1906537-005	VB-BFWC19-Zone D		Sediment	10/22/19	1725	10/30/19	KELSO	II	II

Special Instructions/Comments

pH Checked _____

Turnaround Requirements

_____ **RUSH** (Surcharges Apply)

PLEASE CIRCLE WORK DAYS
1 2 3 4 5

____ **STANDARD**

Requested FAX Date: _____

Requested Report Date: 11/20/19

Report Requirements

____ I. Results Only

____ II. Results + QC Summaries

____ III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

PQL/MDL/J Y
EDD N

Invoice Information

PO# 53J1906537

Bill to

Relinquished By: _____ Received By: _____ 11/1/19 0969 Airbill Number: _____

PC

Cooler Receipt and Preservation Form

Client ALS/Jax Service Request K19 J906537

Received: 11/1/19 Opened: 11/1/19 By: Unloaded: 11/1/19 By:

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
0.8	0.9	—	—	+0.1	308		6666 8257 6347	
0.0	0.0	—	—	0	381		" " 6336	

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA Y N

   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

7/25/16 *Page* ____ *of* ____

Organochlorine Pesticides

ALS Environmental—Kelso Laboratory
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REVISED
9:42 am, Jan 27, 2020

Sample Results

ALS Environmental—Kelso Laboratory
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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/25/19 09:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone A	**Units:**	ug/Kg
Lab Code:	J1906537-001	**Basis:**	Dry

Low Level Organochlorine Pesticides by GC

Analysis Method: 8081B
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Aldrin	ND	U	2.8	0.84	1	11/12/19 20:44	11/4/19	*
alpha-BHC	ND	U	1.4	0.42	1	11/12/19 20:44	11/4/19	*
beta-BHC	ND	U	1.4	0.39	1	11/12/19 20:44	11/4/19	*
delta-BHC	ND	U	1.4	0.40	1	11/12/19 20:44	11/4/19	*
gamma-BHC (Lindane)	ND	U	1.4	0.45	1	11/12/19 20:44	11/4/19	*
Chlordane	**110**		14	6.9	1	11/12/19 20:44	11/4/19	
cis-Chlordane	**5.8**		1.4	0.59	1	11/12/19 20:44	11/4/19	
trans-Chlordane	**15**		1.4	0.55	1	11/12/19 20:44	11/4/19	
4,4'-DDD	**4.4**		2.8	0.86	1	11/12/19 20:44	11/4/19	
4,4'-DDE	**5.3**		1.4	0.57	1	11/12/19 20:44	11/4/19	
4,4'-DDT	ND	Ui	5.5	5.5	1	11/12/19 20:44	11/4/19	
Dieldrin	ND	Ui	1.4	0.45	1	11/12/19 20:44	11/4/19	*
Endosulfan I	ND	Ui	3.4	3.4	1	11/12/19 20:44	11/4/19	
Endosulfan II	ND	Ui	2.8	1.5	1	11/12/19 20:44	11/4/19	
Endosulfan Sulfate	ND	U	2.8	1.5	1	11/12/19 20:44	11/4/19	
Endrin	**0.58**	**JP**	1.4	0.46	1	11/12/19 20:44	11/4/19	*
Endrin Aldehyde	**1.4**	**J**	2.8	1.3	1	11/12/19 20:44	11/4/19	*
Endrin Ketone	ND	Ui	2.9	2.9	1	11/12/19 20:44	11/4/19	
Heptachlor	ND	U	1.4	0.56	1	11/12/19 20:44	11/4/19	
Heptachlor Epoxide	ND	U	2.8	0.94	1	11/12/19 20:44	11/4/19	*
Methoxychlor	ND	Ui	2.8	1.5	1	11/12/19 20:44	11/4/19	
Toxaphene	ND	U	140	49	1	11/12/19 20:44	11/4/19	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	73	70 - 130	11/12/19 20:44	
Tetrachloro-m-xylene	63	70 - 130	11/12/19 20:44	*

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 15:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Upstream	**Units:**	ug/Kg
Lab Code:	J1906537-002	**Basis:**	Dry

Low Level Organochlorine Pesticides by GC

Analysis Method: 8081B
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Aldrin	**0.59**	**JP**	2.0	0.59	1	11/12/19 21:13	11/4/19	*
alpha-BHC	ND	U	1.0	0.29	1	11/12/19 21:13	11/4/19	*
beta-BHC	ND	U	1.0	0.27	1	11/12/19 21:13	11/4/19	*
delta-BHC	ND	U	1.0	0.28	1	11/12/19 21:13	11/4/19	*
gamma-BHC (Lindane)	ND	U	1.0	0.31	1	11/12/19 21:13	11/4/19	*
Chlordane	ND	U	10	4.8	1	11/12/19 21:13	11/4/19	
cis-Chlordane	**1.2**		1.0	0.41	1	11/12/19 21:13	11/4/19	
trans-Chlordane	**2.8**	**P**	1.0	0.38	1	11/12/19 21:13	11/4/19	
4,4'-DDD	**1.3**	**J**	2.0	0.60	1	11/12/19 21:13	11/4/19	
4,4'-DDE	**3.9**		1.0	0.40	1	11/12/19 21:13	11/4/19	
4,4'-DDT	ND	Ui	1.8	1.8	1	11/12/19 21:13	11/4/19	
Dieldrin	ND	U	0.97	0.22	1	11/12/19 21:13	11/4/19	*
Endosulfan I	**1.5**		1.0	0.37	1	11/12/19 21:13	11/4/19	
Endosulfan II	ND	Ui	3.8	3.8	1	11/12/19 21:13	11/4/19	
Endosulfan Sulfate	**170**		20	9.9	10	11/18/19 16:16	11/4/19	
Endrin	ND	U	1.0	0.32	1	11/12/19 21:13	11/4/19	*
Endrin Aldehyde	ND	U	2.0	0.89	1	11/12/19 21:13	11/4/19	*
Endrin Ketone	**0.55**	**JP**	1.0	0.45	1	11/12/19 21:13	11/4/19	
Heptachlor	ND	U	1.0	0.39	1	11/12/19 21:13	11/4/19	
Heptachlor Epoxide	ND	U	2.0	0.66	1	11/12/19 21:13	11/4/19	*
Methoxychlor	ND	U	2.0	0.71	1	11/12/19 21:13	11/4/19	
Toxaphene	ND	U	100	34	1	11/12/19 21:13	11/4/19	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	71	70 - 130	11/12/19 21:13	
Tetrachloro-m-xylene	62	70 - 130	11/12/19 21:13	*

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 10:24
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Downstream	**Units:**	ug/Kg
Lab Code:	J1906537-003	**Basis:**	Dry

Low Level Organochlorine Pesticides by GC

Analysis Method: 8081B
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Aldrin	ND	U	3.0	0.90	1	11/12/19 23:43	11/4/19	*
alpha-BHC	ND	U	1.5	0.44	1	11/12/19 23:43	11/4/19	*
beta-BHC	ND	U	1.5	0.41	1	11/12/19 23:43	11/4/19	*
delta-BHC	ND	U	1.5	0.43	1	11/12/19 23:43	11/4/19	*
gamma-BHC (Lindane)	**0.54**	**JP**	1.5	0.47	1	11/12/19 23:43	11/4/19	*
Chlordane	**100**		15	7.3	1	11/12/19 23:43	11/4/19	
cis-Chlordane	**5.7**		1.5	0.62	1	11/12/19 23:43	11/4/19	
trans-Chlordane	**14**		1.5	0.58	1	11/12/19 23:43	11/4/19	
4,4'-DDD	**3.7**	**P**	3.0	0.91	1	11/12/19 23:43	11/4/19	
4,4'-DDE	**12**		1.5	0.61	1	11/12/19 23:43	11/4/19	
4,4'-DDT	**1.8**	**JP**	3.0	0.93	1	11/12/19 23:43	11/4/19	
Dieldrin	ND	Ui	1.5	0.67	1	11/12/19 23:43	11/4/19	*
Endosulfan I	ND	Ui	1.5	0.56	1	11/12/19 23:43	11/4/19	
Endosulfan II	ND	Ui	3.7	3.7	1	11/12/19 23:43	11/4/19	
Endosulfan Sulfate	**51**		3.0	1.5	1	11/12/19 23:43	11/4/19	
Endrin	ND	U	1.5	0.49	1	11/12/19 23:43	11/4/19	*
Endrin Aldehyde	ND	U	3.0	1.4	1	11/12/19 23:43	11/4/19	*
Endrin Ketone	**1.6**	**P**	1.5	0.68	1	11/12/19 23:43	11/4/19	
Heptachlor	ND	U	1.5	0.59	1	11/12/19 23:43	11/4/19	
Heptachlor Epoxide	ND	U	3.0	1.0	1	11/12/19 23:43	11/4/19	*
Methoxychlor	ND	U	3.0	1.1	1	11/12/19 23:43	11/4/19	
Toxaphene	ND	U	150	52	1	11/12/19 23:43	11/4/19	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	78	70 - 130	11/12/19 23:43	
Tetrachloro-m-xylene	65	70 - 130	11/12/19 23:43	*

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/23/19 16:10
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone C	**Units:**	ug/Kg
Lab Code:	J1906537-004	**Basis:**	Dry

Low Level Organochlorine Pesticides by GC

Analysis Method: 8081B
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Aldrin	ND	U	3.5	1.1	1	11/13/19 00:12	11/4/19	*
alpha-BHC	ND	U	1.8	0.51	1	11/13/19 00:12	11/4/19	*
beta-BHC	ND	Ui	1.8	1.6	1	11/13/19 00:12	11/4/19	*
delta-BHC	ND	U	1.8	0.50	1	11/13/19 00:12	11/4/19	*
gamma-BHC (Lindane)	**0.61**	**JP**	1.8	0.55	1	11/13/19 00:12	11/4/19	*
Chlordane	ND	U	18	8.5	1	11/13/19 00:12	11/4/19	
cis-Chlordane	**1.1**	**J**	1.8	0.73	1	11/13/19 00:12	11/4/19	
trans-Chlordane	**3.8**		1.8	0.67	1	11/13/19 00:12	11/4/19	
4,4'-DDD	**1.8**	**JP**	3.5	1.1	1	11/13/19 00:12	11/4/19	
4,4'-DDE	**12**		1.8	0.71	1	11/13/19 00:12	11/4/19	
4,4'-DDT	ND	Ui	6.0	6.0	1	11/13/19 00:12	11/4/19	
Dieldrin	ND	U	1.8	0.39	1	11/13/19 00:12	11/4/19	*
Endosulfan I	ND	U	1.8	0.66	1	11/13/19 00:12	11/4/19	
Endosulfan II	ND	U	3.5	1.3	1	11/13/19 00:12	11/4/19	
Endosulfan Sulfate	ND	U	3.5	1.8	1	11/13/19 00:12	11/4/19	
Endrin	ND	U	1.8	0.57	1	11/13/19 00:12	11/4/19	*
Endrin Aldehyde	ND	U	3.5	1.6	1	11/13/19 00:12	11/4/19	*
Endrin Ketone	ND	U	1.8	0.80	1	11/13/19 00:12	11/4/19	
Heptachlor	ND	U	1.8	0.69	1	11/13/19 00:12	11/4/19	
Heptachlor Epoxide	ND	U	3.5	1.2	1	11/13/19 00:12	11/4/19	*
Methoxychlor	ND	U	3.5	1.3	1	11/13/19 00:12	11/4/19	
Toxaphene	ND	U	180	60	1	11/13/19 00:12	11/4/19	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	75	70 - 130	11/13/19 00:12	
Tetrachloro-m-xylene	66	70 - 130	11/13/19 00:12	*

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/22/19 17:25
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone D	**Units:**	ug/Kg
Lab Code:	J1906537-005	**Basis:**	Dry

Low Level Organochlorine Pesticides by GC

Analysis Method: 8081B
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Aldrin	ND	U	2.3	0.69	1	11/13/19 00:42	11/4/19	*
alpha-BHC	ND	U	1.2	0.34	1	11/13/19 00:42	11/4/19	*
beta-BHC	ND	U	1.2	0.32	1	11/13/19 00:42	11/4/19	*
delta-BHC	ND	U	1.2	0.33	1	11/13/19 00:42	11/4/19	*
gamma-BHC (Lindane)	ND	U	1.2	0.36	1	11/13/19 00:42	11/4/19	*
Chlordane	ND	U	12	5.6	1	11/13/19 00:42	11/4/19	
cis-Chlordane	**0.82**	**J**	1.2	0.48	1	11/13/19 00:42	11/4/19	
trans-Chlordane	**1.6**	**P**	1.2	0.45	1	11/13/19 00:42	11/4/19	
4,4'-DDD	ND	U	2.3	0.70	1	11/13/19 00:42	11/4/19	
4,4'-DDE	**1.0**	**J**	1.2	0.47	1	11/13/19 00:42	11/4/19	
4,4'-DDT	ND	U	2.3	0.71	1	11/13/19 00:42	11/4/19	
Dieldrin	ND	U	1.2	0.26	1	11/13/19 00:42	11/4/19	*
Endosulfan I	ND	Ui	1.2	1.1	1	11/13/19 00:42	11/4/19	
Endosulfan II	**1.5**	**JP**	2.3	0.80	1	11/13/19 00:42	11/4/19	
Endosulfan Sulfate	ND	U	2.3	1.2	1	11/13/19 00:42	11/4/19	
Endrin	ND	U	1.2	0.38	1	11/13/19 00:42	11/4/19	*
Endrin Aldehyde	ND	U	2.3	1.1	1	11/13/19 00:42	11/4/19	*
Endrin Ketone	ND	U	1.2	0.53	1	11/13/19 00:42	11/4/19	
Heptachlor	ND	Ui	1.2	0.46	1	11/13/19 00:42	11/4/19	
Heptachlor Epoxide	ND	U	2.3	0.77	1	11/13/19 00:42	11/4/19	*
Methoxychlor	ND	U	2.3	0.83	1	11/13/19 00:42	11/4/19	
Toxaphene	ND	U	120	40	1	11/13/19 00:42	11/4/19	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	69	70 - 130	11/13/19 00:42	*
Tetrachloro-m-xylene	63	70 - 130	11/13/19 00:42	*

QC Summary Forms

ALS Environmental—Kelso Laboratory
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Organochlorine Pesticides

ALS Environmental—Kelso Laboratory
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Client: Water and Air Research **Service Request:** J1906537
Project: USACE Big Fishweir Creek
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Low Level Organochlorine Pesticides by GC

Analysis Method: 8081B
Extraction Method: EPA 3546

Sample Name	Lab Code	Decachlorobiphenyl 70-130	Tetrachloro-m-xylene 70-130
VB-BFWC19-Zone A	J1906537-001	73	63*
VB-BFWC19-Zone B Upstream	J1906537-002	71	62*
VB-BFWC19-Zone B Downstream	J1906537-003	78	65*
VB-BFWC19-Zone C	J1906537-004	75	66*
VB-BFWC19-Zone D	J1906537-005	69*	63*
Method Blank	KQ1916139-07	72	68*
Lab Control Sample	KQ1916139-05	75	66*
Lab Control Sample	KQ1916139-06	75	70
VB-BFWC19-Zone B Upstream	KQ1916139-01	84	72
VB-BFWC19-Zone B Upstream	KQ1916139-02	69*	60*
VB-BFWC19-Zone B Upstream	KQ1916139-03	69*	61*
VB-BFWC19-Zone B Upstream	KQ1916139-04	71	64*

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QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19
Sample Matrix:	Sediment	**Date Received:**	10/30/19
		Date Analyzed:	11/12/19
		Date Extracted:	11/4/19

Duplicate Matrix Spike Summary
Low Level Organochlorine Pesticides by GC

Sample Name:	VB-BFWC19-Zone B Upstream	**Units:**	ug/Kg
Lab Code:	J1906537-002	**Basis:**	Dry
Analysis Method:	8081B		
Prep Method:	EPA 3546		

		Matrix Spike KQ1916139-01			**Duplicate Matrix Spike** KQ1916139-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Aldrin	0.59 J	17.2	25.9	64 *	15.8	29.4	52 *	70-130	9	40
alpha-BHC	ND U	18.0	25.9	69 *	16.9	29.4	58 *	70-130	6	40
beta-BHC	ND U	17.8	25.9	69 *	16.3	29.4	55 *	70-130	9	40
delta-BHC	ND U	18.7	25.9	72	17.3	29.4	59 *	70-130	8	40
gamma-BHC (Lindane)	ND U	19.4	25.9	75	18.0	29.4	61 *	70-130	8	40
cis-Chlordane	1.2	21.9	25.9	80	19.0	29.4	60 *	70-130	14	40
trans-Chlordane	2.8	25.4	25.9	87	20.6	29.4	61 *	70-130	21	40
4,4'-DDD	1.3 J	23.7	25.9	86	20.8	29.4	66 *	70-130	13	40
4,4'-DDE	3.9	24.2	25.9	78	21.6	29.4	60 *	70-130	11	40
4,4'-DDT	ND Ui	24.5	25.9	94	21.8	29.4	74	70-130	11	40
Dieldrin	ND U	18.6	25.9	72	16.9	29.4	58 *	70-130	9	40
Endosulfan I	1.5	22.3	25.9	80	19.3	29.4	60 *	70-130	14	40
Endosulfan II	ND Ui	23.8	25.9	92	21.5	29.4	73	70-130	10	40
Endosulfan Sulfate	170	20.9	25.9	-565 #	19.1	29.4	-503 #	70-130	9	40
Endrin	ND U	20.0	25.9	77	18.3	29.4	62 *	70-130	9	40
Endrin Aldehyde	ND U	20.1	25.9	78	18.1	29.4	62 *	70-130	10	40
Endrin Ketone	0.55 J	21.7	25.9	82	19.8	29.4	65 *	70-130	9	40
Heptachlor Epoxide	ND U	17.8	25.9	69 *	16.7	29.4	57 *	70-130	6	40
Methoxychlor	ND U	28.7	25.9	111	26.1	29.4	89	70-130	10	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19
Sample Matrix:	Sediment	**Date Received:**	10/30/19
		Date Analyzed:	11/12/19
		Date Extracted:	11/4/19

Duplicate Matrix Spike Summary
Low Level Organochlorine Pesticides by GC

Sample Name:	VB-BFWC19-Zone B Upstream	**Units:**	ug/Kg
Lab Code:	J1906537-002	**Basis:**	Dry
Analysis Method:	8081B		
Prep Method:	EPA 3546		

		Matrix Spike KQ1916139-03			**Duplicate Matrix Spike** KQ1916139-04					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Chlordane	ND U	287	309	93	210	287	73	70-130	31	40
Toxaphene	ND U	993	1240	80	931	1150	81	70-130	6	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KQ1916139-07	**Basis:**	Dry

Low Level Organochlorine Pesticides by GC

Analysis Method: 8081B
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Aldrin	ND	U	2.0	0.59	1	11/12/19 19:14	11/4/19	
alpha-BHC	ND	U	1.0	0.29	1	11/12/19 19:14	11/4/19	
beta-BHC	ND	U	1.0	0.27	1	11/12/19 19:14	11/4/19	
delta-BHC	ND	U	1.0	0.28	1	11/12/19 19:14	11/4/19	
gamma-BHC (Lindane)	ND	U	1.0	0.31	1	11/12/19 19:14	11/4/19	
Chlordane	ND	U	10	4.8	1	11/12/19 19:14	11/4/19	
cis-Chlordane	ND	U	1.0	0.41	1	11/12/19 19:14	11/4/19	
trans-Chlordane	ND	U	1.0	0.38	1	11/12/19 19:14	11/4/19	
4,4'-DDD	ND	U	2.0	0.60	1	11/12/19 19:14	11/4/19	
4,4'-DDE	ND	U	1.0	0.40	1	11/12/19 19:14	11/4/19	
4,4'-DDT	ND	U	2.0	0.61	1	11/12/19 19:14	11/4/19	
Dieldrin	ND	U	0.72	0.22	1	11/12/19 19:14	11/4/19	
Endosulfan I	ND	U	1.0	0.37	1	11/12/19 19:14	11/4/19	
Endosulfan II	ND	U	2.0	0.69	1	11/12/19 19:14	11/4/19	
Endosulfan Sulfate	ND	U	2.0	0.99	1	11/12/19 19:14	11/4/19	
Endrin	ND	U	1.0	0.32	1	11/12/19 19:14	11/4/19	
Endrin Aldehyde	ND	U	2.0	0.89	1	11/12/19 19:14	11/4/19	
Endrin Ketone	ND	U	1.0	0.45	1	11/12/19 19:14	11/4/19	
Heptachlor	ND	U	1.0	0.39	1	11/12/19 19:14	11/4/19	
Heptachlor Epoxide	ND	U	2.0	0.66	1	11/12/19 19:14	11/4/19	
Methoxychlor	ND	U	2.0	0.71	1	11/12/19 19:14	11/4/19	
Toxaphene	ND	U	100	34	1	11/12/19 19:14	11/4/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	72	70 - 130	11/12/19 19:14	
Tetrachloro-m-xylene	68	70 - 130	11/12/19 19:14	*

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QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Analyzed:**	11/12/19
Sample Matrix:	Sediment	**Date Extracted:**	11/04/19

Lab Control Sample Summary
Low Level Organochlorine Pesticides by GC

Analysis Method:	8081B	**Units:**	ug/Kg
Prep Method:	EPA 3546	**Basis:**	Dry
		Analysis Lot:	659542

Lab Control Sample
KQ1916139-05

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
4,4'-DDD	18.8	25.0	75	70-130
4,4'-DDE	17.4	25.0	70	70-130
4,4'-DDT	19.6	25.0	78	70-130
Aldrin	15.8	25.0	63 *	70-130
alpha-BHC	16.9	25.0	68 *	70-130
beta-BHC	16.7	25.0	67 *	70-130
cis-Chlordane	17.6	25.0	71	70-130
delta-BHC	16.9	25.0	67 *	70-130
Dieldrin	16.1	25.0	64 *	70-130
Endosulfan I	18.3	25.0	73	70-130
Endosulfan II	20.1	25.0	81	70-130
Endosulfan Sulfate	17.8	25.0	71	70-130
Endrin	17.3	25.0	69 *	70-130
Endrin Aldehyde	16.3	25.0	65 *	70-130
Endrin Ketone	18.8	25.0	75	70-130
gamma-BHC (Lindane)	17.3	25.0	69 *	70-130
Heptachlor Epoxide	16.4	25.0	66 *	70-130
Methoxychlor	22.9	25.0	92	70-130
trans-Chlordane	17.7	25.0	71	70-130

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QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Analyzed:**	11/12/19
Sample Matrix:	Sediment	**Date Extracted:**	11/04/19

Lab Control Sample Summary
Low Level Organochlorine Pesticides by GC

Analysis Method:	8081B	**Units:**	ug/Kg
Prep Method:	EPA 3546	**Basis:**	Dry
		Analysis Lot:	659542

Lab Control Sample
KQ1916139-06

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Chlordane	195	250	78	70-130
Toxaphene	816	1000	82	70-130

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Confirmation Results

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/25/19 09:35
SRM Matrix:	Sediment	**Date Received:**	10/30/19
Sample Name:	VB-BFWC19-Zone A		
Lab Code:	J1906537-001		
		Units:	ug/Kg
		Basis:	Dry
		Percent Solids:	59.3

Low Level Organochlorine Pesticides by GC

Analytical Method: 8081B
Prep Method: EPA 3546

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
4,4'-DDD	0.86	4.4	5.9	29		1	11/12/19 20:44
4,4'-DDE	0.57	5.3	6.0	12		1	11/12/19 20:44
Chlordane	6.9	110	79	33		1	11/12/19 20:44
Endrin	0.46	0.58	1.7	98	JP	1	11/12/19 20:44
Endrin Aldehyde	1.3	1.4	1.9	30	J	1	11/12/19 20:44
cis-Chlordane	0.59	5.8	6.3	8		1	11/12/19 20:44
trans-Chlordane	0.55	15	18	18		1	11/12/19 20:44

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Confirmation Results

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 15:35
SRM Matrix:	Sediment	**Date Received:**	10/30/19
Sample Name:	VB-BFWC19-Zone B Upstream		
Lab Code:	J1906537-002		
		Units:	ug/Kg
		Basis:	Dry
		Percent Solids:	74.5

Low Level Organochlorine Pesticides by GC

Analytical Method: 8081B
Prep Method: EPA 3546

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Endosulfan Sulfate	9.9	170	210	21		10	11/18/19 16:16
4,4'-DDD	0.60	1.3	1.7	27	J	1	11/12/19 21:13
4,4'-DDE	0.40	3.9	4.0	3		1	11/12/19 21:13
Aldrin	0.59	0.59	2.0	109	JP	1	11/12/19 21:13
Endosulfan I	0.37	1.5	1.6	6		1	11/12/19 21:13
Endrin Ketone	0.45	0.55	5.5	164	JP	1	11/12/19 21:13
cis-Chlordane	0.41	1.2	1.2	<1		1	11/12/19 21:13
trans-Chlordane	0.38	2.8	4.6	49	P	1	11/12/19 21:13

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Confirmation Results

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 10:24
SRM Matrix:	Sediment	**Date Received:**	10/30/19
Sample Name:	VB-BFWC19-Zone B Downstream		
Lab Code:	J1906537-003		
		Units:	ug/Kg
		Basis:	Dry
		Percent Solids:	56.5

Low Level Organochlorine Pesticides by GC

Analytical Method: 8081B
Prep Method: EPA 3546

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
4,4'-DDD	0.91	3.7	8.6	80	P	1	11/12/19 23:43
4,4'-DDE	0.61	12	14	15		1	11/12/19 23:43
4,4'-DDT	0.93	1.8	3.8	71	JP	1	11/12/19 23:43
Chlordane	7.3	100	92	8		1	11/12/19 23:43
Endosulfan Sulfate	1.5	51	67	27		1	11/12/19 23:43
Endrin Ketone	0.68	1.6	10	145	P	1	11/12/19 23:43
cis-Chlordane	0.62	5.7	6.2	8		1	11/12/19 23:43
gamma-BHC (Lindane)	0.47	0.54	2.0	115	JP	1	11/12/19 23:43
trans-Chlordane	0.58	14	17	19		1	11/12/19 23:43

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Confirmation Results

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/23/19 16:10
SRM Matrix:	Sediment	**Date Received:**	10/30/19
Sample Name:	VB-BFWC19-Zone C		
Lab Code:	J1906537-004		
		Units:	ug/Kg
		Basis:	Dry
		Percent Solids:	45.2

Low Level Organochlorine Pesticides by GC

Analytical Method: 8081B
Prep Method: EPA 3546

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
4,4'-DDD	1.1	1.8	3.4	62	JP	1	11/13/19 00:12
4,4'-DDE	0.71	12	15	22		1	11/13/19 00:12
cis-Chlordane	0.73	1.1	1.3	17	J	1	11/13/19 00:12
gamma-BHC (Lindane)	0.55	0.61	1.4	79	JP	1	11/13/19 00:12
trans-Chlordane	0.67	3.8	5.6	38		1	11/13/19 00:12

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Confirmation Results

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/22/19 17:25
SRM Matrix:	Sediment	**Date Received:**	10/30/19
Sample Name:	VB-BFWC19-Zone D		
Lab Code:	J1906537-005		
		Units:	ug/Kg
		Basis:	Dry
		Percent Solids:	71.6

Low Level Organochlorine Pesticides by GC

Analytical Method: 8081B
Prep Method: EPA 3546

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
4,4'-DDE	0.47	1.0	1.1	10	J	1	11/13/19 00:42
Endosulfan II	0.80	1.5	2.8	60	JP	1	11/13/19 00:42
cis-Chlordane	0.48	0.82	1.0	20	J	1	11/13/19 00:42
trans-Chlordane	0.45	1.6	4.8	100	P	1	11/13/19 00:42

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Confirmation Results

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 15:35
SRM Matrix:	Sediment	**Date Received:**	10/30/19
Sample Name:	VB-BFWC19-Zone B Upstream		
Lab Code:	KQ1916139-01		
		Units:	ug/Kg
		Basis:	Dry
		Percent Solids:	74.5

Low Level Organochlorine Pesticides by GC

Analytical Method: 8081B
Prep Method: EPA 3546

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
4,4'-DDD	0.63	23.7	24.5	3		1	11/12/19 21:43
4,4'-DDE	0.42	24.2	24.4	<1		1	11/12/19 21:43
4,4'-DDT	0.64	24.5	26.5	8		1	11/12/19 21:43
Aldrin	0.62	17.2	20.9	19		1	11/12/19 21:43
Dieldrin	0.23	18.6	20.7	11		1	11/12/19 21:43
Endosulfan I	0.39	22.3	22.8	2		1	11/12/19 21:43
Endosulfan II	0.72	23.8	26.1	9		1	11/12/19 21:43
Endosulfan Sulfate	1.1	20.9	24.4	15		1	11/12/19 21:43
Endrin	0.34	20.0	22.4	11		1	11/12/19 21:43
Endrin Aldehyde	0.93	20.1	23.0	13		1	11/12/19 21:43
Endrin Ketone	0.47	21.7	24.0	10		1	11/12/19 21:43
Heptachlor	0.41	18.4	23.2	23		1	11/12/19 21:43
Heptachlor Epoxide	0.69	17.8	19.2	8		1	11/12/19 21:43
Methoxychlor	0.74	28.7	29.0	1		1	11/12/19 21:43
alpha-BHC	0.31	18.0	19.0	5		1	11/12/19 21:43
beta-BHC	0.28	17.8	21.0	16		1	11/12/19 21:43
cis-Chlordane	0.43	21.9	24.1	10		1	11/12/19 21:43
delta-BHC	0.30	18.7	21.4	13		1	11/12/19 21:43
gamma-BHC (Lindane)	0.33	19.4	19.5	<1		1	11/12/19 21:43
trans-Chlordane	0.40	25.4	26.6	5		1	11/12/19 21:43

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Confirmation Results

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 15:35
SRM Matrix:	Sediment	**Date Received:**	10/30/19
Sample Name:	VB-BFWC19-Zone B Upstream		
Lab Code:	KQ1916139-02		
		Units:	ug/Kg
		Basis:	Dry
		Percent Solids:	74.5

Low Level Organochlorine Pesticides by GC

Analytical Method: 8081B
Prep Method: EPA 3546

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
4,4'-DDD	0.71	20.8	21.8	5		1	11/12/19 22:13
4,4'-DDE	0.48	21.6	21.7	<1		1	11/12/19 22:13
4,4'-DDT	0.72	21.8	25.0	14		1	11/12/19 22:13
Aldrin	0.70	15.8	18.4	15		1	11/12/19 22:13
Dieldrin	0.26	16.9	19.0	12		1	11/12/19 22:13
Endosulfan I	0.44	19.3	19.5	1		1	11/12/19 22:13
Endosulfan II	0.82	21.5	25.2	16		1	11/12/19 22:13
Endosulfan Sulfate	1.2	19.1	22.0	14		1	11/12/19 22:13
Endrin	0.38	18.3	20.5	11		1	11/12/19 22:13
Endrin Aldehyde	1.1	18.1	20.7	13		1	11/12/19 22:13
Endrin Ketone	0.53	19.8	21.8	10		1	11/12/19 22:13
Heptachlor	0.46	17.2	22.4	26		1	11/12/19 22:13
Heptachlor Epoxide	0.78	16.7	17.7	6		1	11/12/19 22:13
Methoxychlor	0.84	26.1	27.3	4		1	11/12/19 22:13
alpha-BHC	0.35	16.9	17.7	5		1	11/12/19 22:13
beta-BHC	0.32	16.3	19.7	19		1	11/12/19 22:13
cis-Chlordane	0.49	19.0	20.7	9		1	11/12/19 22:13
delta-BHC	0.33	17.3	19.6	12		1	11/12/19 22:13
gamma-BHC (Lindane)	0.37	18.0	18.1	<1		1	11/12/19 22:13
trans-Chlordane	0.45	20.6	21.3	3		1	11/12/19 22:13

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Confirmation Results

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 15:35
SRM Matrix:	Sediment	**Date Received:**	10/30/19
Sample Name:	VB-BFWC19-Zone B Upstream		
Lab Code:	KQ1916139-03		
		Units:	ug/Kg
		Basis:	Dry
		Percent Solids:	74.5

Low Level Organochlorine Pesticides by GC

Analytical Method: 8081B
Prep Method: EPA 3546

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Chlordane	6.0	287	277	4		1	11/12/19 22:43
Toxaphene	43	993	921	8		1	11/12/19 22:43

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Confirmation Results

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 15:35
SRM Matrix:	Sediment	**Date Received:**	10/30/19
Sample Name:	VB-BFWC19-Zone B Upstream		
Lab Code:	KQ1916139-04		
		Units:	ug/Kg
		Basis:	Dry
		Percent Solids:	74.5

Low Level Organochlorine Pesticides by GC

Analytical Method: 8081B
Prep Method: EPA 3546

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Chlordane	5.6	210	223	6		1	11/12/19 23:13
Toxaphene	40	931	846	10		1	11/12/19 23:13

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Confirmation Results

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	NA
SRM Matrix:	Sediment	**Date Received:**	
Sample Name:	Lab Control Sample		
Lab Code:	KQ1916139-05	**Units:**	ug/Kg
		Basis:	Dry

Low Level Organochlorine Pesticides by GC

Analytical Method: 8081B
Prep Method: EPA 3546

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
4,4'-DDD	0.60	18.8	19.7	5		1	11/12/19 19:44
4,4'-DDE	0.40	17.4	18.0	3		1	11/12/19 19:44
4,4'-DDT	0.61	19.6	22.0	12		1	11/12/19 19:44
Aldrin	0.59	15.8	17.1	8		1	11/12/19 19:44
Dieldrin	0.22	16.1	17.9	11		1	11/12/19 19:44
Endosulfan I	0.37	18.3	17.6	4		1	11/12/19 19:44
Endosulfan II	0.69	20.1	22.2	10		1	11/12/19 19:44
Endosulfan Sulfate	0.99	17.8	20.2	13		1	11/12/19 19:44
Endrin	0.32	17.3	19.4	11		1	11/12/19 19:44
Endrin Aldehyde	0.89	16.3	18.8	14		1	11/12/19 19:44
Endrin Ketone	0.45	18.8	19.8	5		1	11/12/19 19:44
Heptachlor	0.39	17.1	23.2	30		1	11/12/19 19:44
Heptachlor Epoxide	0.66	16.4	17.2	5		1	11/12/19 19:44
Methoxychlor	0.71	22.9	23.3	2		1	11/12/19 19:44
alpha-BHC	0.29	16.9	17.7	5		1	11/12/19 19:44
beta-BHC	0.27	16.7	18.6	11		1	11/12/19 19:44
cis-Chlordane	0.41	17.6	19.3	9		1	11/12/19 19:44
delta-BHC	0.28	16.9	18.9	11		1	11/12/19 19:44
gamma-BHC (Lindane)	0.31	17.3	17.9	3		1	11/12/19 19:44
trans-Chlordane	0.38	17.7	17.8	<1		1	11/12/19 19:44

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Confirmation Results

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	NA
SRM Matrix:	Sediment	**Date Received:**	
Sample Name:	Lab Control Sample		
Lab Code:	KQ1916139-06	**Units:**	ug/Kg
		Basis:	Dry

Low Level Organochlorine Pesticides by GC

Analytical Method: 8081B
Prep Method: EPA 3546

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Chlordane	4.8	195	199	2		1	11/12/19 20:14
Toxaphene	34	816	735	10		1	11/12/19 20:14

Congener Specific PCBs

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

REVISED
9:42 am, Jan 27, 2020

Sample Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/25/19 09:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone A	**Units:**	ug/Kg
Lab Code:	J1906537-001	**Basis:**	Dry

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method: 8082A
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
PCB 1	ND	U	6.1	2.6	1	11/07/19 13:42	11/5/19	
PCB 101	ND	Ui	2.5	2.5	1	11/07/19 13:42	11/5/19	
PCB 105	ND	U	0.61	0.15	1	11/07/19 13:42	11/5/19	
PCB 110	**1.0**		0.61	0.20	1	11/07/19 13:42	11/5/19	
PCB 114	ND	U	0.61	0.15	1	11/07/19 13:42	11/5/19	
PCB 118	**0.62**		0.61	0.12	1	11/07/19 13:42	11/5/19	
PCB 119	ND	U	0.61	0.20	1	11/07/19 13:42	11/5/19	
PCB 123	ND	U	0.61	0.15	1	11/07/19 13:42	11/5/19	
PCB 126	ND	U	0.61	0.21	1	11/07/19 13:42	11/5/19	
PCB 128	ND	Ui	0.61	0.42	1	11/07/19 13:42	11/5/19	
PCB 138	**2.2**		0.61	0.22	1	11/07/19 13:42	11/5/19	
PCB 132	ND	Ui	0.78	0.78	1	11/07/19 13:42	11/5/19	
PCB 141	**0.36**	**JP**	0.61	0.12	1	11/07/19 13:42	11/5/19	
PCB 149	**1.4**		0.61	0.17	1	11/08/19 14:55	11/5/19	
PCB 151	**0.45**	**J**	0.61	0.15	1	11/07/19 13:42	11/5/19	
PCB 153	**1.9**	**P**	0.61	0.16	1	11/07/19 13:42	11/5/19	
PCB 156	ND	U	0.61	0.15	1	11/07/19 13:42	11/5/19	
PCB 157	ND	U	0.61	0.16	1	11/07/19 13:42	11/5/19	
PCB 158	ND	Ui	0.61	0.21	1	11/07/19 13:42	11/5/19	
PCB 166	ND	U	0.61	0.17	1	11/07/19 13:42	11/5/19	
PCB 167	**0.74**		0.61	0.20	1	11/07/19 13:42	11/5/19	
PCB 168	ND	Ui	0.72	0.72	1	11/07/19 13:42	11/5/19	*
PCB 169	ND	U	0.61	0.25	1	11/07/19 13:42	11/5/19	
PCB 170	**0.86**		0.61	0.17	1	11/08/19 14:55	11/5/19	
PCB 174	ND	Ui	0.76	0.76	1	11/07/19 13:42	11/5/19	
PCB 177	**0.21**	**JP**	0.61	0.20	1	11/07/19 13:42	11/5/19	
PCB 18	ND	U	0.61	0.27	1	11/07/19 13:42	11/5/19	
PCB 180	**1.5**		0.61	0.14	1	11/07/19 13:42	11/5/19	
PCB 183	**0.24**	**JP**	0.61	0.17	1	11/07/19 13:42	11/5/19	
PCB 184	ND	Ui	1.6	1.6	1	11/07/19 13:42	11/5/19	
PCB 187	**0.54**	**J**	0.61	0.20	1	11/07/19 13:42	11/5/19	
PCB 189	ND	U	0.61	0.12	1	11/07/19 13:42	11/5/19	
PCB 194	ND	U	0.61	0.22	1	11/07/19 13:42	11/5/19	
PCB 195	ND	U	0.61	0.14	1	11/07/19 13:42	11/5/19	
PCB 201	ND	U	0.61	0.20	1	11/07/19 13:42	11/5/19	
PCB 203	**0.28**	**J**	0.61	0.16	1	11/07/19 13:42	11/5/19	
PCB 206	ND	U	0.61	0.17	1	11/07/19 13:42	11/5/19	
Decachlorobiphenyl	ND	U	0.61	0.27	1	11/07/19 13:42	11/5/19	
PCB 28	ND	U	0.61	0.27	1	11/07/19 13:42	11/5/19	
PCB 31	ND	Ui	3.0	3.0	1	11/07/19 13:42	11/5/19	
PCB 33	**0.39**	**JP**	0.61	0.32	1	11/07/19 13:42	11/5/19	
PCB 37	**1.2**		0.61	0.21	1	11/07/19 13:42	11/5/19	
PCB 44	**0.26**	**JP**	0.61	0.21	1	11/07/19 13:42	11/5/19	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/25/19 09:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone A	**Units:**	ug/Kg
Lab Code:	J1906537-001	**Basis:**	Dry

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method: 8082A
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
PCB 49	**0.50**	**JP**	0.61	0.16	1	11/07/19 13:42	11/5/19	
PCB 5	**2.5**		0.61	0.12	1	11/07/19 13:42	11/5/19	
PCB 52	**0.65**		0.61	0.25	1	11/07/19 13:42	11/5/19	
PCB 56	ND	U	0.61	0.15	1	11/07/19 13:42	11/5/19	
PCB 60	**16**		0.61	0.16	1	11/07/19 13:42	11/5/19	
PCB 66	ND	Ui	0.79	0.79	1	11/07/19 13:42	11/5/19	
PCB 70	ND	Ui	0.75	0.75	1	11/07/19 13:42	11/5/19	
PCB 74	ND	Ui	0.89	0.89	1	11/07/19 13:42	11/5/19	
PCB 77	ND	U	0.61	0.25	1	11/07/19 13:42	11/5/19	*
PCB 8	ND	U	0.61	0.36	1	11/07/19 13:42	11/5/19	
PCB 81	ND	Ui	1.8	1.8	1	11/07/19 13:42	11/5/19	*
PCB 87	ND	Ui	1.1	1.1	1	11/07/19 13:42	11/5/19	
PCB 90	ND	U	0.61	0.22	1	11/07/19 13:42	11/5/19	
PCB 95	**1.0**		0.61	0.19	1	11/08/19 14:55	11/5/19	
PCB 97	ND	U	0.61	0.12	1	11/07/19 13:42	11/5/19	
PCB 99	ND	U	0.61	0.34	1	11/07/19 13:42	11/5/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tetrachloro-m-xylene	70	70 - 130	11/07/19 13:42	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 15:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Upstream	**Units:**	ug/Kg
Lab Code:	J1906537-002	**Basis:**	Dry

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method: 8082A
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
PCB 1	ND	U	5.7	2.5	1	11/07/19 17:07	11/5/19	
PCB 101	ND	Ui	0.57	0.57	1	11/07/19 17:07	11/5/19	
PCB 105	ND	U	0.57	0.14	1	11/07/19 17:07	11/5/19	
PCB 110	**0.37**	**JP**	0.57	0.19	1	11/07/19 17:07	11/5/19	
PCB 114	ND	U	0.57	0.14	1	11/07/19 17:07	11/5/19	
PCB 118	ND	U	0.57	0.11	1	11/07/19 17:07	11/5/19	
PCB 119	ND	U	0.57	0.19	1	11/07/19 17:07	11/5/19	
PCB 123	ND	Ui	0.64	0.64	1	11/07/19 17:07	11/5/19	
PCB 126	**0.42**	**J**	0.57	0.20	1	11/07/19 17:07	11/5/19	
PCB 128	ND	Ui	0.57	0.34	1	11/07/19 17:07	11/5/19	
PCB 138	**0.82**	**P**	0.57	0.21	1	11/07/19 17:07	11/5/19	
PCB 132	ND	Ui	0.57	0.27	1	11/07/19 17:07	11/5/19	
PCB 141	**0.17**	**J**	0.57	0.11	1	11/07/19 17:07	11/5/19	
PCB 149	**0.71**		0.57	0.17	1	11/08/19 16:38	11/5/19	
PCB 151	**0.21**	**J**	0.57	0.14	1	11/07/19 17:07	11/5/19	
PCB 153	**0.95**	**P**	0.57	0.15	1	11/07/19 17:07	11/5/19	
PCB 156	ND	U	0.57	0.14	1	11/07/19 17:07	11/5/19	
PCB 157	ND	U	0.57	0.15	1	11/07/19 17:07	11/5/19	
PCB 158	**0.097**	**JP**	0.57	0.084	1	11/07/19 17:07	11/5/19	
PCB 166	ND	U	0.57	0.17	1	11/07/19 17:07	11/5/19	
PCB 167	**0.37**	**J**	0.57	0.19	1	11/07/19 17:07	11/5/19	
PCB 168	ND	U	0.57	0.17	1	11/07/19 17:07	11/5/19	*
PCB 169	ND	U	0.57	0.23	1	11/07/19 17:07	11/5/19	
PCB 170	ND	Ui	0.57	0.44	1	11/07/19 17:07	11/5/19	
PCB 174	ND	Ui	0.64	0.64	1	11/07/19 17:07	11/5/19	*
PCB 177	ND	U	0.57	0.19	1	11/07/19 17:07	11/5/19	
PCB 18	ND	U	0.57	0.26	1	11/07/19 17:07	11/5/19	
PCB 180	**0.74**		0.57	0.13	1	11/07/19 17:07	11/5/19	
PCB 183	ND	U	0.57	0.17	1	11/07/19 17:07	11/5/19	
PCB 184	ND	U	0.57	0.18	1	11/07/19 17:07	11/5/19	
PCB 187	**0.47**	**J**	0.57	0.19	1	11/07/19 17:07	11/5/19	
PCB 189	ND	U	0.57	0.11	1	11/07/19 17:07	11/5/19	
PCB 194	ND	U	0.57	0.21	1	11/07/19 17:07	11/5/19	
PCB 195	ND	U	0.57	0.13	1	11/07/19 17:07	11/5/19	
PCB 201	ND	U	0.57	0.19	1	11/07/19 17:07	11/5/19	
PCB 203	ND	U	0.57	0.15	1	11/07/19 17:07	11/5/19	
PCB 206	ND	U	0.57	0.17	1	11/07/19 17:07	11/5/19	
Decachlorobiphenyl	ND	U	0.57	0.26	1	11/07/19 17:07	11/5/19	
PCB 28	ND	Ui	0.57	0.40	1	11/07/19 17:07	11/5/19	
PCB 31	ND	Ui	0.86	0.86	1	11/07/19 17:07	11/5/19	
PCB 33	ND	U	0.57	0.30	1	11/07/19 17:07	11/5/19	
PCB 37	ND	Ui	0.57	0.44	1	11/07/19 17:07	11/5/19	
PCB 44	ND	U	0.57	0.20	1	11/07/19 17:07	11/5/19	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 15:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Upstream	**Units:**	ug/Kg
Lab Code:	J1906537-002	**Basis:**	Dry

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method: 8082A
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
PCB 49	**0.16**	**J**	0.57	0.15	1	11/07/19 17:07	11/5/19	
PCB 5	**0.96**		0.57	0.11	1	11/07/19 17:07	11/5/19	
PCB 52	ND	U	0.57	0.23	1	11/07/19 17:07	11/5/19	
PCB 56	ND	U	0.57	0.14	1	11/07/19 17:07	11/5/19	
PCB 60	**3.7**	**P**	0.57	0.15	1	11/07/19 17:07	11/5/19	
PCB 66	ND	U	0.57	0.22	1	11/07/19 17:07	11/5/19	
PCB 70	ND	U	0.57	0.17	1	11/07/19 17:07	11/5/19	
PCB 74	ND	Ui	0.57	0.43	1	11/07/19 17:07	11/5/19	
PCB 77	ND	U	0.57	0.23	1	11/07/19 17:07	11/5/19	*
PCB 8	ND	Ui	1.4	1.4	1	11/07/19 17:07	11/5/19	
PCB 81	ND	Ui	0.70	0.70	1	11/07/19 17:07	11/5/19	*
PCB 87	ND	Ui	1.1	1.1	1	11/07/19 17:07	11/5/19	
PCB 90	ND	U	0.57	0.21	1	11/07/19 17:07	11/5/19	
PCB 95	**0.41**	**J**	0.57	0.18	1	11/08/19 16:38	11/5/19	
PCB 97	ND	U	0.57	0.11	1	11/07/19 17:07	11/5/19	
PCB 99	ND	U	0.57	0.33	1	11/07/19 17:07	11/5/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tetrachloro-m-xylene	71	70 - 130	11/07/19 17:07	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 10:24
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Downstream	**Units:**	ug/Kg
Lab Code:	J1906537-003	**Basis:**	Dry

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method: 8082A
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
PCB 1	ND	U	7.8	3.3	1	11/07/19 17:41	11/5/19	
PCB 101	ND	Ui	3.4	3.4	1	11/07/19 17:41	11/5/19	
PCB 105	ND	U	0.78	0.19	1	11/07/19 17:41	11/5/19	
PCB 110	**1.3**	**P**	0.78	0.25	1	11/07/19 17:41	11/5/19	
PCB 114	ND	U	0.78	0.19	1	11/07/19 17:41	11/5/19	
PCB 118	ND	Ui	0.78	0.23	1	11/07/19 17:41	11/5/19	
PCB 119	ND	Ui	5.2	5.2	1	11/07/19 17:41	11/5/19	
PCB 123	ND	Ui	0.78	0.27	1	11/07/19 17:41	11/5/19	
PCB 126	ND	U	0.78	0.27	1	11/07/19 17:41	11/5/19	
PCB 128	**0.61**	**J**	0.78	0.14	1	11/07/19 17:41	11/5/19	
PCB 138	**2.0**		0.78	0.28	1	11/07/19 17:41	11/5/19	
PCB 132	ND	U	0.78	0.19	1	11/07/19 17:41	11/5/19	
PCB 141	**0.30**	**J**	0.78	0.15	1	11/07/19 17:41	11/5/19	
PCB 149	**1.6**		0.78	0.22	1	11/08/19 17:12	11/5/19	
PCB 151	ND	Ui	0.78	0.57	1	11/07/19 17:41	11/5/19	
PCB 153	**1.8**	**P**	0.78	0.21	1	11/07/19 17:41	11/5/19	
PCB 156	ND	U	0.78	0.19	1	11/07/19 17:41	11/5/19	
PCB 157	ND	U	0.78	0.21	1	11/07/19 17:41	11/5/19	
PCB 158	ND	Ui	0.78	0.23	1	11/07/19 17:41	11/5/19	
PCB 166	ND	U	0.78	0.22	1	11/07/19 17:41	11/5/19	
PCB 167	ND	Ui	0.78	0.75	1	11/07/19 17:41	11/5/19	
PCB 168	ND	U	0.78	0.22	1	11/07/19 17:41	11/5/19	*
PCB 169	ND	U	0.78	0.32	1	11/07/19 17:41	11/5/19	
PCB 170	**0.85**		0.78	0.22	1	11/08/19 17:12	11/5/19	
PCB 174	**0.77**	**JP**	0.78	0.18	1	11/08/19 17:12	11/5/19	
PCB 177	ND	U	0.78	0.25	1	11/07/19 17:41	11/5/19	
PCB 18	ND	U	0.78	0.35	1	11/07/19 17:41	11/5/19	
PCB 180	**1.3**		0.78	0.18	1	11/07/19 17:41	11/5/19	
PCB 183	ND	U	0.78	0.22	1	11/07/19 17:41	11/5/19	
PCB 184	ND	Ui	1.5	1.5	1	11/07/19 17:41	11/5/19	
PCB 187	**0.57**	**J**	0.78	0.25	1	11/07/19 17:41	11/5/19	
PCB 189	ND	U	0.78	0.15	1	11/07/19 17:41	11/5/19	
PCB 194	ND	U	0.78	0.28	1	11/07/19 17:41	11/5/19	
PCB 195	ND	U	0.78	0.18	1	11/07/19 17:41	11/5/19	
PCB 201	ND	U	0.78	0.25	1	11/07/19 17:41	11/5/19	
PCB 203	**0.29**	**JP**	0.78	0.21	1	11/07/19 17:41	11/5/19	
PCB 206	ND	U	0.78	0.22	1	11/07/19 17:41	11/5/19	
Decachlorobiphenyl	ND	U	0.78	0.35	1	11/07/19 17:41	11/5/19	
PCB 28	ND	U	0.78	0.35	1	11/07/19 17:41	11/5/19	
PCB 31	ND	U	0.78	0.16	1	11/07/19 17:41	11/5/19	
PCB 33	ND	U	0.78	0.41	1	11/07/19 17:41	11/5/19	
PCB 37	**1.9**		0.78	0.27	1	11/07/19 17:41	11/5/19	
PCB 44	**0.66**	**J**	0.78	0.27	1	11/07/19 17:41	11/5/19	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 10:24
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Downstream	**Units:**	ug/Kg
Lab Code:	J1906537-003	**Basis:**	Dry

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method: 8082A
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
PCB 49	**0.78**		0.78	0.21	1	11/07/19 17:41	11/5/19	
PCB 5	**4.2**		0.78	0.15	1	11/07/19 17:41	11/5/19	
PCB 52	**0.90**		0.78	0.32	1	11/07/19 17:41	11/5/19	
PCB 56	ND	U	0.78	0.19	1	11/07/19 17:41	11/5/19	
PCB 60	**18**		0.78	0.21	1	11/07/19 17:41	11/5/19	
PCB 66	ND	Ui	1.6	1.6	1	11/07/19 17:41	11/5/19	
PCB 70	**1.1**	**P**	0.78	0.22	1	11/07/19 17:41	11/5/19	
PCB 74	ND	Ui	0.78	0.42	1	11/07/19 17:41	11/5/19	
PCB 77	ND	Ui	0.78	0.47	1	11/07/19 17:41	11/5/19	*
PCB 8	ND	U	0.78	0.46	1	11/07/19 17:41	11/5/19	
PCB 81	ND	Ui	2.4	2.4	1	11/07/19 17:41	11/5/19	*
PCB 87	ND	Ui	2.3	2.3	1	11/07/19 17:41	11/5/19	
PCB 90	ND	Ui	3.3	3.3	1	11/07/19 17:41	11/5/19	
PCB 95	**1.5**		0.78	0.24	1	11/08/19 17:12	11/5/19	
PCB 97	ND	U	0.78	0.15	1	11/07/19 17:41	11/5/19	
PCB 99	ND	U	0.78	0.44	1	11/07/19 17:41	11/5/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tetrachloro-m-xylene	70	70 - 130	11/07/19 17:41	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/23/19 16:10
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone C	**Units:**	ug/Kg
Lab Code:	J1906537-004	**Basis:**	Dry

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method: 8082A
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
PCB 1	ND	U	9.3	3.9	1	11/07/19 18:16	11/5/19	
PCB 101	ND	Ui	5.2	5.2	1	11/07/19 18:16	11/5/19	
PCB 105	ND	U	0.93	0.23	1	11/07/19 18:16	11/5/19	
PCB 110	**3.1**		0.93	0.30	1	11/07/19 18:16	11/5/19	
PCB 114	ND	U	0.93	0.23	1	11/07/19 18:16	11/5/19	
PCB 118	**1.9**		0.93	0.18	1	11/07/19 18:16	11/5/19	
PCB 119	ND	U	0.93	0.30	1	11/07/19 18:16	11/5/19	
PCB 123	ND	U	0.93	0.23	1	11/07/19 18:16	11/5/19	
PCB 126	ND	U	0.93	0.32	1	11/07/19 18:16	11/5/19	
PCB 128	**0.86**	**J**	0.93	0.17	1	11/07/19 18:16	11/5/19	
PCB 138	**3.9**		0.93	0.34	1	11/07/19 18:16	11/5/19	
PCB 132	ND	U	0.93	0.23	1	11/07/19 18:16	11/5/19	
PCB 141	**0.50**	**J**	0.93	0.18	1	11/07/19 18:16	11/5/19	
PCB 149	**5.0**		0.93	0.26	1	11/08/19 17:47	11/5/19	
PCB 151	**1.0**		0.93	0.23	1	11/07/19 18:16	11/5/19	
PCB 153	**5.6**	**P**	0.93	0.25	1	11/07/19 18:16	11/5/19	
PCB 156	**0.31**	**J**	0.93	0.23	1	11/07/19 18:16	11/5/19	
PCB 157	ND	U	0.93	0.25	1	11/07/19 18:16	11/5/19	
PCB 158	ND	Ui	0.93	0.49	1	11/07/19 18:16	11/5/19	
PCB 166	**0.31**	**JP**	0.93	0.26	1	11/07/19 18:16	11/5/19	
PCB 167	ND	Ui	1.4	1.4	1	11/07/19 18:16	11/5/19	
PCB 168	ND	Ui	0.93	0.83	1	11/07/19 18:16	11/5/19	*
PCB 169	ND	U	0.93	0.38	1	11/07/19 18:16	11/5/19	
PCB 170	**2.1**		0.93	0.26	1	11/08/19 17:47	11/5/19	
PCB 174	**1.9**		0.93	0.21	1	11/08/19 17:47	11/5/19	
PCB 177	**0.67**	**JP**	0.93	0.30	1	11/07/19 18:16	11/5/19	
PCB 18	**0.74**	**JP**	0.93	0.41	1	11/07/19 18:16	11/5/19	
PCB 180	**3.8**		0.93	0.21	1	11/07/19 18:16	11/5/19	
PCB 183	**0.80**	**J**	0.93	0.26	1	11/07/19 18:16	11/5/19	
PCB 184	ND	Ui	3.4	3.4	1	11/07/19 18:16	11/5/19	
PCB 187	**2.0**		0.93	0.30	1	11/07/19 18:16	11/5/19	
PCB 189	ND	U	0.93	0.18	1	11/07/19 18:16	11/5/19	
PCB 194	**0.72**	**J**	0.93	0.34	1	11/07/19 18:16	11/5/19	
PCB 195	ND	U	0.93	0.21	1	11/07/19 18:16	11/5/19	
PCB 201	ND	U	0.93	0.30	1	11/07/19 18:16	11/5/19	
PCB 203	**0.65**	**JP**	0.93	0.25	1	11/07/19 18:16	11/5/19	
PCB 206	**0.55**	**J**	0.93	0.26	1	11/07/19 18:16	11/5/19	
Decachlorobiphenyl	**0.58**	**J**	0.93	0.41	1	11/07/19 18:16	11/5/19	
PCB 28	ND	Ui	0.93	0.68	1	11/07/19 18:16	11/5/19	
PCB 31	ND	Ui	0.93	0.71	1	11/07/19 18:16	11/5/19	
PCB 33	ND	U	0.93	0.49	1	11/07/19 18:16	11/5/19	
PCB 37	ND	Ui	0.93	0.86	1	11/07/19 18:16	11/5/19	
PCB 44	**1.3**		0.93	0.32	1	11/07/19 18:16	11/5/19	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/23/19 16:10
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone C	**Units:**	ug/Kg
Lab Code:	J1906537-004	**Basis:**	Dry

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method: 8082A
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
PCB 49	**2.3**		0.93	0.25	1	11/07/19 18:16	11/5/19	
PCB 5	**15**		0.93	0.18	1	11/07/19 18:16	11/5/19	
PCB 52	**2.6**		0.93	0.38	1	11/07/19 18:16	11/5/19	
PCB 56	ND	Ui	0.93	0.50	1	11/07/19 18:16	11/5/19	
PCB 60	**5.8**	**P**	0.93	0.25	1	11/07/19 18:16	11/5/19	
PCB 66	ND	Ui	3.0	3.0	1	11/07/19 18:16	11/5/19	
PCB 70	**1.8**		0.93	0.26	1	11/07/19 18:16	11/5/19	
PCB 74	ND	U	0.93	0.34	1	11/07/19 18:16	11/5/19	
PCB 77	ND	U	0.93	0.38	1	11/07/19 18:16	11/5/19	*
PCB 8	ND	Ui	0.93	0.71	1	11/07/19 18:16	11/5/19	
PCB 81	ND	Ui	5.4	5.4	1	11/07/19 18:16	11/5/19	*
PCB 87	ND	Ui	4.5	4.5	1	11/07/19 18:16	11/5/19	
PCB 90	ND	U	0.93	0.34	1	11/07/19 18:16	11/5/19	
PCB 95	**4.3**		0.93	0.28	1	11/08/19 17:47	11/5/19	
PCB 97	ND	U	0.93	0.18	1	11/07/19 18:16	11/5/19	
PCB 99	ND	U	0.93	0.52	1	11/07/19 18:16	11/5/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tetrachloro-m-xylene	74	70 - 130	11/07/19 18:16	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/22/19 17:25
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone D	**Units:**	ug/Kg
Lab Code:	J1906537-005	**Basis:**	Dry

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method: 8082A
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
PCB 1	ND	U	5.5	2.4	1	11/07/19 18:50	11/5/19	
PCB 101	ND	U	0.55	0.29	1	11/07/19 18:50	11/5/19	
PCB 105	ND	U	0.55	0.14	1	11/07/19 18:50	11/5/19	
PCB 110	**0.26**	**J**	0.55	0.18	1	11/07/19 18:50	11/5/19	
PCB 114	ND	U	0.55	0.14	1	11/07/19 18:50	11/5/19	
PCB 118	**0.24**	**J**	0.55	0.11	1	11/07/19 18:50	11/5/19	
PCB 119	ND	Ui	0.86	0.86	1	11/07/19 18:50	11/5/19	
PCB 123	ND	U	0.55	0.14	1	11/07/19 18:50	11/5/19	
PCB 126	ND	U	0.55	0.19	1	11/07/19 18:50	11/5/19	
PCB 128	**0.14**	**J**	0.55	0.099	1	11/07/19 18:50	11/5/19	
PCB 138	**0.31**	**JP**	0.55	0.20	1	11/07/19 18:50	11/5/19	
PCB 132	ND	U	0.55	0.14	1	11/07/19 18:50	11/5/19	
PCB 141	ND	U	0.55	0.11	1	11/07/19 18:50	11/5/19	
PCB 149	**0.27**	**J**	0.55	0.16	1	11/08/19 18:21	11/5/19	
PCB 151	ND	U	0.55	0.14	1	11/07/19 18:50	11/5/19	
PCB 153	**0.46**	**J**	0.55	0.15	1	11/07/19 18:50	11/5/19	
PCB 156	ND	U	0.55	0.14	1	11/07/19 18:50	11/5/19	
PCB 157	ND	U	0.55	0.15	1	11/07/19 18:50	11/5/19	
PCB 158	ND	U	0.55	0.081	1	11/07/19 18:50	11/5/19	
PCB 166	ND	U	0.55	0.16	1	11/07/19 18:50	11/5/19	
PCB 167	**0.18**	**JP**	0.55	0.18	1	11/07/19 18:50	11/5/19	
PCB 168	ND	U	0.55	0.16	1	11/07/19 18:50	11/5/19	*
PCB 169	ND	U	0.55	0.22	1	11/07/19 18:50	11/5/19	
PCB 170	**0.18**	**JP**	0.55	0.16	1	11/07/19 18:50	11/5/19	
PCB 174	ND	U	0.55	0.13	1	11/08/19 18:21	11/5/19	
PCB 177	ND	U	0.55	0.18	1	11/07/19 18:50	11/5/19	
PCB 18	ND	U	0.55	0.25	1	11/07/19 18:50	11/5/19	
PCB 180	ND	U	0.55	0.13	1	11/07/19 18:50	11/5/19	
PCB 183	ND	U	0.55	0.16	1	11/07/19 18:50	11/5/19	
PCB 184	ND	Ui	0.55	0.27	1	11/07/19 18:50	11/5/19	
PCB 187	ND	U	0.55	0.18	1	11/07/19 18:50	11/5/19	
PCB 189	ND	U	0.55	0.11	1	11/07/19 18:50	11/5/19	
PCB 194	ND	U	0.55	0.20	1	11/07/19 18:50	11/5/19	
PCB 195	ND	U	0.55	0.13	1	11/07/19 18:50	11/5/19	
PCB 201	ND	U	0.55	0.18	1	11/07/19 18:50	11/5/19	
PCB 203	ND	U	0.55	0.15	1	11/07/19 18:50	11/5/19	
PCB 206	ND	U	0.55	0.16	1	11/07/19 18:50	11/5/19	
Decachlorobiphenyl	ND	U	0.55	0.25	1	11/07/19 18:50	11/5/19	
PCB 28	ND	U	0.55	0.25	1	11/07/19 18:50	11/5/19	
PCB 31	ND	Ui	0.55	0.52	1	11/07/19 18:50	11/5/19	
PCB 33	ND	U	0.55	0.29	1	11/07/19 18:50	11/5/19	
PCB 37	ND	Ui	0.55	0.32	1	11/07/19 18:50	11/5/19	
PCB 44	**0.19**	**JP**	0.55	0.19	1	11/07/19 18:50	11/5/19	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/22/19 17:25
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone D	**Units:**	ug/Kg
Lab Code:	J1906537-005	**Basis:**	Dry

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method: 8082A
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
PCB 49	ND	U	0.55	0.15	1	11/07/19 18:50	11/5/19	
PCB 5	**0.58**		0.55	0.11	1	11/07/19 18:50	11/5/19	
PCB 52	ND	U	0.55	0.22	1	11/07/19 18:50	11/5/19	
PCB 56	ND	U	0.55	0.14	1	11/07/19 18:50	11/5/19	
PCB 60	**2.8**		0.55	0.15	1	11/07/19 18:50	11/5/19	
PCB 66	ND	U	0.55	0.21	1	11/07/19 18:50	11/5/19	
PCB 70	ND	U	0.55	0.16	1	11/07/19 18:50	11/5/19	
PCB 74	ND	U	0.55	0.20	1	11/07/19 18:50	11/5/19	
PCB 77	ND	U	0.55	0.22	1	11/07/19 18:50	11/5/19	*
PCB 8	ND	U	0.55	0.32	1	11/07/19 18:50	11/5/19	
PCB 81	ND	Ui	0.58	0.58	1	11/07/19 18:50	11/5/19	*
PCB 87	ND	U	0.55	0.13	1	11/07/19 18:50	11/5/19	
PCB 90	ND	U	0.55	0.20	1	11/07/19 18:50	11/5/19	
PCB 95	ND	U	0.55	0.17	1	11/08/19 18:21	11/5/19	
PCB 97	ND	U	0.55	0.11	1	11/07/19 18:50	11/5/19	
PCB 99	ND	U	0.55	0.31	1	11/07/19 18:50	11/5/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tetrachloro-m-xylene	75	70 - 130	11/07/19 18:50	

QC Summary Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Congener Specific PCBs

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Water and Air Research **Service Request:** J1906537
Project: USACE Big Fishweir Creek
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method: 8082A
Extraction Method: EPA 3546

Sample Name	Lab Code	Tetrachloro-m-xylene 70-130
VB-BFWC19-Zone A	J1906537-001	70
VB-BFWC19-Zone B Upstream	J1906537-002	71
VB-BFWC19-Zone B Downstream	J1906537-003	70
VB-BFWC19-Zone C	J1906537-004	74
VB-BFWC19-Zone D	J1906537-005	75
Method Blank	KQ1916140-07	84
Lab Control Sample	KQ1916140-05	77
Lab Control Sample	KQ1916140-06	75
VB-BFWC19-Zone A	KQ1916140-01	76
VB-BFWC19-Zone A	KQ1916140-02	77
VB-BFWC19-Zone A	KQ1916140-03	71
VB-BFWC19-Zone A	KQ1916140-04	71

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QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/25/19
Sample Matrix:	Sediment	**Date Received:**	10/30/19
		Date Analyzed:	11/7/19
		Date Extracted:	11/5/19

Duplicate Matrix Spike Summary
Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Sample Name:	VB-BFWC19-Zone A	**Units:**	ug/Kg
Lab Code:	J1906537-001	**Basis:**	Dry
Analysis Method:	8082A		
Prep Method:	EPA 3546		

		Matrix Spike KQ1916140-01			**Duplicate Matrix Spike** KQ1916140-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
PCB 101	ND Ui	20.6	19.0	109	19.4	19.1	101	70-130	6	40
PCB 110	1.0	17.7	19.0	88	16.1	19.1	79	70-130	9	40
PCB 114	ND U	16.8	19.0	88	15.4	19.1	81	52-111	8	40
PCB 123	ND U	17.6	19.0	93	16.3	19.1	85	56-119	7	40
PCB 138	2.2	20.0	19.0	94	18.3	19.1	85	53-113	9	40
PCB 132	ND Ui	19.5	19.0	103	17.7	19.1	93	70-130	9	40
PCB 141	0.36 J	16.9	19.0	87	14.8	19.1	76	70-130	13	40
PCB 151	0.45 J	17.0	19.0	87	15.7	19.1	80	70-130	8	40
PCB 156	ND U	16.8	19.0	88	15.4	19.1	81	48-124	8	40
PCB 167	0.74	17.1	19.0	86	15.8	19.1	79	52-124	8	40
PCB 177	0.21 J	17.3	19.0	90	15.8	19.1	81	70-130	9	40
PCB 18	ND U	15.4	19.0	81	13.3	19.1	70	47-116	15	40
PCB 180	1.5	20.2	19.0	99	18.7	19.1	90	49-130	8	40
PCB 183	0.24 J	18.5	19.0	96	16.9	19.1	87	52-113	9	40
PCB 184	ND Ui	21.2	19.0	112	19.5	19.1	102	54-122	9	40
PCB 187	0.54 J	18.7	19.0	96	16.2	19.1	82	49-140	15	40
PCB 189	ND U	16.4	19.0	86	15.4	19.1	81	43-128	6	40
PCB 194	ND U	18.8	19.0	99	17.1	19.1	89	70-130	10	40
PCB 195	ND U	18.8	19.0	99	17.2	19.1	90	41-130	9	40
PCB 201	ND U	17.0	19.0	90	15.7	19.1	82	70-130	8	40
PCB 203	0.28 J	16.9	19.0	88	15.4	19.1	79	70-130	9	40
PCB 206	ND U	16.3	19.0	86	14.8	19.1	78	46-115	10	40
Decachlorobiphenyl	ND U	18.2	19.0	96	16.8	19.1	88	49-136	8	40
PCB 28	ND U	16.6	19.0	88	15.5	19.1	81	59-128	7	40
PCB 33	0.39 J	15.7	19.0	81	14.9	19.1	76	70-130	5	40
PCB 44	0.26 J	17.2	19.0	89	15.5	19.1	80	53-121	10	40
PCB 52	0.65	16.2	19.0	82	14.9	19.1	75	50-115	8	40
PCB 56	ND U	17.0 P	19.0	90	15.3 P	19.1	80	70-130	10	40
PCB 66	ND Ui	16.4	19.0	86	14.7	19.1	77	58-130	11	40
PCB 70	ND Ui	17.7	19.0	93	15.9	19.1	83	70-130	11	40
PCB 74	ND Ui	15.6	19.0	82	13.9	19.1	73	70-130	11	40
PCB 8	ND U	14.4	19.0	76	14.4	19.1	75	54-135	<1	40
PCB 87	ND Ui	18.5	19.0	97	16.9	19.1	88	53-118	9	40
PCB 97	ND U	15.5	19.0	82	12.3	19.1	64 *	70-130	23	40
PCB 99	ND U	11.4 P	19.0	60 *	8.15 P	19.1	43 *	70-130	34	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/25/19
Sample Matrix:	Sediment	**Date Received:**	10/30/19
		Date Analyzed:	11/07/19 - 11/08/19
		Date Extracted:	11/5/19

Duplicate Matrix Spike Summary
Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Sample Name:	VB-BFWC19-Zone A	**Units:**	ug/Kg
Lab Code:	J1906537-001	**Basis:**	Dry
Analysis Method:	8082A		
Prep Method:	EPA 3546		

		Matrix Spike KQ1916140-03			**Duplicate Matrix Spike** KQ1916140-04					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
PCB 1	ND U	137	181	76	127	172	74	70-130	8	40
PCB 105	ND U	17.8	18.1	98	17.2	17.2	100	49-116	3	40
PCB 118	0.62	17.6	18.1	93	16.6	17.2	93	45-117	6	40
PCB 119	ND U	17.8	18.1	98	17.5	17.2	102	70-130	2	40
PCB 126	ND U	16.7	18.1	92	16.5	17.2	96	49-129	1	40
PCB 128	ND Ui	17.5	18.1	97	17.4	17.2	102	41-117	<1	40
PCB 149	1.4	17.9	18.1	91	17.2	17.2	92	70-130	4	40
PCB 153	1.9	19.0	18.1	94	18.0	17.2	94	41-115	5	40
PCB 157	ND U	17.9	18.1	99	16.4	17.2	95	48-117	9	40
PCB 158	ND Ui	18.8	18.1	104	17.8	17.2	104	48-122	5	40
PCB 166	ND U	19.6	18.1	108	18.5	17.2	108	70-130	6	40
PCB 168	ND Ui	20.2	18.1	112	19.0	17.2	111	70-130	6	40
PCB 169	ND U	18.5	18.1	102	17.6	17.2	103	41-120	5	40
PCB 170	0.86	18.0	18.1	95	17.3	17.2	96	40-122	4	40
PCB 174	ND Ui	18.2	18.1	100	17.0	17.2	99	70-130	7	40
PCB 31	ND Ui	16.5	18.1	91	17.0 P	17.2	99	70-130	3	40
PCB 37	1.2	19.8	18.1	102	18.7	17.2	102	70-130	6	40
PCB 49	0.50 J	16.9	18.1	91	16.8	17.2	95	70-130	1	40
PCB 5	2.5	16.1	18.1	74	15.4	17.2	75	70-130	4	40
PCB 60	16	26.1	18.1	54	29.1 P	17.2	75	38-127	11	40
PCB 77	ND U	19.5	18.1	108	18.8	17.2	110	42-111	3	40
PCB 81	ND Ui	20.0	18.1	110	19.3	17.2	113	34-136	4	40
PCB 90	ND U	18.2	18.1	100	17.8	17.2	104	24-147	2	40
PCB 95	1.0	18.8	18.1	98	15.1	17.2	82	70-130	22	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KQ1916140-07	**Basis:**	Dry

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method: 8082A
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
PCB 1	**3.4**	**J**	5.0	2.1	1	11/07/19 11:59	11/5/19	
PCB 101	ND	U	0.50	0.26	1	11/07/19 11:59	11/5/19	
PCB 105	ND	U	0.50	0.12	1	11/07/19 11:59	11/5/19	
PCB 110	ND	U	0.50	0.16	1	11/07/19 11:59	11/5/19	
PCB 114	ND	U	0.50	0.12	1	11/07/19 11:59	11/5/19	
PCB 118	ND	U	0.50	0.095	1	11/07/19 11:59	11/5/19	
PCB 119	ND	U	0.50	0.16	1	11/07/19 11:59	11/5/19	
PCB 123	ND	U	0.50	0.12	1	11/07/19 11:59	11/5/19	
PCB 126	ND	U	0.50	0.17	1	11/07/19 11:59	11/5/19	
PCB 128	ND	U	0.50	0.090	1	11/07/19 11:59	11/5/19	
PCB 138	ND	U	0.50	0.18	1	11/07/19 11:59	11/5/19	
PCB 132	ND	U	0.50	0.12	1	11/07/19 11:59	11/5/19	
PCB 141	ND	U	0.36	0.096	1	11/07/19 11:59	11/5/19	
PCB 149	ND	U	0.50	0.14	1	11/07/19 11:59	11/5/19	
PCB 151	ND	U	0.36	0.12	1	11/07/19 11:59	11/5/19	
PCB 153	ND	U	0.36	0.13	1	11/07/19 11:59	11/5/19	
PCB 156	ND	U	0.50	0.12	1	11/07/19 11:59	11/5/19	
PCB 157	ND	U	0.50	0.13	1	11/07/19 11:59	11/5/19	
PCB 158	ND	U	0.50	0.073	1	11/07/19 11:59	11/5/19	
PCB 166	ND	U	0.50	0.14	1	11/07/19 11:59	11/5/19	
PCB 167	ND	U	0.50	0.16	1	11/07/19 11:59	11/5/19	
PCB 168	ND	U	0.50	0.14	1	11/07/19 11:59	11/5/19	
PCB 169	ND	U	0.36	0.20	1	11/07/19 11:59	11/5/19	
PCB 170	ND	U	0.50	0.14	1	11/07/19 11:59	11/5/19	
PCB 174	ND	U	0.50	0.11	1	11/07/19 11:59	11/5/19	
PCB 177	ND	U	0.50	0.16	1	11/07/19 11:59	11/5/19	
PCB 18	ND	U	0.50	0.22	1	11/07/19 11:59	11/5/19	
PCB 180	ND	U	0.50	0.11	1	11/07/19 11:59	11/5/19	
PCB 183	ND	U	0.50	0.14	1	11/07/19 11:59	11/5/19	
PCB 184	ND	U	0.50	0.15	1	11/07/19 11:59	11/5/19	
PCB 187	ND	U	0.50	0.16	1	11/07/19 11:59	11/5/19	
PCB 189	ND	U	0.50	0.095	1	11/07/19 11:59	11/5/19	
PCB 194	ND	U	0.50	0.18	1	11/07/19 11:59	11/5/19	
PCB 195	ND	U	0.50	0.11	1	11/07/19 11:59	11/5/19	
PCB 201	ND	U	0.50	0.16	1	11/07/19 11:59	11/5/19	
PCB 203	ND	U	0.50	0.13	1	11/07/19 11:59	11/5/19	
PCB 206	ND	U	0.50	0.14	1	11/07/19 11:59	11/5/19	
Decachlorobiphenyl	ND	U	0.50	0.22	1	11/07/19 11:59	11/5/19	
PCB 28	ND	U	0.50	0.22	1	11/07/19 11:59	11/5/19	
PCB 31	ND	U	0.50	0.098	1	11/07/19 11:59	11/5/19	
PCB 33	ND	U	0.50	0.26	1	11/07/19 11:59	11/5/19	
PCB 37	ND	U	0.50	0.17	1	11/07/19 11:59	11/5/19	
PCB 44	ND	U	0.50	0.17	1	11/07/19 11:59	11/5/19	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KQ1916140-07	**Basis:**	Dry

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method: 8082A
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
PCB 49	ND	U	0.50	0.13	1	11/07/19 11:59	11/5/19	
PCB 5	ND	U	0.50	0.092	1	11/07/19 11:59	11/5/19	
PCB 52	ND	U	0.36	0.20	1	11/07/19 11:59	11/5/19	
PCB 56	ND	U	0.50	0.12	1	11/07/19 11:59	11/5/19	
PCB 60	ND	U	0.50	0.13	1	11/07/19 11:59	11/5/19	
PCB 66	ND	U	0.50	0.19	1	11/07/19 11:59	11/5/19	
PCB 70	ND	U	0.50	0.14	1	11/07/19 11:59	11/5/19	
PCB 74	ND	U	0.50	0.18	1	11/07/19 11:59	11/5/19	
PCB 77	ND	U	0.50	0.20	1	11/07/19 11:59	11/5/19	
PCB 8	ND	U	0.50	0.29	1	11/07/19 11:59	11/5/19	
PCB 81	ND	U	0.50	0.18	1	11/07/19 11:59	11/5/19	
PCB 87	ND	U	0.50	0.11	1	11/07/19 11:59	11/5/19	
PCB 90	ND	U	0.50	0.18	1	11/07/19 11:59	11/5/19	
PCB 95	ND	U	0.50	0.15	1	11/07/19 11:59	11/5/19	
PCB 97	ND	U	0.36	0.093	1	11/07/19 11:59	11/5/19	
PCB 99	ND	U	0.50	0.28	1	11/07/19 11:59	11/5/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tetrachloro-m-xylene	84	70 - 130	11/07/19 11:59	

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QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Analyzed:**	11/07/19
Sample Matrix:	Sediment	**Date Extracted:**	11/05/19

Lab Control Sample Summary
Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method:	8082A	**Units:**	ug/Kg
Prep Method:	EPA 3546	**Basis:**	Dry
		Analysis Lot:	658823

Lab Control Sample
KQ1916140-05

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Decachlorobiphenyl	11.2	12.5	90	49-136
PCB 101	11.4	12.5	91	70-130
PCB 110	10.6	12.5	85	70-130
PCB 114	10.4	12.5	83	52-111
PCB 123	10.8	12.5	86	56-119
PCB 132	11.7	12.5	94	70-130
PCB 138	11.3	12.5	91	53-113
PCB 141	10.8	12.5	86	70-130
PCB 151	10.6	12.5	84	70-130
PCB 156	10.3	12.5	82	48-124
PCB 167	10.3	12.5	82	52-124
PCB 177	10.9	12.5	87	70-130
PCB 18	9.28	12.5	74	47-116
PCB 180	11.8	12.5	94	49-130
PCB 183	11.6	12.5	93	52-113
PCB 184	12.5	12.5	100	54-122
PCB 187	11.2	12.5	89	49-140
PCB 189	10.5	12.5	84	43-128
PCB 194	11.3	12.5	90	70-130
PCB 195	11.6	12.5	93	41-130
PCB 201	10.8	12.5	86	70-130
PCB 203	10.7	12.5	86	70-130
PCB 206	9.96	12.5	80	46-115
PCB 28	10.2	12.5	81	59-128
PCB 33	9.71	12.5	78	70-130
PCB 44	10.5	12.5	84	53-121
PCB 52	9.77	12.5	78	50-115
PCB 56	10.7	12.5	85	70-130
PCB 66	9.31	12.5	74	58-130
PCB 70	10.2	12.5	82	70-130
PCB 74	9.82	12.5	79	70-130
PCB 8	8.71	12.5	70	54-135
PCB 87	10.7	12.5	86	53-118
PCB 97	10.3	12.5	83	70-130
PCB 99	11.3	12.5	90	70-130

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QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Analyzed:**	11/07/19
Sample Matrix:	Sediment	**Date Extracted:**	11/05/19

Lab Control Sample Summary
Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method:	8082A	**Units:**	ug/Kg
Prep Method:	EPA 3546	**Basis:**	Dry
		Analysis Lot:	658823

Lab Control Sample
KQ1916140-06

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
PCB 1	85.0	125	68 *	70-130
PCB 105	11.0	12.5	88	49-116
PCB 118	10.9	12.5	87	45-117
PCB 119	11.2	12.5	90	70-130
PCB 126	10.3	12.5	83	49-129
PCB 128	11.2	12.5	90	41-117
PCB 149	11.0	12.5	88	70-130
PCB 153	11.3	12.5	90	41-115
PCB 157	11.0	12.5	88	48-117
PCB 158	12.0	12.5	96	48-122
PCB 166	12.2	12.5	98	70-130
PCB 168	12.9	12.5	103	70-130
PCB 169	11.0	12.5	88	41-120
PCB 170	11.1	12.5	89	40-122
PCB 174	11.7	12.5	94	70-130
PCB 31	10.2	12.5	82	70-130
PCB 37	10.8	12.5	87	70-130
PCB 49	10.7	12.5	86	70-130
PCB 5	10.4	12.5	83	70-130
PCB 60	11.6	12.5	93	38-127
PCB 77	11.0	12.5	88	42-111
PCB 81	11.2	12.5	90	34-136
PCB 90	11.3	12.5	91	24-147
PCB 95	11.3	12.5	90	70-130

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Confirmation Results

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/25/19 09:35
SRM Matrix:	Sediment	**Date Received:**	10/30/19
Sample Name:	VB-BFWC19-Zone A		
Lab Code:	J1906537-001		
		Units:	ug/Kg
		Basis:	Dry
		Percent Solids:	59.3

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analytical Method: 8082A
Prep Method: EPA 3546

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
PCB 149	0.17	1.4	1.7	19		1	11/08/19 14:55
PCB 170	0.17	0.86	0.88	2		1	11/08/19 14:55
PCB 95	0.19	1.0	1.2	18		1	11/08/19 14:55
PCB 110	0.20	1.0	1.4	33		1	11/07/19 13:42
PCB 118	0.12	0.62	0.82	28		1	11/07/19 13:42
PCB 138	0.22	2.2	2.3	4		1	11/07/19 13:42
PCB 141	0.12	0.36	0.72	67	JP	1	11/07/19 13:42
PCB 151	0.15	0.45	0.67	39	J	1	11/07/19 13:42
PCB 153	0.16	1.9	2.9	42	P	1	11/07/19 13:42
PCB 167	0.20	0.74	1.0	30		1	11/07/19 13:42
PCB 177	0.20	0.21	0.60	96	JP	1	11/07/19 13:42
PCB 180	0.14	1.5	1.5	<1		1	11/07/19 13:42
PCB 183	0.17	0.24	0.42	55	JP	1	11/07/19 13:42
PCB 187	0.20	0.54	0.65	18	J	1	11/07/19 13:42
PCB 203	0.16	0.28	0.42	40	J	1	11/07/19 13:42
PCB 33	0.32	0.39	0.32	20	JP	1	11/07/19 13:42
PCB 37	0.21	1.2	1.3	8		1	11/07/19 13:42
PCB 44	0.21	0.26	0.53	68	JP	1	11/07/19 13:42
PCB 49	0.16	0.50	0.82	48	JP	1	11/07/19 13:42
PCB 5	0.12	2.5	2.7	8		1	11/07/19 13:42
PCB 52	0.25	0.65	0.68	5		1	11/07/19 13:42
PCB 60	0.16	16	18	12		1	11/07/19 13:42

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Confirmation Results

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 15:35
SRM Matrix:	Sediment	**Date Received:**	10/30/19
Sample Name:	VB-BFWC19-Zone B Upstream		
Lab Code:	J1906537-002		
		Units:	ug/Kg
		Basis:	Dry
		Percent Solids:	74.5

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analytical Method: 8082A
Prep Method: EPA 3546

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
PCB 149	0.17	0.71	0.78	9		1	11/08/19 16:38
PCB 95	0.18	0.41	0.59	36	J	1	11/08/19 16:38
PCB 110	0.19	0.37	0.63	52	JP	1	11/07/19 17:07
PCB 126	0.20	0.42	0.57	30	J	1	11/07/19 17:07
PCB 138	0.21	0.82	1.3	45	P	1	11/07/19 17:07
PCB 141	0.11	0.17	0.21	21	J	1	11/07/19 17:07
PCB 151	0.14	0.21	0.27	25	J	1	11/07/19 17:07
PCB 153	0.15	0.95	1.7	57	P	1	11/07/19 17:07
PCB 158	0.084	0.097	8.8	196	JP	1	11/07/19 17:07
PCB 167	0.19	0.37	0.50	30	J	1	11/07/19 17:07
PCB 180	0.13	0.74	0.79	7		1	11/07/19 17:07
PCB 187	0.19	0.47	0.49	4	J	1	11/07/19 17:07
PCB 49	0.15	0.16	0.22	32	J	1	11/07/19 17:07
PCB 5	0.11	0.96	1.0	4		1	11/07/19 17:07
PCB 60	0.15	3.7	6.1	49	P	1	11/07/19 17:07

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Confirmation Results

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 10:24
SRM Matrix:	Sediment	**Date Received:**	10/30/19
Sample Name:	VB-BFWC19-Zone B Downstream		
Lab Code:	J1906537-003		
		Units:	ug/Kg
		Basis:	Dry
		Percent Solids:	56.5

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analytical Method: 8082A
Prep Method: EPA 3546

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
PCB 149	0.22	1.6	1.7	6		1	11/08/19 17:12
PCB 170	0.22	0.85	0.90	6		1	11/08/19 17:12
PCB 174	0.18	0.77	1.3	51	JP	1	11/08/19 17:12
PCB 95	0.24	1.5	1.7	12		1	11/08/19 17:12
PCB 110	0.25	1.3	2.2	51	P	1	11/07/19 17:41
PCB 128	0.14	0.61	0.66	8	J	1	11/07/19 17:41
PCB 138	0.28	2.0	2.4	18		1	11/07/19 17:41
PCB 141	0.15	0.30	0.33	10	J	1	11/07/19 17:41
PCB 153	0.21	1.8	2.9	47	P	1	11/07/19 17:41
PCB 180	0.18	1.3	1.8	32		1	11/07/19 17:41
PCB 187	0.25	0.57	0.75	27	J	1	11/07/19 17:41
PCB 203	0.21	0.29	0.49	51	JP	1	11/07/19 17:41
PCB 37	0.27	1.9	2.1	10		1	11/07/19 17:41
PCB 44	0.27	0.66	0.81	20	J	1	11/07/19 17:41
PCB 49	0.21	0.78	0.81	4		1	11/07/19 17:41
PCB 5	0.15	4.2	4.9	15		1	11/07/19 17:41
PCB 52	0.32	0.90	0.95	5		1	11/07/19 17:41
PCB 60	0.21	18	20	11		1	11/07/19 17:41
PCB 70	0.22	1.1	2.8	87	P	1	11/07/19 17:41

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Confirmation Results

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/23/19 16:10
SRM Matrix:	Sediment	**Date Received:**	10/30/19
Sample Name:	VB-BFWC19-Zone C		
Lab Code:	J1906537-004		
		Units:	ug/Kg
		Basis:	Dry
		Percent Solids:	45.2

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analytical Method: 8082A
Prep Method: EPA 3546

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
PCB 149	0.26	5.0	6.2	21		1	11/08/19 17:47
PCB 170	0.26	2.1	2.1	<1		1	11/08/19 17:47
PCB 174	0.21	1.9	2.4	23		1	11/08/19 17:47
PCB 95	0.28	4.3	4.7	9		1	11/08/19 17:47
Decachlorobiphenyl	0.41	0.58	0.67	14	J	1	11/07/19 18:16
PCB 110	0.30	3.1	3.7	18		1	11/07/19 18:16
PCB 118	0.18	1.9	2.2	15		1	11/07/19 18:16
PCB 128	0.17	0.86	1.2	33	J	1	11/07/19 18:16
PCB 138	0.34	3.9	4.5	14		1	11/07/19 18:16
PCB 141	0.18	0.50	0.58	15	J	1	11/07/19 18:16
PCB 151	0.23	1.0	1.0	<1		1	11/07/19 18:16
PCB 153	0.25	5.6	8.7	43	P	1	11/07/19 18:16
PCB 156	0.23	0.31	0.37	18	J	1	11/07/19 18:16
PCB 166	0.26	0.31	2.0	146	JP	1	11/07/19 18:16
PCB 177	0.30	0.67	1.1	49	JP	1	11/07/19 18:16
PCB 18	0.41	0.74	1.5	68	JP	1	11/07/19 18:16
PCB 180	0.21	3.8	4.1	8		1	11/07/19 18:16
PCB 183	0.26	0.80	0.90	12	J	1	11/07/19 18:16
PCB 187	0.30	2.0	2.2	10		1	11/07/19 18:16
PCB 194	0.34	0.72	0.73	1	J	1	11/07/19 18:16
PCB 203	0.25	0.65	1.1	51	JP	1	11/07/19 18:16
PCB 206	0.26	0.55	0.58	5	J	1	11/07/19 18:16
PCB 44	0.32	1.3	1.5	14		1	11/07/19 18:16
PCB 49	0.25	2.3	2.4	4		1	11/07/19 18:16
PCB 5	0.18	15	16	6		1	11/07/19 18:16
PCB 52	0.38	2.6	3.4	27		1	11/07/19 18:16
PCB 60	0.25	5.8	14	83	P	1	11/07/19 18:16
PCB 70	0.26	1.8	1.8	<1		1	11/07/19 18:16

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Confirmation Results

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/22/19 17:25
SRM Matrix:	Sediment	**Date Received:**	10/30/19
Sample Name:	VB-BFWC19-Zone D		
Lab Code:	J1906537-005		
		Units:	ug/Kg
		Basis:	Dry
		Percent Solids:	71.6

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analytical Method: 8082A
Prep Method: EPA 3546

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
PCB 149	0.16	0.27	0.27	<1	J	1	11/08/19 18:21
PCB 110	0.18	0.26	0.30	14	J	1	11/07/19 18:50
PCB 118	0.11	0.24	0.28	15	J	1	11/07/19 18:50
PCB 128	0.099	0.14	0.18	25	J	1	11/07/19 18:50
PCB 138	0.20	0.31	0.62	67	JP	1	11/07/19 18:50
PCB 153	0.15	0.46	0.62	30	J	1	11/07/19 18:50
PCB 167	0.18	0.18	0.18	<1	JP	1	11/07/19 18:50
PCB 170	0.16	0.18	0.16	12	JP	1	11/07/19 18:50
PCB 44	0.19	0.19	0.19	<1	JP	1	11/07/19 18:50
PCB 5	0.11	0.58	0.59	2		1	11/07/19 18:50
PCB 60	0.15	2.8	3.0	7		1	11/07/19 18:50

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Confirmation Results

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/25/19 09:35
SRM Matrix:	Sediment	**Date Received:**	10/30/19
Sample Name:	VB-BFWC19-Zone A		
Lab Code:	KQ1916140-01		
		Units:	ug/Kg
		Basis:	Dry
		Percent Solids:	59.3

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analytical Method: 8082A
Prep Method: EPA 3546

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Decachlorobiphenyl	0.34	18.2	18.4	1		1	11/07/19 14:16
PCB 101	0.40	20.6	26.5	25		1	11/07/19 14:16
PCB 110	0.25	17.7	19.1	8		1	11/07/19 14:16
PCB 114	0.19	16.8	16.9	<1		1	11/07/19 14:16
PCB 123	0.19	17.6	18.7	6		1	11/07/19 14:16
PCB 132	0.19	19.5	20.4	5		1	11/07/19 14:16
PCB 138	0.28	20.0	20.2	<1		1	11/07/19 14:16
PCB 141	0.15	16.9	19.2	13		1	11/07/19 14:16
PCB 151	0.19	17.0	17.5	3		1	11/07/19 14:16
PCB 156	0.19	16.8	18.3	9		1	11/07/19 14:16
PCB 167	0.25	17.1	17.5	2		1	11/07/19 14:16
PCB 177	0.25	17.3	18.3	6		1	11/07/19 14:16
PCB 18	0.34	15.4	16.7	8		1	11/07/19 14:16
PCB 180	0.17	20.2	20.5	1		1	11/07/19 14:16
PCB 183	0.22	18.5	18.9	2		1	11/07/19 14:16
PCB 184	0.23	21.2	21.5	1		1	11/07/19 14:16
PCB 187	0.25	18.7	19.1	2		1	11/07/19 14:16
PCB 189	0.15	16.4	17.2	5		1	11/07/19 14:16
PCB 194	0.28	18.8	19.1	2		1	11/07/19 14:16
PCB 195	0.17	18.8	19.6	4		1	11/07/19 14:16
PCB 201	0.25	17.0	17.9	5		1	11/07/19 14:16
PCB 203	0.20	16.9	17.4	3		1	11/07/19 14:16
PCB 206	0.22	16.3	16.8	3		1	11/07/19 14:16
PCB 28	0.34	16.6	19.3	15		1	11/07/19 14:16
PCB 33	0.40	15.7	17.9	13		1	11/07/19 14:16
PCB 44	0.26	17.2	17.6	2		1	11/07/19 14:16
PCB 52	0.31	16.2	16.9	4		1	11/07/19 14:16
PCB 56	0.19	17.0	29.4	53	P	1	11/07/19 14:16

PCB 66	0.29	16.4	16.6	1		1	11/07/19 14:16
PCB 70	0.22	17.7	17.9	1		1	11/07/19 14:16
PCB 74	0.28	15.6	17.2	10		1	11/07/19 14:16
PCB 8	0.45	14.4	16.5	14		1	11/07/19 14:16
PCB 87	0.17	18.5	21.2	14		1	11/07/19 14:16
PCB 97	0.15	15.5	17.3	11		1	11/07/19 14:16
PCB 99	0.43	11.4	18.8	49	P	1	11/07/19 14:16

ALS Group USA, Corp.
dba ALS Environmental

Confirmation Results

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/25/19 09:35
SRM Matrix:	Sediment	**Date Received:**	10/30/19
Sample Name:	VB-BFWC19-Zone A		
Lab Code:	KQ1916140-02		
		Units:	ug/Kg
		Basis:	Dry
		Percent Solids:	59.3

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analytical Method: 8082A
Prep Method: EPA 3546

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Decachlorobiphenyl	0.34	16.8	18.8	11		1	11/07/19 16:33
PCB 101	0.40	19.4	25.1	26		1	11/07/19 16:33
PCB 110	0.25	16.1	17.5	8		1	11/07/19 16:33
PCB 114	0.19	15.4	15.6	1		1	11/07/19 16:33
PCB 123	0.19	16.3	17.2	5		1	11/07/19 16:33
PCB 132	0.19	17.7	19.0	7		1	11/07/19 16:33
PCB 138	0.28	18.3	18.7	2		1	11/07/19 16:33
PCB 141	0.15	14.8	17.5	17		1	11/07/19 16:33
PCB 151	0.19	15.7	16.2	3		1	11/07/19 16:33
PCB 156	0.19	15.4	16.7	8		1	11/07/19 16:33
PCB 167	0.25	15.8	16.4	4		1	11/07/19 16:33
PCB 177	0.25	15.8	16.5	4		1	11/07/19 16:33
PCB 18	0.34	13.3	14.0	5		1	11/07/19 16:33
PCB 180	0.17	18.7	18.9	1		1	11/07/19 16:33
PCB 183	0.22	16.9	17.4	3		1	11/07/19 16:33
PCB 184	0.23	19.5	20.1	3		1	11/07/19 16:33
PCB 187	0.25	16.2	17.3	7		1	11/07/19 16:33
PCB 189	0.15	15.4	15.8	3		1	11/07/19 16:33
PCB 194	0.28	17.1	17.4	2		1	11/07/19 16:33
PCB 195	0.17	17.2	17.7	3		1	11/07/19 16:33
PCB 201	0.25	15.7	16.2	3		1	11/07/19 16:33
PCB 203	0.20	15.4	15.9	3		1	11/07/19 16:33
PCB 206	0.22	14.8	15.6	5		1	11/07/19 16:33
PCB 28	0.34	15.5	17.6	13		1	11/07/19 16:33
PCB 33	0.40	14.9	17.0	13		1	11/07/19 16:33
PCB 44	0.26	15.5	15.8	2		1	11/07/19 16:33
PCB 52	0.31	14.9	15.7	5		1	11/07/19 16:33
PCB 56	0.19	15.3	29.5	63	P	1	11/07/19 16:33

Confirmation Results

PCB 66	0.30	14.7	14.8	<1		1	11/07/19 16:33
PCB 70	0.22	15.9	16.4	3		1	11/07/19 16:33
PCB 74	0.28	13.9	15.7	12		1	11/07/19 16:33
PCB 8	0.45	14.4	16.1	11		1	11/07/19 16:33
PCB 87	0.17	16.9	19.4	14		1	11/07/19 16:33
PCB 97	0.15	12.3	17.2	33		1	11/07/19 16:33
PCB 99	0.43	8.15	16.6	68	P	1	11/07/19 16:33

ALS Group USA, Corp.
dba ALS Environmental

Confirmation Results

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/25/19 09:35
SRM Matrix:	Sediment	**Date Received:**	10/30/19
Sample Name:	VB-BFWC19-Zone A		
Lab Code:	KQ1916140-03		
		Units:	ug/Kg
		Basis:	Dry
		Percent Solids:	59.3

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analytical Method: 8082A
Prep Method: EPA 3546

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
PCB 149	0.21	17.9	19.0	6		1	11/08/19 15:30
PCB 170	0.21	18.0	19.1	6		1	11/08/19 15:30
PCB 95	0.22	18.8	19.5	4		1	11/08/19 15:30
PCB 1	3.1	137	139	1		1	11/07/19 15:24
PCB 105	0.18	17.8	17.8	<1		1	11/07/19 15:24
PCB 118	0.14	17.6	18.1	3		1	11/07/19 15:24
PCB 119	0.24	17.8	19.8	11		1	11/07/19 15:24
PCB 126	0.25	16.7	17.3	4		1	11/07/19 15:24
PCB 128	0.14	17.5	17.8	2		1	11/07/19 15:24
PCB 153	0.19	19.0	19.7	4		1	11/07/19 15:24
PCB 157	0.19	17.9	18.4	3		1	11/07/19 15:24
PCB 158	0.11	18.8	19.8	5		1	11/07/19 15:24
PCB 166	0.21	19.6	19.9	2		1	11/07/19 15:24
PCB 168	0.21	20.2	21.5	6		1	11/07/19 15:24
PCB 169	0.30	18.5	19.2	4		1	11/07/19 15:24
PCB 174	0.16	18.2	19.3	6		1	11/07/19 15:24
PCB 31	0.15	16.5	18.1	9		1	11/07/19 15:24
PCB 37	0.25	19.8	20.1	2		1	11/07/19 15:24
PCB 49	0.19	16.9	17.8	5		1	11/07/19 15:24
PCB 5	0.14	16.1	18.6	14		1	11/07/19 15:24
PCB 60	0.19	26.1	27.1	4		1	11/07/19 15:24
PCB 77	0.30	19.5	21.7	11		1	11/07/19 15:24
PCB 81	0.27	20.0	25.0	22		1	11/07/19 15:24
PCB 90	0.27	18.2	19.4	6		1	11/07/19 15:24

ALS Group USA, Corp.
dba ALS Environmental

Confirmation Results

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/25/19 09:35
SRM Matrix:	Sediment	**Date Received:**	10/30/19
Sample Name:	VB-BFWC19-Zone A		
Lab Code:	KQ1916140-04		
		Units:	ug/Kg
		Basis:	Dry
		Percent Solids:	59.3

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analytical Method: 8082A
Prep Method: EPA 3546

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
PCB 149	0.20	17.2	17.3	<1		1	11/08/19 16:04
PCB 170	0.20	17.3	17.9	3		1	11/08/19 16:04
PCB 95	0.21	15.1	18.3	19		1	11/08/19 16:04
PCB 1	2.9	127	136	7		1	11/07/19 15:59
PCB 105	0.17	17.2	17.5	2		1	11/07/19 15:59
PCB 118	0.14	16.6	17.1	3		1	11/07/19 15:59
PCB 119	0.22	17.5	19.1	9		1	11/07/19 15:59
PCB 126	0.24	16.5	16.7	1		1	11/07/19 15:59
PCB 128	0.13	17.4	17.5	<1		1	11/07/19 15:59
PCB 153	0.18	18.0	18.5	3		1	11/07/19 15:59
PCB 157	0.18	16.4	17.4	6		1	11/07/19 15:59
PCB 158	0.11	17.8	18.6	4		1	11/07/19 15:59
PCB 166	0.20	18.5	19.4	5		1	11/07/19 15:59
PCB 168	0.20	19.0	20.6	8		1	11/07/19 15:59
PCB 169	0.28	17.6	17.7	<1		1	11/07/19 15:59
PCB 174	0.16	17.0	19.8	15		1	11/07/19 15:59
PCB 31	0.14	17.0	3.82	127	P	1	11/07/19 15:59
PCB 37	0.24	18.7	21.3	13		1	11/07/19 15:59
PCB 49	0.18	16.8	17.0	1		1	11/07/19 15:59
PCB 5	0.13	15.4	17.6	13		1	11/07/19 15:59
PCB 60	0.18	29.1	10.2	96	P	1	11/07/19 15:59
PCB 77	0.28	18.8	20.2	7		1	11/07/19 15:59
PCB 81	0.25	19.3	24.1	22		1	11/07/19 15:59
PCB 90	0.25	17.8	19.3	8		1	11/07/19 15:59

ALS Group USA, Corp.
dba ALS Environmental

Confirmation Results

Client: Water and Air Research
Project: USACE Big Fishweir Creek
SRM Matrix: Sediment

Service Request: J1906537
Date Collected: NA
Date Received:

Sample Name: Lab Control Sample
Lab Code: KQ1916140-05

Units: ug/Kg
Basis: Dry

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analytical Method: 8082A
Prep Method: EPA 3546

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Decachlorobiphenyl	0.22	11.2	11.2	<1		1	11/07/19 12:33
PCB 101	0.26	11.4	11.8	3		1	11/07/19 12:33
PCB 110	0.16	10.6	10.9	3		1	11/07/19 12:33
PCB 114	0.12	10.4	10.5	<1		1	11/07/19 12:33
PCB 123	0.12	10.8	11.1	3		1	11/07/19 12:33
PCB 132	0.12	11.7	12.0	3		1	11/07/19 12:33
PCB 138	0.18	11.3	11.6	3		1	11/07/19 12:33
PCB 141	0.096	10.8	11.2	4		1	11/07/19 12:33
PCB 151	0.12	10.6	10.8	2		1	11/07/19 12:33
PCB 156	0.12	10.3	11.0	7		1	11/07/19 12:33
PCB 167	0.16	10.3	10.4	<1		1	11/07/19 12:33
PCB 177	0.16	10.9	11.3	4		1	11/07/19 12:33
PCB 18	0.22	9.28	10.4	11		1	11/07/19 12:33
PCB 180	0.11	11.8	11.8	<1		1	11/07/19 12:33
PCB 183	0.14	11.6	11.7	<1		1	11/07/19 12:33
PCB 184	0.15	12.5	12.5	<1		1	11/07/19 12:33
PCB 187	0.16	11.2	11.3	<1		1	11/07/19 12:33
PCB 189	0.095	10.5	10.6	<1		1	11/07/19 12:33
PCB 194	0.18	11.3	11.7	3		1	11/07/19 12:33
PCB 195	0.11	11.6	12.1	4		1	11/07/19 12:33
PCB 201	0.16	10.8	11.2	4		1	11/07/19 12:33
PCB 203	0.13	10.7	10.8	<1		1	11/07/19 12:33
PCB 206	0.14	9.96	10.3	3		1	11/07/19 12:33
PCB 28	0.22	10.2	10.3	<1		1	11/07/19 12:33
PCB 33	0.26	9.71	9.82	1		1	11/07/19 12:33
PCB 44	0.17	10.5	10.5	<1		1	11/07/19 12:33
PCB 52	0.20	9.77	10.1	3		1	11/07/19 12:33
PCB 56	0.12	10.7	10.7	<1		1	11/07/19 12:33

PCB 66	0.19	9.31	9.59	3	1	11/07/19 12:33
PCB 70	0.14	10.2	10.3	<1	1	11/07/19 12:33
PCB 74	0.18	9.82	10.1	3	1	11/07/19 12:33
PCB 8	0.29	8.71	8.86	2	1	11/07/19 12:33
PCB 87	0.11	10.7	10.8	<1	1	11/07/19 12:33
PCB 97	0.093	10.3	10.7	4	1	11/07/19 12:33
PCB 99	0.28	11.3	11.4	<1	1	11/07/19 12:33

ALS Group USA, Corp.
dba ALS Environmental

Confirmation Results

Client: Water and Air Research
Project: USACE Big Fishweir Creek
SRM Matrix: Sediment

Service Request: J1906537
Date Collected: NA
Date Received:

Sample Name: Lab Control Sample
Lab Code: KQ1916140-06

Units: ug/Kg
Basis: Dry

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analytical Method: 8082A
Prep Method: EPA 3546

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
PCB 1	2.1	85.0	85.3	<1		1	11/07/19 13:07
PCB 105	0.12	11.0	11.3	3		1	11/07/19 13:07
PCB 118	0.095	10.9	11.1	2		1	11/07/19 13:07
PCB 119	0.16	11.2	11.4	2		1	11/07/19 13:07
PCB 126	0.17	10.3	10.4	<1		1	11/07/19 13:07
PCB 128	0.090	11.2	11.4	2		1	11/07/19 13:07
PCB 149	0.14	11.0	11.2	2		1	11/07/19 13:07
PCB 153	0.13	11.3	11.4	<1		1	11/07/19 13:07
PCB 157	0.13	11.0	11.5	4		1	11/07/19 13:07
PCB 158	0.073	12.0	12.5	4		1	11/07/19 13:07
PCB 166	0.14	12.2	12.3	<1		1	11/07/19 13:07
PCB 168	0.14	12.9	12.9	<1		1	11/07/19 13:07
PCB 169	0.20	11.0	11.4	4		1	11/07/19 13:07
PCB 170	0.14	11.1	11.7	5		1	11/07/19 13:07
PCB 174	0.11	11.7	12.0	3		1	11/07/19 13:07
PCB 31	0.098	10.2	10.7	5		1	11/07/19 13:07
PCB 37	0.17	10.8	11.6	7		1	11/07/19 13:07
PCB 49	0.13	10.7	11.1	4		1	11/07/19 13:07
PCB 5	0.092	10.4	10.6	2		1	11/07/19 13:07
PCB 60	0.13	11.6	11.8	2		1	11/07/19 13:07
PCB 77	0.20	11.0	12.1	10		1	11/07/19 13:07
PCB 81	0.18	11.2	11.5	3		1	11/07/19 13:07
PCB 90	0.18	11.3	11.5	2		1	11/07/19 13:07
PCB 95	0.15	11.3	11.7	3		1	11/07/19 13:07

ALS Group USA, Corp.
dba ALS Environmental

Confirmation Results

Client:	Water and Air Research	**Service Request:**	J1906537
Project:	USACE Big Fishweir Creek	**Date Collected:**	NA
SRM Matrix:	Sediment	**Date Received:**	
Sample Name:	Method Blank		
Lab Code:	KQ1916140-07	**Units:**	ug/Kg
		Basis:	Dry

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analytical Method: 8082A
Prep Method: EPA 3546

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
PCB 1	2.1	3.4	3.5	3	J	1	11/07/19 11:59

January 06, 2020 Service Request No:J1906553

Mr. Bryan Cotter
Water and Air Research
6821 S.W. Archer Road.
Gainesville, FL 32608

Laboratory Results for: USACE Big Fishweir Creek

Dear Mr.Cotter,

Enclosed are the results of the sample(s) submitted to our laboratory October 31, 2019
For your reference, these analyses have been assigned our service request number **J1906553.**

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and ALS Environmental is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. In accordance with the TNI 2016 Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Please contact me if you have any questions. My extension is 4406. You may also contact me via email at Mandy.Sullivan@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Mandy Sullivan
Project Manager

ADDRESS 9143 Philips Highway, Suite 200, Jacksonville, FL 32256
PHONE +1 904 739 2277 | FAX +1 904 739 2011
ALS Group USA, Corp.
dba ALS Environmental

Narrative Documents

ALS Environmental—Jacksonville Laboratory
9143 Philips Highway, Suite 200, Jacksonville, FL 32256
Phone (904) 739-2277 Fax (904) 739-2011
www.alsglobal.com

9143 Philips Highway, Suite 200, Jacksonville, FL 32256 | 904-739-2277 | www.alsglobal.com

Client: Water and Air Research
Project: USACE Big Fishweir Creek
Sample Matrix: Water

Service Request: J1906553
Date Received: 10/31/2019

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Three water samples were received for analysis at ALS Environmental on 10/31/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivolatiles by GC/MS:

The Relative Percent Difference (RPD) for multiple analytes in the replicate Laboratory Control Sample (LCS) analyses LCS JQ1906453-02 and DLCS JQ1906453-03 were outside control criteria. Recovery in the Laboratory Control Sample (LCS) and Duplicate Laboratory Control Sample (DLCS) was acceptable, which indicates the analytical batch was in control and no further corrective action was appropriate. The data is flagged to indicate the problem.

Subcontracted Analytical Parameters:

One or more samples were subcontracted to another laboratory for testing. The certified analytical report from the subcontractor has been included in its entirety at the end of this report and includes the name and address of the subcontracted laboratory.

Approved by _____ Date 11/25/2019

SAMPLE DETECTION SUMMARY

CLIENT ID: VB-BFWC19-Zone D			Lab ID: J1906553-002			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Benz(a)anthracene	0.0628	J	0.0350	0.0971	ug/L	8270D SIM
Benzo(b)fluoranthene	0.0523	J	0.0250	0.0971	ug/L	8270D SIM
Fluoranthene	0.0445	J	0.0390	0.0971	ug/L	8270D SIM
Pyrene	0.0509	J	0.0310	0.0971	ug/L	8270D SIM
Bis(2-ethylhexyl) Phthalate	3.00	J	1.50	4.88	ug/L	8270D
Diethyl Phthalate	4.93		1.70	4.88	ug/L	8270D

Sample Receipt Information

ALS Environmental—Jacksonville Laboratory
9143 Philips Highway, Suite 200, Jacksonville, FL 32256
Phone (904) 739-2277 Fax (904) 739-2011
www.alsglobal.com

Client: Water and Air Research **Service Request:**J1906553
Project: USACE Big Fishweir Creek/19-5805-01

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
J1906553-001	VB-BFWC19-Zone A	10/30/2019	1155
J1906553-002	VB-BFWC19-Zone D	10/30/2019	1230
J1906553-003	VB-BFWC19-Site Water	10/30/2019	1255

ALS Environmental

Cooler Receipt Form

Client: Water + Air Research Service Request #: J1906553

Project: USACE Big Fishweir Creek Shipping paid by ALS? Yes No (N/A)

Cooler received on 10/3/19 and opened on 10/3/19 by LM

COURIER: ALS UPS FEDEX DHL (Client) Other _____ Airbill # _____

1	Were custody seals on outside of cooler?	Yes	(No)		
	If yes, how many and where?	#:___ on lid	other		
2	Were seals intact and signature and date correct?	Yes	No	(N/A)	
3	Were custody papers properly filled out?	(Yes)	No	N/A	
4	Temperature of cooler(s) upon receipt (Should be 0°C and ≤ 6°C)	1.0	2.8	3.2	
5	Thermometer ID	T188	T188	T188	
6	Temperature Blank Present?	(Yes)	No		
7	Were Ice or Ice Packs present	(Ice)	Ice Packs	No	
8	Did all bottles arrive in good condition (unbroken, etc....)?	(Yes)	No	N/A	
9	Type of packing material present	Netting	Vial Holder	(Bubble Wrap)	
		Paper	Styrofoam	(Other)	N/A
10	Were all bottle labels complete (sample ID, preservation, etc....)?	(Yes)	No	N/A	
11	Did all bottle labels and tags agree with custody papers?	(Yes)	No	N/A	
12	Were the correct bottles used for the tests indicated?	(Yes)	No	N/A	
13	Were all of the preserved bottles received with the appropriate preservative?	(Yes)	No	N/A	
	(HNO3 pH<2) H2SO4 pH<2 ZnAc2/NaOH pH>9 NaOH pH>12 HCl pH<2				
	~~Preservative~~ additions noted below				
14	Were all samples received within analysis holding times?	(Yes)	No	N/A	
15	Were VOA vials free of air bubbles greater than 6mm? If present, note below	Yes	No	(N/A)	
16	Where did the bottles originate?	(ALS)	Client		

Sample ID	Reagent	Lot #	ml added	Initials Date/Time

Additional comments and/or explanation of all discrepancies noted above:

Client approval to run samples if discrepancies noted: Date:

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

ALS

9143 Phillips Highway, Suite 200, Jacksonville, FL 32256
Phone (904) 739-2277 / 800-695-7222 x06 / FAX (904) 739-2011

SR# 001, 002, 003

T058455

Project Name: USACE Big Fishweir Creek	
Project Number: 19-5805-01	Report To: Bryan Cotter
Company / Address: Water and Air Research, 6821 S.W. Archer Road, Gainesville FL, 32608	
Phone # 352-372-1500	FAX #
Sampler Signature	Sampler Printed Name: Bryan Cotter + Am Drill

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	7D 8081A / PEST_OC	7D 8151A / HERB	7D 8270D / SVO	7D 8270D SIM / SVO SIM	14D 8081A / PEST_OC	14D 8082A / PCB	14D 8151A / HERB	14D 8270D / SVO	14D 8270D SIM / SVO SIM	28D 7471B / Hg	180D 200.8 / Metals Redppt	180D 6020B / Metals T	365D 1613B / Dioxins Furans	Hardness SM2340B	Remarks
					15															
1. VB-BFWK19-Zone A Eut.		10/30/19	1155	Liquid	13	X	X	X	X		X					X		X	✓	
2. VB-BFWK19-Zone D Eut.		↓	1230	Liquid	13	X	X	X	X		X					X		X	✓	
3. VB-BFWK19-Site water		↓	1255	Liquid	13	X	X	X	X		X					X		X	✓	
4.				~~Liquid~~	~~13~~	X	X	X	X		X					X		X	✓	
5.				~~Liquid~~	~~13~~	X	X	X	X		X					X		X	✓	
6.				~~Solid~~	4					X	X	X	X	X	X		X	X		
7.				~~Solid~~	4					X	X	X	X	X	X		X	X		
8.				~~Solid~~	4					X	X	X	X	X	X		X	X		
9.				~~Solid~~	4					X	X	X	X	X	X		X	X		
10.				~~Solid~~	4					X	X	X	X	X	X		X	X		

Special Instructions/Comments:

Please include hardness. Analyte list and MDLs attached.

1.0°/2.8°/3.2°

Turnaround Requirements

___ RUSH (SURCHARGES APPLY)

___ Standard 15 Business Days per Quote

REQUESTED FAX DATE

Nov 23 2019

Requested Report Date

Report Requirements

___ I. Results Only

X II. Results + QC Summaries (LCS, DUP, MS/MSD as required)

___ III. Results + QC and Cilibration Summaries

___ IV. Data Validation Report with Raw Data

EData ____Yes ____No

Invoice Information

P.O.# _____

Bill To: Water & Air Research

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Kit Gunn AEL Jax					
Signature Fed Ex	Signature	Signature	Signature	Signature	Signature
Printed Name	Printed Name Bryan Cotter	Printed Name	Printed Name Bennie Brock	Printed Name	Printed Name
Firm	Firm Water & Air Research	Firm	Firm ALS	Firm	Firm
Date/Time	Date/Time 10/31/19	Date/Time 10/31/19 1242	Date/Time 10/31/19 1242	Date/Time	Date/Time

Miscellaneous Forms

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9143 Philips Highway, Suite 200, Jacksonville, FL 32256
Phone (904) 739-2277 Fax (904) 739-2011
www.alsglobal.com

REPORT QUALIFIERS AND DEFINITIONS

INORGANIC DATA

* The result is an outlier. See case narrative.
# The control limit criteria are not applicable. See case narrative.
B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
E The result is an estimated amount because the value exceeded the instrument calibration range.
J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
Z Too many colonies were present (TNTC). The numeric value represents the filtration volume.
i The MRL/MDL has been elevated due to matrix interference.
X See case narrative.

METALS DATA

* The result is an outlier. See case narrative.
# The control limit criteria are not applicable. See case narrative.
J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
E The reported value is estimated because of the presence of matrix interference.
M The duplicate injection precision was not met.
N The Matrix Spike sample recovery is not within control limits. See case narrative.
S The result was determined by Method of Standard Additions (MSA).
U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i The MRL/MDL has been elevated due to matrix interference.
X See case narrative.
+ The correlation coefficient for the MSA is less than 0.995.

ORGANIC DATA

* The result is an outlier. See case narrative.
# The control limit criteria are not applicable. See case narrative.
A The tentatively identified compound is a suspected aldol-condensation product.
B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D The reported result is from a dilution.
E The result is an estimated amount because the value exceeded the instrument calibration range.
J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P The GC or HPLC confirmation criteria were exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides)
U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i The MRL/MDL has been elevated due to a chromatographic interference.
X See case narrative.

PETROLEUM HYDROCARBON SPECIFIC

F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.

Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.

Z The chromatographic fingerprint does not resemble a petroleum product.

Jacksonville Lab ID # for State Certifications[1]

Agency	Number	Expiration Date
Department of Defense	66206	6/30/2020
Florida Department of Health	E82502	6/30/2020
Georgia Department of Natural Resources	958	6/30/2020
Kentucky Division of Waste Management	123042	6/30/2020
Louisiana Department of Environmental Quality	02086	6/30/2020
Maine Department of Health and Human Services	2019004	2/3/2021
New York State Department of Health	12113	4/1/2020
North Carolina Department of Environment and Natural Resources	527	12/31/2019
South Carolina Department of Health and Environmental Control	96021001	6/30/2019
Texas Commission on Environmental Quality	T104704197-19-12	5/31/2020
Virginia Environmental Accreditation Program	460191	12/14/2019

[1] Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the laboratory case narrative provided. For a specific list of accredited analytes, refer to http://www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads/North-America-Downloads

ACRONYMS

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Client: Water and Air Research **Service Request:** J1906553
Project: USACE Big Fishweir Creek/19-5805-01

Sample Name: VB-BFWC19-Zone A **Date Collected:** 10/30/19
Lab Code: J1906553-001 **Date Received:** 10/31/19
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
1613B	TWOODS	LLUONG
1631E	ABOYER	ABOYER
200.7	YZOOK	AMCKORNEY
200.8	YZOOK	JCHAN
200.8	YZOOK	EMCALLISTER
200.8	MYOUNG	JCHAN
8081B	JDUNFIELD	MCHAPPELLE
8082A	JDUNFIELD	MCHAPPELLE
8151A	KSERCU	JMISIUREWICZ
8270D	ECOMOR	TYEREMYANTS
8270D SIM	ECOMOR	TYEREMYANTS
SM 2340 C	ABUVEL	ABUVEL

Sample Name: VB-BFWC19-Zone A **Date Collected:** 10/30/19
Lab Code: J1906553-001.R01 **Date Received:** 10/31/19
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
8081B	JDUNFIELD	SHERBELIN

Sample Name: VB-BFWC19-Zone D **Date Collected:** 10/30/19
Lab Code: J1906553-002 **Date Received:** 10/31/19
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
1613B	TWOODS	LLUONG
1631E	ABOYER	ABOYER
200.7	YZOOK	AMCKORNEY
200.8	MYOUNG	JCHAN
200.8	YZOOK	EMCALLISTER
200.8	YZOOK	JCHAN
8081B	JDUNFIELD	MCHAPPELLE

Client: Water and Air Research **Service Request:** J1906553
Project: USACE Big Fishweir Creek/19-5805-01

Sample Name: VB-BFWC19-Zone D **Date Collected:** 10/30/19
Lab Code: J1906553-002 **Date Received:** 10/31/19
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
8082A	JDUNFIELD	MCHAPPELLE
8151A	KSERCU	JMISIUREWICZ
8270D	ECOMOR	TYEREMYANTS
8270D SIM	ECOMOR	TYEREMYANTS
SM 2340 C	ABUVEL	ABUVEL

Sample Name: VB-BFWC19-Zone D **Date Collected:** 10/30/19
Lab Code: J1906553-002.R01 **Date Received:** 10/31/19
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
8081B	JDUNFIELD	SHERBELIN

Sample Name: VB-BFWC19-Site Water **Date Collected:** 10/30/19
Lab Code: J1906553-003 **Date Received:** 10/31/19
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
1613B	TWOODS	LLUONG
1631E	ABOYER	ABOYER
200.7	YZOOK	AMCKORNEY
200.8	MYOUNG	JCHAN
200.8	YZOOK	JCHAN
200.8	YZOOK	EMCALLISTER
8081B	JDUNFIELD	MCHAPPELLE
8082A	JDUNFIELD	MCHAPPELLE
8151A	KSERCU	JMISIUREWICZ
8270D	ECOMOR	TYEREMYANTS
8270D SIM	ECOMOR	TYEREMYANTS
SM 2340 C	ABUVEL	ABUVEL

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01		

Sample Name:	VB-BFWC19-Site Water	**Date Collected:**	10/30/19
Lab Code:	J1906553-003.R01	**Date Received:**	10/31/19
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
8081B	JDUNFIELD	SHERBELIN

Sample Results

ALS Environmental—Jacksonville Laboratory
9143 Philips Highway, Suite 200, Jacksonville, FL 32256
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Semivolatile Organic Compounds by GC/MS

ALS Environmental—Jacksonville Laboratory
9143 Philips Highway, Suite 200, Jacksonville, FL 32256
Phone (904)739-2277 Fax (904)739-2011
www.alsglobal.com

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 11:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone A	**Units:**	ug/L
Lab Code:	J1906553-001	**Basis:**	NA

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3510C

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	0.600	U	4.85	0.600	1	11/06/19 00:28	11/1/19	
1,2-Dichlorobenzene	0.640	U	4.85	0.640	1	11/06/19 00:28	11/1/19	
1,3-Dichlorobenzene	0.920	U	4.85	0.920	1	11/06/19 00:28	11/1/19	
1,4-Dichlorobenzene	0.910	U	4.85	0.910	1	11/06/19 00:28	11/1/19	
1-Methylnaphthalene	0.730	U	4.85	0.730	1	11/06/19 00:28	11/1/19	
2,4,5-Trichlorophenol	1.30	U	4.85	1.30	1	11/06/19 00:28	11/1/19	
2,4,6-Trichlorophenol	0.890	U	4.85	0.890	1	11/06/19 00:28	11/1/19	
2,4-Dichlorophenol	1.20	U	4.85	1.20	1	11/06/19 00:28	11/1/19	
2,4-Dimethylphenol	1.50	U	4.85	1.50	1	11/06/19 00:28	11/1/19	
2,4-Dinitrophenol	0.760	U	19.4	0.760	1	11/06/19 00:28	11/1/19	
2,4-Dinitrotoluene	1.30	U	4.85	1.30	1	11/06/19 00:28	11/1/19	
2,6-Dinitrotoluene	1.10	U	4.85	1.10	1	11/06/19 00:28	11/1/19	
2-Chloronaphthalene	4.60	U	4.85	4.60	1	11/06/19 00:28	11/1/19	
2-Chlorophenol	1.20	U	4.85	1.20	1	11/06/19 00:28	11/1/19	*
2-Methylnaphthalene	0.630	U	4.85	0.630	1	11/06/19 00:28	11/1/19	
2-Methylphenol	1.30	U	4.85	1.30	1	11/06/19 00:28	11/1/19	*
2-Nitroaniline	1.50	U	4.85	1.50	1	11/06/19 00:28	11/1/19	
2-Nitrophenol	1.40	U	19.4	1.40	1	11/06/19 00:28	11/1/19	
3- and 4-Methylphenol Coelution	1.00	U	4.85	1.00	1	11/06/19 00:28	11/1/19	*
3,3'-Dichlorobenzidine	1.40	U	19.4	1.40	1	11/06/19 00:28	11/1/19	
3-Nitroaniline	1.10	U	4.85	1.10	1	11/06/19 00:28	11/1/19	
4,6-Dinitro-2-methylphenol	1.00	U	19.4	1.00	1	11/06/19 00:28	11/1/19	
4-Bromophenyl Phenyl Ether	1.30	U	4.85	1.30	1	11/06/19 00:28	11/1/19	
4-Chloro-3-methylphenol	1.80	U	4.85	1.80	1	11/06/19 00:28	11/1/19	
4-Chloroaniline	1.40	U	4.85	1.40	1	11/06/19 00:28	11/1/19	*
4-Chlorophenyl Phenyl Ether	0.960	U	4.85	0.960	1	11/06/19 00:28	11/1/19	
4-Nitroaniline	1.00	U	4.85	1.00	1	11/06/19 00:28	11/1/19	
4-Nitrophenol	1.80	U	19.4	1.80	1	11/06/19 00:28	11/1/19	
Acenaphthene	4.20	U	4.85	4.20	1	11/06/19 00:28	11/1/19	
Acenaphthylene	0.990	U	4.85	0.990	1	11/06/19 00:28	11/1/19	
Acetophenone	1.60	U	9.71	1.60	1	11/06/19 00:28	11/1/19	*
Anthracene	1.60	U	4.85	1.60	1	11/06/19 00:28	11/1/19	
Benz(a)anthracene	1.00	U	4.85	1.00	1	11/06/19 00:28	11/1/19	
Benzo(a)pyrene	1.20	U	4.85	1.20	1	11/06/19 00:28	11/1/19	
Benzo(b)fluoranthene	1.00	U	4.85	1.00	1	11/06/19 00:28	11/1/19	
Benzo(g,h,i)perylene	1.40	U	4.85	1.40	1	11/06/19 00:28	11/1/19	
Benzo(k)fluoranthene	1.80	U	4.85	1.80	1	11/06/19 00:28	11/1/19	
Benzyl Alcohol	1.40	U	4.85	1.40	1	11/06/19 00:28	11/1/19	*
Bis(2-chloroethoxy)methane	1.20	U	4.85	1.20	1	11/06/19 00:28	11/1/19	*
Bis(2-chloroethyl) Ether	1.90	U	4.85	1.90	1	11/06/19 00:28	11/1/19	*
Bis(2-ethylhexyl) Phthalate	1.50	U	4.85	1.50	1	11/06/19 00:28	11/1/19	
Butyl Benzyl Phthalate	0.860	U	9.71	0.860	1	11/06/19 00:28	11/1/19	
Carbazole	1.80	U	4.85	1.80	1	11/06/19 00:28	11/1/19	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 11:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone A	**Units:**	ug/L
Lab Code:	J1906553-001	**Basis:**	NA

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3510C

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Chrysene	1.20	U	4.85	1.20	1	11/06/19 00:28	11/1/19	
Dibenz(a,h)anthracene	1.50	U	4.85	1.50	1	11/06/19 00:28	11/1/19	
Dibenzofuran	1.30	U	4.85	1.30	1	11/06/19 00:28	11/1/19	
Diethyl Phthalate	1.70	U	4.85	1.70	1	11/06/19 00:28	11/1/19	
Dimethyl Phthalate	1.30	U	4.85	1.30	1	11/06/19 00:28	11/1/19	
Di-n-butyl Phthalate	1.60	U	4.85	1.60	1	11/06/19 00:28	11/1/19	
Di-n-octyl Phthalate	1.20	U	9.71	1.20	1	11/06/19 00:28	11/1/19	
Fluoranthene	1.40	U	4.85	1.40	1	11/06/19 00:28	11/1/19	
Fluorene	0.840	U	4.85	0.840	1	11/06/19 00:28	11/1/19	
Hexachlorobenzene	1.70	U	4.85	1.70	1	11/06/19 00:28	11/1/19	
Hexachlorobutadiene	1.20	U	4.85	1.20	1	11/06/19 00:28	11/1/19	
Hexachlorocyclopentadiene	0.500	U	4.85	0.500	1	11/06/19 00:28	11/1/19	*
Hexachloroethane	0.810	U	4.85	0.810	1	11/06/19 00:28	11/1/19	
Indeno(1,2,3-cd)pyrene	1.70	U	4.85	1.70	1	11/06/19 00:28	11/1/19	
Isophorone	1.80	U	4.85	1.80	1	11/06/19 00:28	11/1/19	*
Naphthalene	0.530	U	4.85	0.530	1	11/06/19 00:28	11/1/19	
Nitrobenzene	2.10	U	4.85	2.10	1	11/06/19 00:28	11/1/19	*
N-Nitrosodi-n-propylamine	2.20	U	4.85	2.20	1	11/06/19 00:28	11/1/19	*
Pentachlorophenol (PCP)	1.10	U	19.4	1.10	1	11/06/19 00:28	11/1/19	
Phenanthrene	1.40	U	4.85	1.40	1	11/06/19 00:28	11/1/19	
Phenol	0.590	U	4.85	0.590	1	11/06/19 00:28	11/1/19	*
Pyrene	0.740	U	4.85	0.740	1	11/06/19 00:28	11/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	66	23 - 122	11/06/19 00:28	
2-Fluorobiphenyl	53	15 - 117	11/06/19 00:28	
2-Fluorophenol	34	10 - 85	11/06/19 00:28	
Nitrobenzene-d5	49	10 - 110	11/06/19 00:28	
Phenol-d6	27	7 - 60	11/06/19 00:28	
p-Terphenyl-d14	89	40 - 125	11/06/19 00:28	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:30
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone D	**Units:**	ug/L
Lab Code:	J1906553-002	**Basis:**	NA

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3510C

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	0.600	U	4.88	0.600	1	11/06/19 00:53	11/1/19	
1,2-Dichlorobenzene	0.640	U	4.88	0.640	1	11/06/19 00:53	11/1/19	
1,3-Dichlorobenzene	0.920	U	4.88	0.920	1	11/06/19 00:53	11/1/19	
1,4-Dichlorobenzene	0.910	U	4.88	0.910	1	11/06/19 00:53	11/1/19	
1-Methylnaphthalene	0.730	U	4.88	0.730	1	11/06/19 00:53	11/1/19	
2,4,5-Trichlorophenol	1.30	U	4.88	1.30	1	11/06/19 00:53	11/1/19	
2,4,6-Trichlorophenol	0.890	U	4.88	0.890	1	11/06/19 00:53	11/1/19	
2,4-Dichlorophenol	1.20	U	4.88	1.20	1	11/06/19 00:53	11/1/19	
2,4-Dimethylphenol	1.50	U	4.88	1.50	1	11/06/19 00:53	11/1/19	
2,4-Dinitrophenol	0.760	U	19.5	0.760	1	11/06/19 00:53	11/1/19	
2,4-Dinitrotoluene	1.30	U	4.88	1.30	1	11/06/19 00:53	11/1/19	
2,6-Dinitrotoluene	1.10	U	4.88	1.10	1	11/06/19 00:53	11/1/19	
2-Chloronaphthalene	4.60	U	4.88	4.60	1	11/06/19 00:53	11/1/19	
2-Chlorophenol	1.20	U	4.88	1.20	1	11/06/19 00:53	11/1/19	*
2-Methylnaphthalene	0.630	U	4.88	0.630	1	11/06/19 00:53	11/1/19	
2-Methylphenol	1.30	U	4.88	1.30	1	11/06/19 00:53	11/1/19	*
2-Nitroaniline	1.50	U	4.88	1.50	1	11/06/19 00:53	11/1/19	
2-Nitrophenol	1.40	U	19.5	1.40	1	11/06/19 00:53	11/1/19	
3- and 4-Methylphenol Coelution	1.00	U	4.88	1.00	1	11/06/19 00:53	11/1/19	*
3,3'-Dichlorobenzidine	1.40	U	19.5	1.40	1	11/06/19 00:53	11/1/19	
3-Nitroaniline	1.10	U	4.88	1.10	1	11/06/19 00:53	11/1/19	
4,6-Dinitro-2-methylphenol	1.00	U	19.5	1.00	1	11/06/19 00:53	11/1/19	
4-Bromophenyl Phenyl Ether	1.30	U	4.88	1.30	1	11/06/19 00:53	11/1/19	
4-Chloro-3-methylphenol	1.80	U	4.88	1.80	1	11/06/19 00:53	11/1/19	
4-Chloroaniline	1.40	U	4.88	1.40	1	11/06/19 00:53	11/1/19	*
4-Chlorophenyl Phenyl Ether	0.960	U	4.88	0.960	1	11/06/19 00:53	11/1/19	
4-Nitroaniline	1.00	U	4.88	1.00	1	11/06/19 00:53	11/1/19	
4-Nitrophenol	1.80	U	19.5	1.80	1	11/06/19 00:53	11/1/19	
Acenaphthene	4.20	U	4.88	4.20	1	11/06/19 00:53	11/1/19	
Acenaphthylene	0.990	U	4.88	0.990	1	11/06/19 00:53	11/1/19	
Acetophenone	1.60	U	9.76	1.60	1	11/06/19 00:53	11/1/19	*
Anthracene	1.60	U	4.88	1.60	1	11/06/19 00:53	11/1/19	
Benz(a)anthracene	1.00	U	4.88	1.00	1	11/06/19 00:53	11/1/19	
Benzo(a)pyrene	1.20	U	4.88	1.20	1	11/06/19 00:53	11/1/19	
Benzo(b)fluoranthene	1.00	U	4.88	1.00	1	11/06/19 00:53	11/1/19	
Benzo(g,h,i)perylene	1.40	U	4.88	1.40	1	11/06/19 00:53	11/1/19	
Benzo(k)fluoranthene	1.80	U	4.88	1.80	1	11/06/19 00:53	11/1/19	
Benzyl Alcohol	1.40	U	4.88	1.40	1	11/06/19 00:53	11/1/19	*
Bis(2-chloroethoxy)methane	1.20	U	4.88	1.20	1	11/06/19 00:53	11/1/19	*
Bis(2-chloroethyl) Ether	1.90	U	4.88	1.90	1	11/06/19 00:53	11/1/19	*
Bis(2-ethylhexyl) Phthalate	**3.00**	**J**	4.88	1.50	1	11/06/19 00:53	11/1/19	
Butyl Benzyl Phthalate	0.860	U	9.76	0.860	1	11/06/19 00:53	11/1/19	
Carbazole	1.80	U	4.88	1.80	1	11/06/19 00:53	11/1/19	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:30
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone D	**Units:**	ug/L
Lab Code:	J1906553-002	**Basis:**	NA

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3510C

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Chrysene	1.20	U	4.88	1.20	1	11/06/19 00:53	11/1/19	
Dibenz(a,h)anthracene	1.50	U	4.88	1.50	1	11/06/19 00:53	11/1/19	
Dibenzofuran	1.30	U	4.88	1.30	1	11/06/19 00:53	11/1/19	
Diethyl Phthalate	**4.93**		4.88	1.70	1	11/06/19 00:53	11/1/19	
Dimethyl Phthalate	1.30	U	4.88	1.30	1	11/06/19 00:53	11/1/19	
Di-n-butyl Phthalate	1.60	U	4.88	1.60	1	11/06/19 00:53	11/1/19	
Di-n-octyl Phthalate	1.20	U	9.76	1.20	1	11/06/19 00:53	11/1/19	
Fluoranthene	1.40	U	4.88	1.40	1	11/06/19 00:53	11/1/19	
Fluorene	0.840	U	4.88	0.840	1	11/06/19 00:53	11/1/19	
Hexachlorobenzene	1.70	U	4.88	1.70	1	11/06/19 00:53	11/1/19	
Hexachlorobutadiene	1.20	U	4.88	1.20	1	11/06/19 00:53	11/1/19	
Hexachlorocyclopentadiene	0.500	U	4.88	0.500	1	11/06/19 00:53	11/1/19	*
Hexachloroethane	0.810	U	4.88	0.810	1	11/06/19 00:53	11/1/19	
Indeno(1,2,3-cd)pyrene	1.70	U	4.88	1.70	1	11/06/19 00:53	11/1/19	
Isophorone	1.80	U	4.88	1.80	1	11/06/19 00:53	11/1/19	*
Naphthalene	0.530	U	4.88	0.530	1	11/06/19 00:53	11/1/19	
Nitrobenzene	2.10	U	4.88	2.10	1	11/06/19 00:53	11/1/19	*
N-Nitrosodi-n-propylamine	2.20	U	4.88	2.20	1	11/06/19 00:53	11/1/19	*
Pentachlorophenol (PCP)	1.10	U	19.5	1.10	1	11/06/19 00:53	11/1/19	
Phenanthrene	1.40	U	4.88	1.40	1	11/06/19 00:53	11/1/19	
Phenol	0.590	U	4.88	0.590	1	11/06/19 00:53	11/1/19	*
Pyrene	0.740	U	4.88	0.740	1	11/06/19 00:53	11/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	72	23 - 122	11/06/19 00:53	
2-Fluorobiphenyl	54	15 - 117	11/06/19 00:53	
2-Fluorophenol	36	10 - 85	11/06/19 00:53	
Nitrobenzene-d5	49	10 - 110	11/06/19 00:53	
Phenol-d6	29	7 - 60	11/06/19 00:53	
p-Terphenyl-d14	78	40 - 125	11/06/19 00:53	

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Site Water	**Units:**	ug/L
Lab Code:	J1906553-003	**Basis:**	NA

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3510C

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	0.600	U	4.81	0.600	1	11/06/19 01:19	11/1/19	
1,2-Dichlorobenzene	0.640	U	4.81	0.640	1	11/06/19 01:19	11/1/19	
1,3-Dichlorobenzene	0.920	U	4.81	0.920	1	11/06/19 01:19	11/1/19	
1,4-Dichlorobenzene	0.910	U	4.81	0.910	1	11/06/19 01:19	11/1/19	
1-Methylnaphthalene	0.730	U	4.81	0.730	1	11/06/19 01:19	11/1/19	
2,4,5-Trichlorophenol	1.30	U	4.81	1.30	1	11/06/19 01:19	11/1/19	
2,4,6-Trichlorophenol	0.890	U	4.81	0.890	1	11/06/19 01:19	11/1/19	
2,4-Dichlorophenol	1.20	U	4.81	1.20	1	11/06/19 01:19	11/1/19	
2,4-Dimethylphenol	1.50	U	4.81	1.50	1	11/06/19 01:19	11/1/19	
2,4-Dinitrophenol	0.760	U	19.2	0.760	1	11/06/19 01:19	11/1/19	
2,4-Dinitrotoluene	1.30	U	4.81	1.30	1	11/06/19 01:19	11/1/19	
2,6-Dinitrotoluene	1.10	U	4.81	1.10	1	11/06/19 01:19	11/1/19	
2-Chloronaphthalene	4.60	U	4.81	4.60	1	11/06/19 01:19	11/1/19	
2-Chlorophenol	1.20	U	4.81	1.20	1	11/06/19 01:19	11/1/19	*
2-Methylnaphthalene	0.630	U	4.81	0.630	1	11/06/19 01:19	11/1/19	
2-Methylphenol	1.30	U	4.81	1.30	1	11/06/19 01:19	11/1/19	*
2-Nitroaniline	1.50	U	4.81	1.50	1	11/06/19 01:19	11/1/19	
2-Nitrophenol	1.40	U	19.2	1.40	1	11/06/19 01:19	11/1/19	
3- and 4-Methylphenol Coelution	1.00	U	4.81	1.00	1	11/06/19 01:19	11/1/19	*
3,3'-Dichlorobenzidine	1.40	U	19.2	1.40	1	11/06/19 01:19	11/1/19	
3-Nitroaniline	1.10	U	4.81	1.10	1	11/06/19 01:19	11/1/19	
4,6-Dinitro-2-methylphenol	1.00	U	19.2	1.00	1	11/06/19 01:19	11/1/19	
4-Bromophenyl Phenyl Ether	1.30	U	4.81	1.30	1	11/06/19 01:19	11/1/19	
4-Chloro-3-methylphenol	1.80	U	4.81	1.80	1	11/06/19 01:19	11/1/19	
4-Chloroaniline	1.40	U	4.81	1.40	1	11/06/19 01:19	11/1/19	*
4-Chlorophenyl Phenyl Ether	0.960	U	4.81	0.960	1	11/06/19 01:19	11/1/19	
4-Nitroaniline	1.00	U	4.81	1.00	1	11/06/19 01:19	11/1/19	
4-Nitrophenol	1.80	U	19.2	1.80	1	11/06/19 01:19	11/1/19	
Acenaphthene	4.20	U	4.81	4.20	1	11/06/19 01:19	11/1/19	
Acenaphthylene	0.990	U	4.81	0.990	1	11/06/19 01:19	11/1/19	
Acetophenone	1.60	U	9.62	1.60	1	11/06/19 01:19	11/1/19	*
Anthracene	1.60	U	4.81	1.60	1	11/06/19 01:19	11/1/19	
Benz(a)anthracene	1.00	U	4.81	1.00	1	11/06/19 01:19	11/1/19	
Benzo(a)pyrene	1.20	U	4.81	1.20	1	11/06/19 01:19	11/1/19	
Benzo(b)fluoranthene	1.00	U	4.81	1.00	1	11/06/19 01:19	11/1/19	
Benzo(g,h,i)perylene	1.40	U	4.81	1.40	1	11/06/19 01:19	11/1/19	
Benzo(k)fluoranthene	1.80	U	4.81	1.80	1	11/06/19 01:19	11/1/19	
Benzyl Alcohol	1.40	U	4.81	1.40	1	11/06/19 01:19	11/1/19	*
Bis(2-chloroethoxy)methane	1.20	U	4.81	1.20	1	11/06/19 01:19	11/1/19	*
Bis(2-chloroethyl) Ether	1.90	U	4.81	1.90	1	11/06/19 01:19	11/1/19	*
Bis(2-ethylhexyl) Phthalate	1.50	U	4.81	1.50	1	11/06/19 01:19	11/1/19	
Butyl Benzyl Phthalate	0.860	U	9.62	0.860	1	11/06/19 01:19	11/1/19	
Carbazole	1.80	U	4.81	1.80	1	11/06/19 01:19	11/1/19	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Site Water	**Units:**	ug/L
Lab Code:	J1906553-003	**Basis:**	NA

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3510C

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Chrysene	1.20	U	4.81	1.20	1	11/06/19 01:19	11/1/19	
Dibenz(a,h)anthracene	1.50	U	4.81	1.50	1	11/06/19 01:19	11/1/19	
Dibenzofuran	1.30	U	4.81	1.30	1	11/06/19 01:19	11/1/19	
Diethyl Phthalate	1.70	U	4.81	1.70	1	11/06/19 01:19	11/1/19	
Dimethyl Phthalate	1.30	U	4.81	1.30	1	11/06/19 01:19	11/1/19	
Di-n-butyl Phthalate	1.60	U	4.81	1.60	1	11/06/19 01:19	11/1/19	
Di-n-octyl Phthalate	1.20	U	9.62	1.20	1	11/06/19 01:19	11/1/19	
Fluoranthene	1.40	U	4.81	1.40	1	11/06/19 01:19	11/1/19	
Fluorene	0.840	U	4.81	0.840	1	11/06/19 01:19	11/1/19	
Hexachlorobenzene	1.70	U	4.81	1.70	1	11/06/19 01:19	11/1/19	
Hexachlorobutadiene	1.20	U	4.81	1.20	1	11/06/19 01:19	11/1/19	
Hexachlorocyclopentadiene	0.500	U	4.81	0.500	1	11/06/19 01:19	11/1/19	*
Hexachloroethane	0.810	U	4.81	0.810	1	11/06/19 01:19	11/1/19	
Indeno(1,2,3-cd)pyrene	1.70	U	4.81	1.70	1	11/06/19 01:19	11/1/19	
Isophorone	1.80	U	4.81	1.80	1	11/06/19 01:19	11/1/19	*
Naphthalene	0.530	U	4.81	0.530	1	11/06/19 01:19	11/1/19	
Nitrobenzene	2.10	U	4.81	2.10	1	11/06/19 01:19	11/1/19	*
N-Nitrosodi-n-propylamine	2.20	U	4.81	2.20	1	11/06/19 01:19	11/1/19	*
Pentachlorophenol (PCP)	1.10	U	19.2	1.10	1	11/06/19 01:19	11/1/19	
Phenanthrene	1.40	U	4.81	1.40	1	11/06/19 01:19	11/1/19	
Phenol	0.590	U	4.81	0.590	1	11/06/19 01:19	11/1/19	*
Pyrene	0.740	U	4.81	0.740	1	11/06/19 01:19	11/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	72	23 - 122	11/06/19 01:19	
2-Fluorobiphenyl	68	15 - 117	11/06/19 01:19	
2-Fluorophenol	43	10 - 85	11/06/19 01:19	
Nitrobenzene-d5	63	10 - 110	11/06/19 01:19	
Phenol-d6	35	7 - 60	11/06/19 01:19	
p-Terphenyl-d14	79	40 - 125	11/06/19 01:19	

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 11:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone A	**Units:**	ug/L
Lab Code:	J1906553-001	**Basis:**	NA

Base Neutral Semivolatile Organic Compounds by GC/MS SIM

Analysis Method: 8270D SIM
Prep Method: EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1-Methylnaphthalene	0.0440 U	0.0962	0.0440	1	11/13/19 03:37	11/5/19	
2-Methylnaphthalene	0.0440 U	0.0962	0.0440	1	11/13/19 03:37	11/5/19	
Acenaphthene	0.0410 U	0.0962	0.0410	1	11/13/19 03:37	11/5/19	
Acenaphthylene	0.0250 U	0.0962	0.0250	1	11/13/19 03:37	11/5/19	
Anthracene	0.0380 U	0.0962	0.0380	1	11/13/19 03:37	11/5/19	
Benz(a)anthracene	0.0350 U	0.0962	0.0350	1	11/13/19 03:37	11/5/19	
Benzo(a)pyrene	0.0310 U	0.0962	0.0310	1	11/13/19 03:37	11/5/19	
Benzo(b)fluoranthene	0.0250 U	0.0962	0.0250	1	11/13/19 03:37	11/5/19	
Benzo(g,h,i)perylene	0.0390 U	0.0962	0.0390	1	11/13/19 03:37	11/5/19	
Benzo(k)fluoranthene	0.0350 U	0.0962	0.0350	1	11/13/19 03:37	11/5/19	
Chrysene	0.0240 U	0.0962	0.0240	1	11/13/19 03:37	11/5/19	
Dibenz(a,h)anthracene	0.0360 U	0.0962	0.0360	1	11/13/19 03:37	11/5/19	
Fluoranthene	0.0390 U	0.0962	0.0390	1	11/13/19 03:37	11/5/19	
Fluorene	0.0470 U	0.0962	0.0470	1	11/13/19 03:37	11/5/19	
Indeno(1,2,3-cd)pyrene	0.0400 U	0.0962	0.0400	1	11/13/19 03:37	11/5/19	
Naphthalene	0.0390 U	0.0962	0.0390	1	11/13/19 03:37	11/5/19	
Phenanthrene	0.0350 U	0.0962	0.0350	1	11/13/19 03:37	11/5/19	
Pyrene	0.0310 U	0.0962	0.0310	1	11/13/19 03:37	11/5/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	79	22 - 105	11/13/19 03:37	
p-Terphenyl-d14	76	25 - 127	11/13/19 03:37	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:30
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone D	**Units:**	ug/L
Lab Code:	J1906553-002	**Basis:**	NA

Base Neutral Semivolatile Organic Compounds by GC/MS SIM

Analysis Method: 8270D SIM
Prep Method: EPA 3510C

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1-Methylnaphthalene	0.0440	U	0.0971	0.0440	1	11/13/19 04:01	11/5/19	
2-Methylnaphthalene	0.0440	U	0.0971	0.0440	1	11/13/19 04:01	11/5/19	
Acenaphthene	0.0410	U	0.0971	0.0410	1	11/13/19 04:01	11/5/19	
Acenaphthylene	0.0250	U	0.0971	0.0250	1	11/13/19 04:01	11/5/19	
Anthracene	0.0380	U	0.0971	0.0380	1	11/13/19 04:01	11/5/19	
Benz(a)anthracene	**0.0628**	**J**	0.0971	0.0350	1	11/13/19 04:01	11/5/19	
Benzo(a)pyrene	0.0310	U	0.0971	0.0310	1	11/13/19 04:01	11/5/19	
Benzo(b)fluoranthene	**0.0523**	**J**	0.0971	0.0250	1	11/13/19 04:01	11/5/19	
Benzo(g,h,i)perylene	0.0390	U	0.0971	0.0390	1	11/13/19 04:01	11/5/19	
Benzo(k)fluoranthene	0.0350	U	0.0971	0.0350	1	11/13/19 04:01	11/5/19	
Chrysene	0.0240	U	0.0971	0.0240	1	11/13/19 04:01	11/5/19	
Dibenz(a,h)anthracene	0.0360	U	0.0971	0.0360	1	11/13/19 04:01	11/5/19	
Fluoranthene	**0.0445**	**J**	0.0971	0.0390	1	11/13/19 04:01	11/5/19	
Fluorene	0.0470	U	0.0971	0.0470	1	11/13/19 04:01	11/5/19	
Indeno(1,2,3-cd)pyrene	0.0400	U	0.0971	0.0400	1	11/13/19 04:01	11/5/19	
Naphthalene	0.0390	U	0.0971	0.0390	1	11/13/19 04:01	11/5/19	
Phenanthrene	0.0350	U	0.0971	0.0350	1	11/13/19 04:01	11/5/19	
Pyrene	**0.0509**	**J**	0.0971	0.0310	1	11/13/19 04:01	11/5/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	43	22 - 105	11/13/19 04:01	
p-Terphenyl-d14	51	25 - 127	11/13/19 04:01	

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Site Water	**Units:**	ug/L
Lab Code:	J1906553-003	**Basis:**	NA

Base Neutral Semivolatile Organic Compounds by GC/MS SIM

Analysis Method: 8270D SIM
Prep Method: EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1-Methylnaphthalene	0.0440 U	0.0962	0.0440	1	11/13/19 04:25	11/5/19	
2-Methylnaphthalene	0.0440 U	0.0962	0.0440	1	11/13/19 04:25	11/5/19	
Acenaphthene	0.0410 U	0.0962	0.0410	1	11/13/19 04:25	11/5/19	
Acenaphthylene	0.0250 U	0.0962	0.0250	1	11/13/19 04:25	11/5/19	
Anthracene	0.0380 U	0.0962	0.0380	1	11/13/19 04:25	11/5/19	
Benz(a)anthracene	0.0350 U	0.0962	0.0350	1	11/13/19 04:25	11/5/19	
Benzo(a)pyrene	0.0310 U	0.0962	0.0310	1	11/13/19 04:25	11/5/19	
Benzo(b)fluoranthene	0.0250 U	0.0962	0.0250	1	11/13/19 04:25	11/5/19	
Benzo(g,h,i)perylene	0.0390 U	0.0962	0.0390	1	11/13/19 04:25	11/5/19	
Benzo(k)fluoranthene	0.0350 U	0.0962	0.0350	1	11/13/19 04:25	11/5/19	
Chrysene	0.0240 U	0.0962	0.0240	1	11/13/19 04:25	11/5/19	
Dibenz(a,h)anthracene	0.0360 U	0.0962	0.0360	1	11/13/19 04:25	11/5/19	
Fluoranthene	0.0390 U	0.0962	0.0390	1	11/13/19 04:25	11/5/19	
Fluorene	0.0470 U	0.0962	0.0470	1	11/13/19 04:25	11/5/19	
Indeno(1,2,3-cd)pyrene	0.0400 U	0.0962	0.0400	1	11/13/19 04:25	11/5/19	
Naphthalene	0.0390 U	0.0962	0.0390	1	11/13/19 04:25	11/5/19	
Phenanthrene	0.0350 U	0.0962	0.0350	1	11/13/19 04:25	11/5/19	
Pyrene	0.0310 U	0.0962	0.0310	1	11/13/19 04:25	11/5/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	77	22 - 105	11/13/19 04:25	
p-Terphenyl-d14	80	25 - 127	11/13/19 04:25	

QC Summary Forms

ALS Environmental - Jacksonville Laboratory
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Semivolatile Organic Compounds by GC/MS

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Client: Water and Air Research **Service Request:** J1906553
Project: USACE Big Fishweir Creek/19-5805-01
Sample Matrix: Water

SURROGATE RECOVERY SUMMARY
Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Extraction Method: EPA 3510C

Sample Name	Lab Code	2,4,6-Tribromophenol 23-122	2-Fluorobiphenyl 15-117	2-Fluorophenol 10-85
VB-BFWC19-Zone A	J1906553-001	66	53	34
VB-BFWC19-Zone D	J1906553-002	72	54	36
VB-BFWC19-Site Water	J1906553-003	72	68	43
Method Blank	JQ1906453-01	69	65	44
Lab Control Sample	JQ1906453-02	93	77	51
Duplicate Lab Control Sample	JQ1906453-03	85	55	35

Client: Water and Air Research **Service Request:** J1906553
Project: USACE Big Fishweir Creek/19-5805-01
Sample Matrix: Water

SURROGATE RECOVERY SUMMARY
Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Extraction Method: EPA 3510C

Sample Name	Lab Code	Nitrobenzene-d5 10-110	Phenol-d6 7-60	p-Terphenyl-d14 40-125
VB-BFWC19-Zone A	J1906553-001	49	27	89
VB-BFWC19-Zone D	J1906553-002	49	29	78
VB-BFWC19-Site Water	J1906553-003	63	35	79
Method Blank	JQ1906453-01	56	35	103
Lab Control Sample	JQ1906453-02	68	39	106
Duplicate Lab Control Sample	JQ1906453-03	48	28	96

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	JQ1906453-01	**Basis:**	NA

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3510C

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	0.600	U	5.00	0.600	1	11/05/19 21:04	11/1/19	
1,2-Dichlorobenzene	0.640	U	5.00	0.640	1	11/05/19 21:04	11/1/19	
1,3-Dichlorobenzene	0.920	U	5.00	0.920	1	11/05/19 21:04	11/1/19	
1,4-Dichlorobenzene	0.910	U	5.00	0.910	1	11/05/19 21:04	11/1/19	
1-Methylnaphthalene	0.730	U	5.00	0.730	1	11/05/19 21:04	11/1/19	
2,4,5-Trichlorophenol	1.30	U	5.00	1.30	1	11/05/19 21:04	11/1/19	
2,4,6-Trichlorophenol	0.890	U	5.00	0.890	1	11/05/19 21:04	11/1/19	
2,4-Dichlorophenol	1.20	U	5.00	1.20	1	11/05/19 21:04	11/1/19	
2,4-Dimethylphenol	1.50	U	5.00	1.50	1	11/05/19 21:04	11/1/19	
2,4-Dinitrophenol	0.760	U	20.0	0.760	1	11/05/19 21:04	11/1/19	
2,4-Dinitrotoluene	1.30	U	5.00	1.30	1	11/05/19 21:04	11/1/19	
2,6-Dinitrotoluene	1.10	U	5.00	1.10	1	11/05/19 21:04	11/1/19	
2-Chloronaphthalene	4.60	U	5.00	4.60	1	11/05/19 21:04	11/1/19	
2-Chlorophenol	1.20	U	5.00	1.20	1	11/05/19 21:04	11/1/19	
2-Methylnaphthalene	0.630	U	5.00	0.630	1	11/05/19 21:04	11/1/19	
2-Methylphenol	1.30	U	5.00	1.30	1	11/05/19 21:04	11/1/19	
2-Nitroaniline	1.50	U	5.00	1.50	1	11/05/19 21:04	11/1/19	
2-Nitrophenol	1.40	U	20.0	1.40	1	11/05/19 21:04	11/1/19	
3- and 4-Methylphenol Coelution	1.00	U	5.00	1.00	1	11/05/19 21:04	11/1/19	
3,3'-Dichlorobenzidine	1.40	U	20.0	1.40	1	11/05/19 21:04	11/1/19	
3-Nitroaniline	1.10	U	5.00	1.10	1	11/05/19 21:04	11/1/19	
4,6-Dinitro-2-methylphenol	1.00	U	20.0	1.00	1	11/05/19 21:04	11/1/19	
4-Bromophenyl Phenyl Ether	1.30	U	5.00	1.30	1	11/05/19 21:04	11/1/19	
4-Chloro-3-methylphenol	1.80	U	5.00	1.80	1	11/05/19 21:04	11/1/19	
4-Chloroaniline	1.40	U	5.00	1.40	1	11/05/19 21:04	11/1/19	
4-Chlorophenyl Phenyl Ether	0.960	U	5.00	0.960	1	11/05/19 21:04	11/1/19	
4-Nitroaniline	1.00	U	5.00	1.00	1	11/05/19 21:04	11/1/19	
4-Nitrophenol	1.80	U	20.0	1.80	1	11/05/19 21:04	11/1/19	
Acenaphthene	4.20	U	5.00	4.20	1	11/05/19 21:04	11/1/19	
Acenaphthylene	0.990	U	5.00	0.990	1	11/05/19 21:04	11/1/19	
Acetophenone	1.60	U	10.0	1.60	1	11/05/19 21:04	11/1/19	
Anthracene	1.60	U	5.00	1.60	1	11/05/19 21:04	11/1/19	
Benz(a)anthracene	1.00	U	5.00	1.00	1	11/05/19 21:04	11/1/19	
Benzo(a)pyrene	1.20	U	5.00	1.20	1	11/05/19 21:04	11/1/19	
Benzo(b)fluoranthene	1.00	U	5.00	1.00	1	11/05/19 21:04	11/1/19	
Benzo(g,h,i)perylene	1.40	U	5.00	1.40	1	11/05/19 21:04	11/1/19	
Benzo(k)fluoranthene	1.80	U	5.00	1.80	1	11/05/19 21:04	11/1/19	
Benzyl Alcohol	1.40	U	5.00	1.40	1	11/05/19 21:04	11/1/19	
Bis(2-chloroethoxy)methane	1.20	U	5.00	1.20	1	11/05/19 21:04	11/1/19	
Bis(2-chloroethyl) Ether	1.90	U	5.00	1.90	1	11/05/19 21:04	11/1/19	
Bis(2-ethylhexyl) Phthalate	1.50	U	5.00	1.50	1	11/05/19 21:04	11/1/19	
Butyl Benzyl Phthalate	0.860	U	10.0	0.860	1	11/05/19 21:04	11/1/19	
Carbazole	1.80	U	5.00	1.80	1	11/05/19 21:04	11/1/19	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	JQ1906453-01	**Basis:**	NA

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3510C

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Chrysene	1.20	U	5.00	1.20	1	11/05/19 21:04	11/1/19	
Dibenz(a,h)anthracene	1.50	U	5.00	1.50	1	11/05/19 21:04	11/1/19	
Dibenzofuran	1.30	U	5.00	1.30	1	11/05/19 21:04	11/1/19	
Diethyl Phthalate	1.70	U	5.00	1.70	1	11/05/19 21:04	11/1/19	
Dimethyl Phthalate	1.30	U	5.00	1.30	1	11/05/19 21:04	11/1/19	
Di-n-butyl Phthalate	1.60	U	5.00	1.60	1	11/05/19 21:04	11/1/19	
Di-n-octyl Phthalate	1.20	U	10.0	1.20	1	11/05/19 21:04	11/1/19	
Fluoranthene	1.40	U	5.00	1.40	1	11/05/19 21:04	11/1/19	
Fluorene	0.840	U	5.00	0.840	1	11/05/19 21:04	11/1/19	
Hexachlorobenzene	1.70	U	5.00	1.70	1	11/05/19 21:04	11/1/19	
Hexachlorobutadiene	1.20	U	5.00	1.20	1	11/05/19 21:04	11/1/19	
Hexachlorocyclopentadiene	0.500	U	5.00	0.500	1	11/05/19 21:04	11/1/19	
Hexachloroethane	0.810	U	5.00	0.810	1	11/05/19 21:04	11/1/19	
Indeno(1,2,3-cd)pyrene	1.70	U	5.00	1.70	1	11/05/19 21:04	11/1/19	
Isophorone	1.80	U	5.00	1.80	1	11/05/19 21:04	11/1/19	
Naphthalene	0.530	U	5.00	0.530	1	11/05/19 21:04	11/1/19	
Nitrobenzene	2.10	U	5.00	2.10	1	11/05/19 21:04	11/1/19	
N-Nitrosodi-n-propylamine	2.20	U	5.00	2.20	1	11/05/19 21:04	11/1/19	
Pentachlorophenol (PCP)	1.10	U	20.0	1.10	1	11/05/19 21:04	11/1/19	
Phenanthrene	1.40	U	5.00	1.40	1	11/05/19 21:04	11/1/19	
Phenol	0.590	U	5.00	0.590	1	11/05/19 21:04	11/1/19	
Pyrene	0.740	U	5.00	0.740	1	11/05/19 21:04	11/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	69	23 - 122	11/05/19 21:04	
2-Fluorobiphenyl	65	15 - 117	11/05/19 21:04	
2-Fluorophenol	44	10 - 85	11/05/19 21:04	
Nitrobenzene-d5	56	10 - 110	11/05/19 21:04	
Phenol-d6	35	7 - 60	11/05/19 21:04	
p-Terphenyl-d14	103	40 - 125	11/05/19 21:04	

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Analyzed:**	11/05/19
Sample Matrix:	Water	**Date Extracted:**	11/01/19

Duplicate Lab Control Sample Summary
Semivolatile Organic Compounds by GC/MS

Analysis Method:	8270D	**Units:**	ug/L
Prep Method:	EPA 3510C	**Basis:**	NA
		Analysis Lot:	658500

	Lab Control Sample JQ1906453-02			Duplicate Lab Control Sample JQ1906453-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
1,2,4-Trichlorobenzene	29.5	40.0	74	22.1	40.0	55	30-110	29	30
1,2-Dichlorobenzene	25.7	40.0	64	19.7	40.0	49	30-110	27	30
1,3-Dichlorobenzene	25.0	40.0	63	19.1	40.0	48	25-110	27	30
1,4-Dichlorobenzene	25.4	40.0	64	19.8	40.0	50	21-110	25	30
1-Methylnaphthalene	32.2	40.0	80	23.7	40.0	59	34-113	30	30
2,4,5-Trichlorophenol	35.4	40.0	88	30.1	40.0	75	43-116	16	30
2,4,6-Trichlorophenol	34.7	40.0	87	27.5	40.0	69	34-119	23	30
2,4-Dichlorophenol	33.0	40.0	83	24.6	40.0	61	32-115	29	30
2,4-Dimethylphenol	33.0	40.0	82	24.3	40.0	61	31-111	30	30
2,4-Dinitrophenol	32.1	40.0	80	28.5	40.0	71	22-113	12	30
2,4-Dinitrotoluene	36.7	40.0	92	32.4	40.0	81	49-117	12	30
2,6-Dinitrotoluene	34.7	40.0	87	29.1	40.0	73	47-120	18	30
2-Chloronaphthalene	30.6	40.0	76	22.8	40.0	57	30-115	29	30
2-Chlorophenol	28.5	40.0	71	20.8	40.0	52	25-110	32 *	30
2-Methylnaphthalene	31.6	40.0	79	23.8	40.0	59	29-110	28	30
2-Methylphenol	28.2	40.0	70	20.6	40.0	51	29-112	31 *	30
2-Nitroaniline	30.7	40.0	77	26.5	40.0	66	38-145	15	30
2-Nitrophenol	32.1	40.0	80	23.7	40.0	59	24-119	30	30
3- and 4-Methylphenol Coelution	27.4	40.0	69	20.1	40.0	50	29-110	31 *	30
3,3'-Dichlorobenzidine	48.9	40.0	122	45.5	40.0	114	43-150	7	30
3-Nitroaniline	38.0	40.0	95	33.2	40.0	83	55-128	13	30
4,6-Dinitro-2-methylphenol	34.9	40.0	87	31.6	40.0	79	26-115	10	30
4-Bromophenyl Phenyl Ether	32.5	40.0	81	28.7	40.0	72	49-115	12	30
4-Chloro-3-methylphenol	35.2	40.0	88	28.6	40.0	71	45-113	21	30
4-Chloroaniline	34.6	40.0	86	24.3	40.0	61	33-122	35 *	30
4-Chlorophenyl Phenyl Ether	32.3	40.0	81	26.1	40.0	65	42-115	21	30
4-Nitroaniline	38.7	40.0	97	33.9	40.0	85	52-128	13	30
4-Nitrophenol	13.6 J	40.0	34	11.6 J	40.0	29	15-85	16	30
Acenaphthene	32.0	40.0	80	24.5	40.0	61	32-112	27	30
Acenaphthylene	32.0	40.0	80	24.2	40.0	60	33-115	28	30
Acetophenone	28.0	40.0	70	20.5	40.0	51	30-115	31 *	30
Anthracene	33.5	40.0	84	30.9	40.0	77	54-114	8	30
Benz(a)anthracene	35.3	40.0	88	33.2	40.0	83	54-120	6	30
Benzo(a)pyrene	37.3	40.0	93	34.1	40.0	85	48-125	9	30
Benzo(b)fluoranthene	38.0	40.0	95	34.9	40.0	87	50-125	8	30
Benzo(g,h,i)perylene	36.8	40.0	92	34.5	40.0	86	50-125	7	30
Benzo(k)fluoranthene	35.2	40.0	88	31.8	40.0	79	45-120	10	30
Benzyl Alcohol	26.8	40.0	67	19.6	40.0	49	25-111	31 *	30
Bis(2-chloroethoxy)methane	31.2	40.0	78	22.5	40.0	56	28-116	33 *	30
Bis(2-chloroethyl) Ether	29.1	40.0	73	21.0	40.0	53	26-114	32 *	30
Bis(2-ethylhexyl) Phthalate	34.9	40.0	87	31.8	40.0	79	48-125	9	30

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Analyzed:**	11/05/19
Sample Matrix:	Water	**Date Extracted:**	11/01/19

Duplicate Lab Control Sample Summary
Semivolatile Organic Compounds by GC/MS

Analysis Method:	8270D	**Units:**	ug/L
Prep Method:	EPA 3510C	**Basis:**	NA
		Analysis Lot:	658500

	Lab Control Sample JQ1906453-02			Duplicate Lab Control Sample JQ1906453-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Butyl Benzyl Phthalate	37.4	40.0	93	34.6	40.0	87	50-128	8	30
Carbazole	35.7	40.0	89	32.8	40.0	82	53-117	9	30
Chrysene	36.2	40.0	90	33.6	40.0	84	51-120	7	30
Dibenz(a,h)anthracene	37.8	40.0	95	35.0	40.0	88	50-125	8	30
Dibenzofuran	32.4	40.0	81	25.3	40.0	63	38-115	25	30
Diethyl Phthalate	34.3	40.0	86	30.2	40.0	76	52-120	13	30
Dimethyl Phthalate	33.8	40.0	84	28.6	40.0	71	47-120	17	30
Di-n-butyl Phthalate	35.6	40.0	89	32.0	40.0	80	54-121	11	30
Di-n-octyl Phthalate	33.4	40.0	83	30.1	40.0	75	46-117	10	30
Fluoranthene	36.2	40.0	90	32.9	40.0	82	56-120	10	30
Fluorene	33.5	40.0	84	27.5	40.0	69	42-115	20	30
Hexachlorobenzene	34.0	40.0	85	31.2	40.0	78	50-117	8	30
Hexachlorobutadiene	28.0	40.0	70	20.6	40.0	51	25-110	30	30
Hexachlorocyclopentadiene	28.9	40.0	72	20.3	40.0	51	22-126	35 *	30
Hexachloroethane	23.2	40.0	58	17.7	40.0	44	21-115	27	30
Indeno(1,2,3-cd)pyrene	37.7	40.0	94	34.8	40.0	87	49-125	8	30
Isophorone	31.2	40.0	78	22.5	40.0	56	31-120	32 *	30
Naphthalene	30.1	40.0	75	22.5	40.0	56	33-115	29	30
Nitrobenzene	26.9	40.0	67	19.5	40.0	49	25-118	32 *	30
N-Nitrosodi-n-propylamine	27.4	40.0	68	20.0	40.0	50	30-123	31 *	30
Pentachlorophenol (PCP)	25.8	40.0	65	23.3	40.0	58	36-110	11	30
Phenanthrene	33.2	40.0	83	30.5	40.0	76	52-117	8	30
Phenol	18.9	40.0	47	13.9	40.0	35	13-90	31 *	30
Pyrene	34.4	40.0	86	32.7	40.0	82	50-121	5	30

Client: Water and Air Research **Service Request:** J1906553
Project: USACE Big Fishweir Creek/19-5805-01
Sample Matrix: Water

SURROGATE RECOVERY SUMMARY
Base Neutral Semivolatile Organic Compounds by GC/MS SIM

Analysis Method: 8270D SIM
Extraction Method: EPA 3510C

Sample Name	Lab Code	2-Fluorobiphenyl 22-105	p-Terphenyl-d14 25-127
VB-BFWC19-Zone A	J1906553-001	79	76
VB-BFWC19-Zone D	J1906553-002	43	51
VB-BFWC19-Site Water	J1906553-003	77	80
Method Blank	JQ1906504-01	53	50
Lab Control Sample	JQ1906504-02	85	78

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	JQ1906504-01	**Basis:**	NA

Base Neutral Semivolatile Organic Compounds by GC/MS SIM

Analysis Method: 8270D SIM
Prep Method: EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1-Methylnaphthalene	0.0440 U	0.100	0.0440	1	11/12/19 22:24	11/5/19	
2-Methylnaphthalene	0.0440 U	0.100	0.0440	1	11/12/19 22:24	11/5/19	
Acenaphthene	0.0410 U	0.100	0.0410	1	11/12/19 22:24	11/5/19	
Acenaphthylene	0.0250 U	0.100	0.0250	1	11/12/19 22:24	11/5/19	
Anthracene	0.0380 U	0.100	0.0380	1	11/12/19 22:24	11/5/19	
Benz(a)anthracene	0.0350 U	0.100	0.0350	1	11/12/19 22:24	11/5/19	
Benzo(a)pyrene	0.0310 U	0.100	0.0310	1	11/12/19 22:24	11/5/19	
Benzo(b)fluoranthene	0.0250 U	0.100	0.0250	1	11/12/19 22:24	11/5/19	
Benzo(g,h,i)perylene	0.0390 U	0.100	0.0390	1	11/12/19 22:24	11/5/19	
Benzo(k)fluoranthene	0.0350 U	0.100	0.0350	1	11/12/19 22:24	11/5/19	
Chrysene	0.0240 U	0.100	0.0240	1	11/12/19 22:24	11/5/19	
Dibenz(a,h)anthracene	0.0360 U	0.100	0.0360	1	11/12/19 22:24	11/5/19	
Fluoranthene	0.0390 U	0.100	0.0390	1	11/12/19 22:24	11/5/19	
Fluorene	0.0470 U	0.100	0.0470	1	11/12/19 22:24	11/5/19	
Indeno(1,2,3-cd)pyrene	0.0400 U	0.100	0.0400	1	11/12/19 22:24	11/5/19	
Naphthalene	0.0390 U	0.100	0.0390	1	11/12/19 22:24	11/5/19	
Phenanthrene	0.0350 U	0.100	0.0350	1	11/12/19 22:24	11/5/19	
Pyrene	0.0310 U	0.100	0.0310	1	11/12/19 22:24	11/5/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	53	22 - 105	11/12/19 22:24	
p-Terphenyl-d14	50	25 - 127	11/12/19 22:24	

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Analyzed:**	11/12/19
Sample Matrix:	Water	**Date Extracted:**	11/05/19

Lab Control Sample Summary
Base Neutral Semivolatile Organic Compounds by GC/MS SIM

Analysis Method:	8270D SIM	**Units:**	ug/L
Prep Method:	EPA 3510C	**Basis:**	NA
		Analysis Lot:	659504

Lab Control Sample
JQ1906504-02

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
1-Methylnaphthalene	1.59	2.00	79	34-105
2-Methylnaphthalene	1.57	2.00	79	32-105
Acenaphthene	1.67	2.00	84	41-109
Acenaphthylene	1.59	2.00	79	35-114
Anthracene	1.64	2.00	82	48-108
Benz(a)anthracene	1.84	2.00	92	52-122
Benzo(a)pyrene	1.81	2.00	90	53-127
Benzo(b)fluoranthene	2.03	2.00	101	53-116
Benzo(g,h,i)perylene	1.80	2.00	90	46-114
Benzo(k)fluoranthene	1.90	2.00	95	57-115
Chrysene	1.78	2.00	89	60-115
Dibenz(a,h)anthracene	1.89	2.00	95	44-110
Fluoranthene	1.82	2.00	91	53-112
Fluorene	1.73	2.00	87	38-106
Indeno(1,2,3-cd)pyrene	1.88	2.00	94	45-120
Naphthalene	1.65	2.00	82	40-105
Phenanthrene	1.68	2.00	84	49-107
Pyrene	1.73	2.00	86	57-115

Subcontracted Analytical Parameters

ALS Environmental—Jacksonville Laboratory
9143 Philips Highway, Suite 200, Jacksonville, FL 32256
Phone (904) 739-2277 Fax (904) 739-2011
www.alsglobal.com

January 03, 2020 Service Request No:J1906553.01

Mr. Bryan Cotter
Water and Air Research
6821 S.W. Archer Road.
Gainesville, FL 32608

Laboratory Results for: USACE Big Fishweir Creek

Dear Mr.Cotter,

Enclosed is the revised report for the sample(s) submitted to our laboratory October 31, 2019
For your reference, these analyses have been assigned our service request number **J1906553.**

Metals have been added to this report.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3342. You may also contact me via email at Amanda.Juell@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

for Amanda Juell
Project Manager

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626
PHONE +1 360 577 7222 | FAX +1 360 636 1068
ALS Group USA, Corp.
dba ALS Environmental

REVISED
4:41 pm, Jan 03, 2020

Narrative Documents

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

Client: Water and Air Research
Project: USACE Big Fishweir Creek
Sample Matrix: Water

Service Request: J1906553
Date Received: 10/31/2019

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Three water samples were received for analysis at ALS Environmental on 10/31/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivoa GC:

Method 8081B, Ultra Low Level Organochlorine Pesticides by GC/ECD 11/15/2019: The MRL was elevated for Endosulfan II in sample VB-BFWC19-Zone D and Method Blank KQ1916178-07 after the absence of Endosulfan II was confirmed by GC/MS/MS analysis. No further corrective action was required.
Method 8081B, Ultra Low Level Organochlorine Pesticides by GC/ECD 11/15/2019: Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

Method 8082A, Polychlorinated Biphenyl (PCB) Congeners by GC/ECD 11/06/2019: The upper control criterion was exceeded for PCB 168 and PCB 174 in Continuing Calibration Verification (CCV) GC36\1106000005.D. The field samples analyzed in this sequence did not contain the analytes in question. Since the apparent problem indicated a potential high bias, the data quality was not affected. No further corrective action was required.
Method 8082A, Polychlorinated Biphenyl (PCB) Congeners by GC/ECD 11/06/2019: The upper control criterion was exceeded for PCB 138, PCB 183 and PCB 184 in Laboratory Control Samples (LCS/DLCS) KQ1916175-01 and KQ1916175-02 and several PCBs in LCS KQ1916175-03 and KQ1916175-04. The analytes in question were not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

Metals:

No significant anomalies were noted with this analysis.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by Amanda Jewell Date 11/20/2019

SAMPLE DETECTION SUMMARY

CLIENT ID: VB-BFWC19-Zone A			Lab ID: J1906553-001			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Hardness, Total as CaCO3	257		2.0	5.0	mg/L	SM 2340 C
Arsenic	5.04		0.06	0.50	ug/L	200.8
Beryllium	0.019	J	0.007	0.020	ug/L	200.8
Cadmium	0.017	J	0.003	0.020	ug/L	200.8
Chromium	0.28		0.02	0.20	ug/L	200.8
Cobalt	0.216		0.007	0.020	ug/L	200.8
Copper	0.46		0.02	0.10	ug/L	200.8
Lead	2.75		0.020	0.050	ug/L	200.8
Nickel	0.88		0.03	0.20	ug/L	200.8
Silver	0.006	J	0.004	0.020	ug/L	200.8
Zinc	2.74		0.20	0.50	ug/L	200.8
beta-BHC	1.1		0.47	1.0	ng/L	8081B
Chlordane	20	P	4.0	10	ng/L	8081B
trans-Chlordane	1.2		0.21	0.50	ng/L	8081B
4,4'-DDE	0.68	P	0.11	0.40	ng/L	8081B

CLIENT ID: VB-BFWC19-Zone D			Lab ID: J1906553-002			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Hardness, Total as CaCO3	218		2.0	5.0	mg/L	SM 2340 C
Arsenic	13.3		0.06	0.51	ug/L	200.8
Cadmium	0.004	J	0.003	0.020	ug/L	200.8
Chromium	0.22		0.02	0.20	ug/L	200.8
Cobalt	0.058		0.007	0.020	ug/L	200.8
Copper	0.26		0.02	0.10	ug/L	200.8
Lead	0.456		0.020	0.051	ug/L	200.8
Nickel	0.72		0.03	0.20	ug/L	200.8
Zinc	0.94		0.20	0.51	ug/L	200.8
4,4'-DDE	2.0	P	0.11	0.40	ng/L	8081B
Endosulfan I	1.1		0.15	0.40	ng/L	8081B
PCB 5	4.7	J	1.8	10	ng/L	8082A

CLIENT ID: VB-BFWC19-Site Water			Lab ID: J1906553-003			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Hardness, Total as CaCO3	235		2.0	5.0	mg/L	SM 2340 C
Arsenic	0.53		0.06	0.50	ug/L	200.8
Chromium	0.17	J	0.02	0.20	ug/L	200.8
Cobalt	0.075		0.007	0.020	ug/L	200.8
Copper	0.57		0.02	0.10	ug/L	200.8
Lead	0.092		0.020	0.050	ug/L	200.8
Nickel	0.91		0.03	0.20	ug/L	200.8
Zinc	3.05		0.20	0.50	ug/L	200.8
Aldrin	0.38	J	0.20	0.40	ng/L	8081B

SAMPLE DETECTION SUMMARY

CLIENT ID: VB-BFWC19-Site Water			Lab ID: J1906553-003			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
gamma-BHC (Lindane)	0.39	J	0.22	0.50	ng/L	8081B
Endosulfan I	0.87	P	0.15	0.40	ng/L	8081B
Endrin Aldehyde	0.59		0.22	0.50	ng/L	8081B

Sample Receipt Information

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: Water and Air Research **Service Request:**J1906553
Project: USACE Big Fishweir Creek/19-5805-01

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
J1906553-001	VB-BFWC19-Zone A	10/30/2019	1155
J1906553-002	VB-BFWC19-Zone D	10/30/2019	1230
J1906553-003	VB-BFWC19-Site Water	10/30/2019	1255

Intra-Network Chain of Custody

9143 Philips Highway, Suite 200 • Jacksonville, FL 32256 • 904-739-2277 • FAX 904-739-2011

ALS Contact: Mandy Sullivan

Project Name: USACE Big Fishweir Creek
Project Number: 19-5805-01
Project Manager: Bryan Cotter
Company: Water and Air Research
QAP: LAB QAP

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Date Received	Send To	Hardness Calc SM 2340 B	Metals Redppt T 200.8	PCB Congeners 8082A	Pest OC ULL 8081B
J1906553-001	VB-BFWC19-Zone A		Water	10/30/19	1155	10/31/19	KELSO	II	II	II	II
J1906553-002	VB-BFWC19-Zone D		Water	10/30/19	1230	10/31/19	KELSO	II	II	II	II
J1906553-003	VB-BFWC19-Site Water		Water	10/30/19	1255	10/31/19	KELSO	II	II	II	II

Test Comments

Metals Redppt T - 200.8 J1906553-001,2,3 PPL Metals List

Special Instructions/Comments

pH Checked _____

Turnaround Requirements

_____**RUSH** (Surcharges Apply)

PLEASE CIRCLE WORK DAYS

1 2 3 4 5

____ **STANDARD**

Requested FAX Date: _____

Requested Report Date: 11/21/19

Report Requirements

____ I. Results Only

____ II. Results + QC Summaries

____ III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

PQL/MDL/J Y

EDD N

Invoice Information

PO# 53J1906553

Bill to

Relinquished By: _____ Received By: _____ Airbill Number: _____

ALS

PC

Cooler Receipt and Preservation Form

Client ALS/Jax Service Request K19 J1906553

Received: 11/1/19 Opened: 11/1/19 By: Unloaded: 11/1/19 By:

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
0.8	0.9	—	—	+0.1	308		6666 8257 6347	
0.0	0.0	—	—	0	381		" " 6336	

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA Y N

   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

7/25/16 ***Page*** ____ ***of*** ____

Miscellaneous Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Client: Water and Air Research **Service Request:** J1906553
Project: USACE Big Fishweir Creek/19-5805-01

Sample Name: VB-BFWC19-Zone A **Date Collected:** 10/30/19
Lab Code: J1906553-001 **Date Received:** 10/31/19
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
1613B	TWOODS	LLUONG
200.8	MYOUNG	JCHAN
8081B	JDUNFIELD	MCHAPPELLE
8082A	JDUNFIELD	MCHAPPELLE
8151A	KSERCU	JMISIUREWICZ
8270D	ECOMOR	TYEREMYANTS
8270D SIM	ECOMOR	TYEREMYANTS
SM 2340 C	ABUVEL	ABUVEL

Sample Name: VB-BFWC19-Zone A **Date Collected:** 10/30/19
Lab Code: J1906553-001.R01 **Date Received:** 10/31/19
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
8081B	JDUNFIELD	SHERBELIN

Sample Name: VB-BFWC19-Zone D **Date Collected:** 10/30/19
Lab Code: J1906553-002 **Date Received:** 10/31/19
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
1613B	TWOODS	LLUONG
200.8	MYOUNG	JCHAN
8081B	JDUNFIELD	MCHAPPELLE
8082A	JDUNFIELD	MCHAPPELLE
8151A	KSERCU	JMISIUREWICZ
8270D	ECOMOR	TYEREMYANTS
8270D SIM	ECOMOR	TYEREMYANTS
SM 2340 C	ABUVEL	ABUVEL

Client: Water and Air Research **Service Request:** J1906553
Project: USACE Big Fishweir Creek/19-5805-01

Sample Name: VB-BFWC19-Zone D **Date Collected:** 10/30/19
Lab Code: J1906553-002.R01 **Date Received:** 10/31/19
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
8081B	JDUNFIELD	SHERBELIN

Sample Name: VB-BFWC19-Site Water **Date Collected:** 10/30/19
Lab Code: J1906553-003 **Date Received:** 10/31/19
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
1613B	TWOODS	LLUONG
200.8	MYOUNG	JCHAN
8081B	JDUNFIELD	MCHAPPELLE
8082A	JDUNFIELD	MCHAPPELLE
8151A	KSERCU	JMISIUREWICZ
8270D	ECOMOR	TYEREMYANTS
8270D SIM	ECOMOR	TYEREMYANTS
SM 2340 C	ABUVEL	ABUVEL

Sample Name: VB-BFWC19-Site Water **Date Collected:** 10/30/19
Lab Code: J1906553-003.R01 **Date Received:** 10/31/19
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
8081B	JDUNFIELD	SHERBELIN

Sample Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Semivolatile Organic Compounds by GC

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 11:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone A	**Units:**	ng/L
Lab Code:	J1906553-001	**Basis:**	NA

Ultra Low Level Organochlorine Pesticides by GC/ECD

Analysis Method: 8081B
Prep Method: EPA 3535A

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Aldrin	0.20	U	0.40	0.20	1	11/14/19 23:46	11/4/19	
alpha-BHC	0.19	U	0.40	0.19	1	11/14/19 23:46	11/4/19	
beta-BHC	**1.1**		1.0	0.47	1	11/14/19 23:46	11/4/19	
delta-BHC	0.20	U	0.40	0.20	1	11/14/19 23:46	11/4/19	
gamma-BHC (Lindane)	0.22	U	0.50	0.22	1	11/14/19 23:46	11/4/19	
Chlordane	**20**	**P**	10	4.0	1	11/14/19 23:46	11/4/19	
cis-Chlordane	0.57	Ui	0.57	0.57	1	11/14/19 23:46	11/4/19	
trans-Chlordane	**1.2**		0.50	0.21	1	11/14/19 23:46	11/4/19	
4,4'-DDD	0.71	Ui	0.71	0.71	1	11/14/19 23:46	11/4/19	
4,4'-DDE	**0.68**	**P**	0.40	0.11	1	11/14/19 23:46	11/4/19	
4,4'-DDT	0.64	Ui	0.64	0.64	1	11/14/19 23:46	11/4/19	
Dieldrin	0.29	Ui	0.50	0.29	1	11/14/19 23:46	11/4/19	
Endosulfan I	0.15	U	0.40	0.15	1	11/14/19 23:46	11/4/19	
Endosulfan II	0.46	Ui	0.46	0.46	1	11/14/19 23:46	11/4/19	
Endosulfan Sulfate	0.84	U	1.0	0.84	1	11/14/19 23:46	11/4/19	
Endrin	0.62	Ui	0.62	0.62	1	11/14/19 23:46	11/4/19	
Endrin Aldehyde	0.22	U	0.50	0.22	1	11/14/19 23:46	11/4/19	
Endrin Ketone	0.28	U	0.50	0.28	1	11/14/19 23:46	11/4/19	
Heptachlor	4.0	Ui	4.0	4.0	1	11/14/19 23:46	11/4/19	
Heptachlor Epoxide	0.69	U	1.0	0.69	1	11/14/19 23:46	11/4/19	
Methoxychlor	0.22	U	0.50	0.22	1	11/14/19 23:46	11/4/19	
Toxaphene	19	U	50	19	1	11/14/19 23:46	11/4/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	56	19 - 127	11/14/19 23:46	
Tetrachloro-m-xylene	40	20 - 106	11/14/19 23:46	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:30
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone D	**Units:**	ng/L
Lab Code:	J1906553-002	**Basis:**	NA

Ultra Low Level Organochlorine Pesticides by GC/ECD

Analysis Method: 8081B
Prep Method: EPA 3535A

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Aldrin	0.48	Ui	0.48	0.48	1	11/15/19 00:16	11/4/19	
alpha-BHC	0.19	U	0.40	0.19	1	11/15/19 00:16	11/4/19	
beta-BHC	0.47	U	1.0	0.47	1	11/15/19 00:16	11/4/19	
delta-BHC	0.20	U	0.40	0.20	1	11/15/19 00:16	11/4/19	
gamma-BHC (Lindane)	1.2	Ui	1.2	1.2	1	11/15/19 00:16	11/4/19	
Chlordane	4.0	U	10	4.0	1	11/15/19 00:16	11/4/19	
cis-Chlordane	0.41	Ui	0.41	0.41	1	11/15/19 00:16	11/4/19	
trans-Chlordane	0.41	Ui	0.50	0.41	1	11/15/19 00:16	11/4/19	
4,4'-DDD	0.71	Ui	0.71	0.71	1	11/15/19 00:16	11/4/19	
4,4'-DDE	**2.0**	**P**	0.40	0.11	1	11/15/19 00:16	11/4/19	
4,4'-DDT	1.6	Ui	1.6	1.6	1	11/15/19 00:16	11/4/19	
Dieldrin	0.23	U	0.50	0.23	1	11/15/19 00:16	11/4/19	
Endosulfan I	**1.1**		0.40	0.15	1	11/15/19 00:16	11/4/19	
Endosulfan II	0.82	Ui	0.82	0.82	1	11/15/19 00:16	11/4/19	
Endosulfan Sulfate	1.1	Ui	1.1	1.1	1	11/15/19 00:16	11/4/19	
Endrin	0.58	Ui	0.58	0.58	1	11/15/19 00:16	11/4/19	
Endrin Aldehyde	0.22	U	0.50	0.22	1	11/15/19 00:16	11/4/19	
Endrin Ketone	0.28	U	0.50	0.28	1	11/15/19 00:16	11/4/19	
Heptachlor	490	Ui	490	490	1	11/15/19 00:16	11/4/19	
Heptachlor Epoxide	0.69	U	1.0	0.69	1	11/15/19 00:16	11/4/19	
Methoxychlor	0.22	U	0.50	0.22	1	11/15/19 00:16	11/4/19	
Toxaphene	19	U	50	19	1	11/15/19 00:16	11/4/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	36	19 - 127	11/15/19 00:16	
Tetrachloro-m-xylene	25	20 - 106	11/15/19 00:16	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Site Water	**Units:**	ng/L
Lab Code:	J1906553-003	**Basis:**	NA

Ultra Low Level Organochlorine Pesticides by GC/ECD

Analysis Method: 8081B
Prep Method: EPA 3535A

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Aldrin	**0.38**	**J**	0.40	0.20	1	11/15/19 00:46	11/4/19	
alpha-BHC	0.19	U	0.40	0.19	1	11/15/19 00:46	11/4/19	
beta-BHC	0.47	U	1.0	0.47	1	11/15/19 00:46	11/4/19	
delta-BHC	0.20	U	0.40	0.20	1	11/15/19 00:46	11/4/19	
gamma-BHC (Lindane)	**0.39**	**J**	0.50	0.22	1	11/15/19 00:46	11/4/19	
Chlordane	13	Ui	13	13	1	11/15/19 00:46	11/4/19	
cis-Chlordane	0.53	Ui	0.53	0.53	1	11/15/19 00:46	11/4/19	
trans-Chlordane	0.35	Ui	0.50	0.35	1	11/15/19 00:46	11/4/19	
4,4'-DDD	0.28	U	1.0	0.28	1	11/15/19 00:46	11/4/19	
4,4'-DDE	0.48	Ui	0.48	0.48	1	11/15/19 00:46	11/4/19	
4,4'-DDT	0.41	Ui	1.0	0.41	1	11/15/19 00:46	11/4/19	
Dieldrin	0.23	U	0.50	0.23	1	11/15/19 00:46	11/4/19	
Endosulfan I	**0.87**	**P**	0.40	0.15	1	11/15/19 00:46	11/4/19	
Endosulfan II	0.89	Ui	0.89	0.89	1	11/15/19 00:46	11/4/19	
Endosulfan Sulfate	0.84	U	1.0	0.84	1	11/15/19 00:46	11/4/19	
Endrin	0.18	U	0.40	0.18	1	11/15/19 00:46	11/4/19	
Endrin Aldehyde	**0.59**		0.50	0.22	1	11/15/19 00:46	11/4/19	
Endrin Ketone	0.28	U	0.50	0.28	1	11/15/19 00:46	11/4/19	
Heptachlor	6.8	Ui	6.8	6.8	1	11/15/19 00:46	11/4/19	
Heptachlor Epoxide	0.69	U	1.0	0.69	1	11/15/19 00:46	11/4/19	
Methoxychlor	0.22	U	0.50	0.22	1	11/15/19 00:46	11/4/19	
Toxaphene	19	U	50	19	1	11/15/19 00:46	11/4/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	38	19 - 127	11/15/19 00:46	
Tetrachloro-m-xylene	38	20 - 106	11/15/19 00:46	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 11:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone A	**Units:**	ng/L
Lab Code:	J1906553-001	**Basis:**	NA

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method: 8082A
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
PCB 1	39 U	100	39	1	11/06/19 14:30	11/4/19	
PCB 101	1.9 U	10	1.9	1	11/06/19 14:30	11/4/19	
PCB 105	1.2 U	10	1.2	1	11/06/19 14:30	11/4/19	
PCB 110	2.4 U	10	2.4	1	11/06/19 14:30	11/4/19	
PCB 114	0.88 U	10	0.88	1	11/06/19 14:30	11/4/19	
PCB 118	1.1 U	10	1.1	1	11/06/19 14:30	11/4/19	
PCB 119	1.5 U	10	1.5	1	11/06/19 14:30	11/4/19	
PCB 123	2.1 U	10	2.1	1	11/06/19 14:30	11/4/19	
PCB 126	2.6 U	10	2.6	1	11/06/19 14:30	11/4/19	
PCB 128	1.1 U	10	1.1	1	11/06/19 14:30	11/4/19	
PCB 138	1.6 U	10	1.6	1	11/06/19 14:30	11/4/19	*
PCB 132	3.0 U	10	3.0	1	11/06/19 14:30	11/4/19	
PCB 141	1.7 U	10	1.7	1	11/06/19 14:30	11/4/19	
PCB 149	1.4 U	10	1.4	1	11/06/19 14:30	11/4/19	
PCB 151	1.2 U	10	1.2	1	11/06/19 14:30	11/4/19	
PCB 153	1.2 U	10	1.2	1	11/06/19 14:30	11/4/19	
PCB 156	1.9 U	10	1.9	1	11/06/19 14:30	11/4/19	
PCB 157	1.9 U	10	1.9	1	11/06/19 14:30	11/4/19	
PCB 158	1.5 U	10	1.5	1	11/06/19 14:30	11/4/19	
PCB 166	1.7 U	10	1.7	1	11/06/19 14:30	11/4/19	
PCB 167	2.8 U	10	2.8	1	11/06/19 14:30	11/4/19	
PCB 168	1.4 U	10	1.4	1	11/06/19 14:30	11/4/19	
PCB 169	1.8 U	10	1.8	1	11/06/19 14:30	11/4/19	
PCB 170	1.6 U	10	1.6	1	11/06/19 14:30	11/4/19	
PCB 174	1.5 U	10	1.5	1	11/06/19 14:30	11/4/19	
PCB 177	1.8 U	10	1.8	1	11/06/19 14:30	11/4/19	
PCB 18	2.0 U	10	2.0	1	11/06/19 14:30	11/4/19	
PCB 180	2.9 U	10	2.9	1	11/06/19 14:30	11/4/19	
PCB 183	1.5 U	10	1.5	1	11/06/19 14:30	11/4/19	*
PCB 184	1.3 U	10	1.3	1	11/06/19 14:30	11/4/19	*
PCB 187	1.4 U	10	1.4	1	11/06/19 14:30	11/4/19	
PCB 189	1.8 U	10	1.8	1	11/06/19 14:30	11/4/19	
PCB 194	1.2 U	10	1.2	1	11/06/19 14:30	11/4/19	
PCB 195	1.8 U	10	1.8	1	11/06/19 14:30	11/4/19	
PCB 201	1.8 U	10	1.8	1	11/06/19 14:30	11/4/19	
PCB 203	1.8 U	10	1.8	1	11/06/19 14:30	11/4/19	
PCB 206	2.3 U	10	2.3	1	11/06/19 14:30	11/4/19	
Decachlorobiphenyl	2.8 U	10	2.8	1	11/06/19 14:30	11/4/19	
PCB 28	1.6 U	10	1.6	1	11/06/19 14:30	11/4/19	
PCB 31	1.4 Ui	10	1.4	1	11/06/19 14:30	11/4/19	
PCB 33	1.7 U	10	1.7	1	11/06/19 14:30	11/4/19	
PCB 37	1.9 U	10	1.9	1	11/06/19 14:30	11/4/19	
PCB 44	3.3 U	10	3.3	1	11/06/19 14:30	11/4/19	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 11:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone A	**Units:**	ng/L
Lab Code:	J1906553-001	**Basis:**	NA

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method: 8082A
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
PCB 49	1.4 U	10	1.4	1	11/06/19 14:30	11/4/19	
PCB 5	1.8 U	10	1.8	1	11/06/19 14:30	11/4/19	
PCB 52	1.4 U	10	1.4	1	11/06/19 14:30	11/4/19	
PCB 56	2.7 U	10	2.7	1	11/06/19 14:30	11/4/19	
PCB 60	0.96 U	10	0.96	1	11/06/19 14:30	11/4/19	
PCB 66	4.2 U	10	4.2	1	11/06/19 14:30	11/4/19	
PCB 70	1.5 U	10	1.5	1	11/06/19 14:30	11/4/19	
PCB 74	1.6 U	10	1.6	1	11/06/19 14:30	11/4/19	
PCB 77	1.9 U	10	1.9	1	11/06/19 14:30	11/4/19	
PCB 8	1.8 Ui	10	1.8	1	11/06/19 14:30	11/4/19	
PCB 81	1.8 U	10	1.8	1	11/06/19 14:30	11/4/19	
PCB 87	1.3 U	10	1.3	1	11/06/19 14:30	11/4/19	
PCB 90	1.3 U	10	1.3	1	11/06/19 14:30	11/4/19	
PCB 95	1.2 U	10	1.2	1	11/06/19 14:30	11/4/19	
PCB 97	2.3 U	10	2.3	1	11/06/19 14:30	11/4/19	
PCB 99	1.8 U	10	1.8	1	11/06/19 14:30	11/4/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tetrachloro-m-xylene	101	70 - 130	11/06/19 14:30	

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:30
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone D	**Units:**	ng/L
Lab Code:	J1906553-002	**Basis:**	NA

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method: 8082A
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
PCB 1	39 U	100	39	1	11/06/19 15:04	11/4/19	
PCB 101	1.9 U	10	1.9	1	11/06/19 15:04	11/4/19	
PCB 105	1.2 U	10	1.2	1	11/06/19 15:04	11/4/19	
PCB 110	2.4 U	10	2.4	1	11/06/19 15:04	11/4/19	
PCB 114	0.88 U	10	0.88	1	11/06/19 15:04	11/4/19	
PCB 118	1.1 U	10	1.1	1	11/06/19 15:04	11/4/19	
PCB 119	1.5 U	10	1.5	1	11/06/19 15:04	11/4/19	
PCB 123	2.1 U	10	2.1	1	11/06/19 15:04	11/4/19	
PCB 126	2.6 U	10	2.6	1	11/06/19 15:04	11/4/19	
PCB 128	1.1 U	10	1.1	1	11/06/19 15:04	11/4/19	
PCB 138	1.6 U	10	1.6	1	11/06/19 15:04	11/4/19	*
PCB 132	3.0 U	10	3.0	1	11/06/19 15:04	11/4/19	
PCB 141	1.7 U	10	1.7	1	11/06/19 15:04	11/4/19	
PCB 149	1.4 U	10	1.4	1	11/06/19 15:04	11/4/19	
PCB 151	1.2 U	10	1.2	1	11/06/19 15:04	11/4/19	
PCB 153	1.2 U	10	1.2	1	11/06/19 15:04	11/4/19	
PCB 156	1.9 U	10	1.9	1	11/06/19 15:04	11/4/19	
PCB 157	1.9 U	10	1.9	1	11/06/19 15:04	11/4/19	
PCB 158	1.5 U	10	1.5	1	11/06/19 15:04	11/4/19	
PCB 166	1.7 U	10	1.7	1	11/06/19 15:04	11/4/19	
PCB 167	2.8 U	10	2.8	1	11/06/19 15:04	11/4/19	
PCB 168	1.4 U	10	1.4	1	11/06/19 15:04	11/4/19	
PCB 169	1.8 U	10	1.8	1	11/06/19 15:04	11/4/19	
PCB 170	1.6 U	10	1.6	1	11/06/19 15:04	11/4/19	
PCB 174	1.5 U	10	1.5	1	11/06/19 15:04	11/4/19	
PCB 177	1.8 U	10	1.8	1	11/06/19 15:04	11/4/19	
PCB 18	2.0 U	10	2.0	1	11/06/19 15:04	11/4/19	
PCB 180	2.9 U	10	2.9	1	11/06/19 15:04	11/4/19	
PCB 183	1.5 U	10	1.5	1	11/06/19 15:04	11/4/19	*
PCB 184	1.3 U	10	1.3	1	11/06/19 15:04	11/4/19	*
PCB 187	1.4 U	10	1.4	1	11/06/19 15:04	11/4/19	
PCB 189	1.8 U	10	1.8	1	11/06/19 15:04	11/4/19	
PCB 194	1.2 U	10	1.2	1	11/06/19 15:04	11/4/19	
PCB 195	1.8 U	10	1.8	1	11/06/19 15:04	11/4/19	
PCB 201	1.8 U	10	1.8	1	11/06/19 15:04	11/4/19	
PCB 203	1.8 U	10	1.8	1	11/06/19 15:04	11/4/19	
PCB 206	2.3 U	10	2.3	1	11/06/19 15:04	11/4/19	
Decachlorobiphenyl	2.8 U	10	2.8	1	11/06/19 15:04	11/4/19	
PCB 28	1.6 U	10	1.6	1	11/06/19 15:04	11/4/19	
PCB 31	1.3 Ui	10	1.3	1	11/06/19 15:04	11/4/19	
PCB 33	1.7 U	10	1.7	1	11/06/19 15:04	11/4/19	
PCB 37	1.9 U	10	1.9	1	11/06/19 15:04	11/4/19	
PCB 44	3.3 U	10	3.3	1	11/06/19 15:04	11/4/19	

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:30
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone D	**Units:**	ng/L
Lab Code:	J1906553-002	**Basis:**	NA

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method: 8082A
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
PCB 49	1.4 U	10	1.4	1	11/06/19 15:04	11/4/19	
PCB 5	**4.7 J**	10	1.8	1	11/06/19 15:04	11/4/19	
PCB 52	1.4 U	10	1.4	1	11/06/19 15:04	11/4/19	
PCB 56	2.7 U	10	2.7	1	11/06/19 15:04	11/4/19	
PCB 60	1.1 Ui	10	1.1	1	11/06/19 15:04	11/4/19	
PCB 66	4.2 U	10	4.2	1	11/06/19 15:04	11/4/19	
PCB 70	1.5 U	10	1.5	1	11/06/19 15:04	11/4/19	
PCB 74	1.6 U	10	1.6	1	11/06/19 15:04	11/4/19	
PCB 77	1.9 U	10	1.9	1	11/06/19 15:04	11/4/19	
PCB 8	6.5 Ui	10	6.5	1	11/06/19 15:04	11/4/19	
PCB 81	1.8 U	10	1.8	1	11/06/19 15:04	11/4/19	
PCB 87	1.3 U	10	1.3	1	11/06/19 15:04	11/4/19	
PCB 90	1.3 U	10	1.3	1	11/06/19 15:04	11/4/19	
PCB 95	1.2 U	10	1.2	1	11/06/19 15:04	11/4/19	
PCB 97	2.3 U	10	2.3	1	11/06/19 15:04	11/4/19	
PCB 99	1.8 U	10	1.8	1	11/06/19 15:04	11/4/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tetrachloro-m-xylene	103	70 - 130	11/06/19 15:04	

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Site Water	**Units:**	ng/L
Lab Code:	J1906553-003	**Basis:**	NA

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method: 8082A
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
PCB 1	39 U	100	39	1	11/06/19 15:38	11/4/19	
PCB 101	1.9 U	10	1.9	1	11/06/19 15:38	11/4/19	
PCB 105	1.2 U	10	1.2	1	11/06/19 15:38	11/4/19	
PCB 110	2.4 U	10	2.4	1	11/06/19 15:38	11/4/19	
PCB 114	0.88 U	10	0.88	1	11/06/19 15:38	11/4/19	
PCB 118	1.1 U	10	1.1	1	11/06/19 15:38	11/4/19	
PCB 119	1.5 U	10	1.5	1	11/06/19 15:38	11/4/19	
PCB 123	2.1 U	10	2.1	1	11/06/19 15:38	11/4/19	
PCB 126	2.6 U	10	2.6	1	11/06/19 15:38	11/4/19	
PCB 128	1.1 U	10	1.1	1	11/06/19 15:38	11/4/19	
PCB 138	1.6 U	10	1.6	1	11/06/19 15:38	11/4/19	*
PCB 132	3.0 U	10	3.0	1	11/06/19 15:38	11/4/19	
PCB 141	1.7 U	10	1.7	1	11/06/19 15:38	11/4/19	
PCB 149	1.4 U	10	1.4	1	11/06/19 15:38	11/4/19	
PCB 151	1.2 U	10	1.2	1	11/06/19 15:38	11/4/19	
PCB 153	1.2 U	10	1.2	1	11/06/19 15:38	11/4/19	
PCB 156	1.9 U	10	1.9	1	11/06/19 15:38	11/4/19	
PCB 157	1.9 U	10	1.9	1	11/06/19 15:38	11/4/19	
PCB 158	1.5 U	10	1.5	1	11/06/19 15:38	11/4/19	
PCB 166	1.7 U	10	1.7	1	11/06/19 15:38	11/4/19	
PCB 167	2.8 U	10	2.8	1	11/06/19 15:38	11/4/19	
PCB 168	1.4 U	10	1.4	1	11/06/19 15:38	11/4/19	
PCB 169	1.8 U	10	1.8	1	11/06/19 15:38	11/4/19	
PCB 170	1.6 U	10	1.6	1	11/06/19 15:38	11/4/19	
PCB 174	1.5 U	10	1.5	1	11/06/19 15:38	11/4/19	
PCB 177	1.8 U	10	1.8	1	11/06/19 15:38	11/4/19	
PCB 18	2.0 U	10	2.0	1	11/06/19 15:38	11/4/19	
PCB 180	2.9 U	10	2.9	1	11/06/19 15:38	11/4/19	
PCB 183	1.5 U	10	1.5	1	11/06/19 15:38	11/4/19	*
PCB 184	1.3 U	10	1.3	1	11/06/19 15:38	11/4/19	*
PCB 187	1.4 U	10	1.4	1	11/06/19 15:38	11/4/19	
PCB 189	1.8 U	10	1.8	1	11/06/19 15:38	11/4/19	
PCB 194	1.2 U	10	1.2	1	11/06/19 15:38	11/4/19	
PCB 195	1.8 U	10	1.8	1	11/06/19 15:38	11/4/19	
PCB 201	1.8 U	10	1.8	1	11/06/19 15:38	11/4/19	
PCB 203	1.8 U	10	1.8	1	11/06/19 15:38	11/4/19	
PCB 206	2.3 U	10	2.3	1	11/06/19 15:38	11/4/19	
Decachlorobiphenyl	2.8 U	10	2.8	1	11/06/19 15:38	11/4/19	
PCB 28	1.6 U	10	1.6	1	11/06/19 15:38	11/4/19	
PCB 31	0.96 U	10	0.96	1	11/06/19 15:38	11/4/19	
PCB 33	1.7 U	10	1.7	1	11/06/19 15:38	11/4/19	
PCB 37	1.9 U	10	1.9	1	11/06/19 15:38	11/4/19	
PCB 44	3.3 U	10	3.3	1	11/06/19 15:38	11/4/19	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Site Water	**Units:**	ng/L
Lab Code:	J1906553-003	**Basis:**	NA

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method: 8082A
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
PCB 49	1.4 U	10	1.4	1	11/06/19 15:38	11/4/19	
PCB 5	1.8 U	10	1.8	1	11/06/19 15:38	11/4/19	
PCB 52	1.4 U	10	1.4	1	11/06/19 15:38	11/4/19	
PCB 56	2.7 U	10	2.7	1	11/06/19 15:38	11/4/19	
PCB 60	0.96 U	10	0.96	1	11/06/19 15:38	11/4/19	
PCB 66	4.2 U	10	4.2	1	11/06/19 15:38	11/4/19	
PCB 70	1.5 U	10	1.5	1	11/06/19 15:38	11/4/19	
PCB 74	1.6 U	10	1.6	1	11/06/19 15:38	11/4/19	
PCB 77	1.9 U	10	1.9	1	11/06/19 15:38	11/4/19	
PCB 8	1.6 U	10	1.6	1	11/06/19 15:38	11/4/19	
PCB 81	1.8 U	10	1.8	1	11/06/19 15:38	11/4/19	
PCB 87	1.3 U	10	1.3	1	11/06/19 15:38	11/4/19	
PCB 90	1.3 U	10	1.3	1	11/06/19 15:38	11/4/19	
PCB 95	1.2 U	10	1.2	1	11/06/19 15:38	11/4/19	
PCB 97	2.3 U	10	2.3	1	11/06/19 15:38	11/4/19	
PCB 99	1.8 U	10	1.8	1	11/06/19 15:38	11/4/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tetrachloro-m-xylene	100	70 - 130	11/06/19 15:38	

Metals

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19
Sample Matrix:	Water	**Date Received:**	10/31/19

Mercury, Total

Prep Method:	METHOD	Units:	ng/L
Analysis Method:	1631E	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
VB-BFWC19-Zone A	J1906553-001	0.5	0.06	1	12/31/19	01/02/20	12.2	
VB-BFWC19-Zone D	J1906553-002	0.5	0.06	1	12/31/19	01/02/20	12.1	
VB-BFWC19-Site Water	J1906553-003	0.5	0.06	1	12/31/19	01/02/20	0.98	
Method Blank 1	J1906553-MB1	0.5	0.06	1	12/31/19	01/02/20	ND	
Method Blank 2	J1906553-MB2	0.5	0.06	1	12/31/19	01/02/20	0.40	J
Method Blank 3	J1906553-MB3	0.5	0.06	1	12/31/19	01/02/20	0.09	J

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 11:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone A	**Basis:**	NA
Lab Code:	J1906553-001		

Total Metals

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Aluminum	200.8	**345**		ug/L	80	10	1	01/03/20 12:33	01/02/20	
Antimony	200.8	**0.8**	**J**	ug/L	1.0	0.4	1	01/03/20 12:33	01/02/20	
Arsenic	200.8	**5.04**		ug/L	0.50	0.06	1	11/07/19 15:15	11/05/19	
Barium	200.8	**62.0**		ug/L	1.0	0.4	1	01/03/20 12:33	01/02/20	
Beryllium	200.8	**0.019**	**J**	ug/L	0.020	0.007	1	11/07/19 15:15	11/05/19	
Boron	200.7	**110**		ug/L	21	3	1	01/03/20 12:31	01/02/20	
Cadmium	200.8	**0.017**	**J**	ug/L	0.020	0.003	1	11/07/19 15:15	11/05/19	
Calcium	200.7	**68500**		ug/L	21	3	1	01/03/20 12:31	01/02/20	
Chromium	200.8	**0.28**		ug/L	0.20	0.02	1	11/07/19 15:15	11/05/19	
Cobalt	200.8	**0.216**		ug/L	0.020	0.007	1	11/07/19 15:15	11/05/19	
Copper	200.8	**0.46**		ug/L	0.10	0.02	1	11/07/19 15:15	11/05/19	
Iron	200.8	**167**		ug/L	40	6	1	01/03/20 12:33	01/02/20	
Lead	200.8	**2.75**		ug/L	0.050	0.020	1	11/07/19 15:15	11/05/19	
Magnesium	200.7	**18400**		ug/L	5.3	0.4	1	01/03/20 12:31	01/02/20	
Manganese	200.8	**85.7**		ug/L	4.0	0.8	1	01/03/20 12:33	01/02/20	
Molybdenum	200.8	**8.6**		ug/L	2.0	0.6	1	01/03/20 12:33	01/02/20	
Nickel	200.8	**0.88**		ug/L	0.20	0.03	1	11/07/19 15:15	11/05/19	
Potassium	200.7	**7170**		ug/L	210	60	1	01/03/20 12:31	01/02/20	
Selenium	200.8	ND	U	ug/L	1.0	0.4	2	01/03/20 08:46	01/02/20	
Silver	200.8	**0.006**	**J**	ug/L	0.020	0.004	1	11/07/19 15:15	11/05/19	
Sodium	200.7	**115000**		ug/L	210	30	1	01/03/20 12:31	01/02/20	
Strontium	200.8	**365**		ug/L	4.0	1.4	1	01/03/20 12:33	01/02/20	
Thallium	200.8	ND	U	ug/L	0.020	0.008	1	11/07/19 15:15	11/05/19	
Tin	200.8	**10.9**		ug/L	2.0	0.6	1	01/03/20 12:33	01/02/20	
Titanium	200.7	**13.7**		ug/L	2.1	0.7	1	01/03/20 12:31	01/02/20	
Uranium	200.8	**3.81**		ug/L	0.40	0.16	1	01/03/20 12:33	01/02/20	
Vanadium	200.8	**3.0**	**J**	ug/L	4.0	0.8	1	01/03/20 12:33	01/02/20	
Zinc	200.8	**2.74**		ug/L	0.50	0.20	1	11/07/19 15:15	11/05/19	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:30
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone D	**Basis:**	NA
Lab Code:	J1906553-002		

Total Metals

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Aluminum	200.8	**1340**		ug/L	80	10	1	01/03/20 12:38	01/02/20	
Antimony	200.8	**0.8**	**J**	ug/L	1.0	0.4	1	01/03/20 12:38	01/02/20	
Arsenic	200.8	**13.3**		ug/L	0.51	0.06	1	11/07/19 15:17	11/05/19	
Barium	200.8	**48.1**		ug/L	1.0	0.4	1	01/03/20 12:38	01/02/20	
Beryllium	200.8	ND	U	ug/L	0.020	0.007	1	11/07/19 15:17	11/05/19	
Boron	200.7	**103**		ug/L	21	3	1	01/03/20 12:39	01/02/20	
Cadmium	200.8	**0.004**	**J**	ug/L	0.020	0.003	1	11/07/19 15:17	11/05/19	
Calcium	200.7	**44900**		ug/L	21	3	1	01/03/20 12:39	01/02/20	
Chromium	200.8	**0.22**		ug/L	0.20	0.02	1	11/07/19 15:17	11/05/19	
Cobalt	200.8	**0.058**		ug/L	0.020	0.007	1	11/07/19 15:17	11/05/19	
Copper	200.8	**0.26**		ug/L	0.10	0.02	1	11/07/19 15:17	11/05/19	
Iron	200.8	**958**		ug/L	40	6	1	01/03/20 12:38	01/02/20	
Lead	200.8	**0.456**		ug/L	0.051	0.020	1	11/07/19 15:17	11/05/19	
Magnesium	200.7	**23100**		ug/L	5.3	0.4	1	01/03/20 12:39	01/02/20	
Manganese	200.8	**24.4**		ug/L	4.0	0.8	1	01/03/20 12:38	01/02/20	
Molybdenum	200.8	**11.7**		ug/L	2.0	0.6	1	01/03/20 12:38	01/02/20	
Nickel	200.8	**0.72**		ug/L	0.20	0.03	1	11/07/19 15:17	11/05/19	
Potassium	200.7	**7720**		ug/L	210	60	1	01/03/20 12:39	01/02/20	
Selenium	200.8	ND	U	ug/L	1.0	0.4	2	01/03/20 08:50	01/02/20	
Silver	200.8	ND	U	ug/L	0.020	0.004	1	11/07/19 15:17	11/05/19	
Sodium	200.7	**63800**		ug/L	210	30	1	01/03/20 12:39	01/02/20	
Strontium	200.8	**454**		ug/L	4.0	1.4	1	01/03/20 12:38	01/02/20	
Thallium	200.8	ND	U	ug/L	0.020	0.008	1	11/07/19 15:17	11/05/19	
Tin	200.8	**9.0**		ug/L	2.0	0.6	1	01/03/20 12:38	01/02/20	
Titanium	200.7	**30.2**		ug/L	2.1	0.7	1	01/03/20 12:39	01/02/20	
Uranium	200.8	**2.30**		ug/L	0.40	0.16	1	01/03/20 12:38	01/02/20	
Vanadium	200.8	**3.9**	**J**	ug/L	4.0	0.8	1	01/03/20 12:38	01/02/20	
Zinc	200.8	**0.94**		ug/L	0.51	0.20	1	11/07/19 15:17	11/05/19	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Site Water	**Basis:**	NA
Lab Code:	J1906553-003		

Total Metals

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Aluminum	200.8	**30**	**J**	ug/L	80	10	1	01/03/20 12:40	01/02/20	
Antimony	200.8	ND	U	ug/L	1.0	0.4	1	01/03/20 12:40	01/02/20	
Arsenic	200.8	**0.53**		ug/L	0.50	0.06	1	11/07/19 15:19	11/05/19	
Barium	200.8	**82.8**		ug/L	1.0	0.4	1	01/03/20 12:40	01/02/20	
Beryllium	200.8	ND	U	ug/L	0.020	0.007	1	11/07/19 15:19	11/05/19	
Boron	200.7	**76**		ug/L	21	3	1	01/03/20 12:41	01/02/20	
Cadmium	200.8	ND	U	ug/L	0.020	0.003	1	11/07/19 15:19	11/05/19	
Calcium	200.7	**69400**		ug/L	21	3	1	01/03/20 12:41	01/02/20	
Chromium	200.8	**0.17**	**J**	ug/L	0.20	0.02	1	11/07/19 15:19	11/05/19	
Cobalt	200.8	**0.075**		ug/L	0.020	0.007	1	11/07/19 15:19	11/05/19	
Copper	200.8	**0.57**		ug/L	0.10	0.02	1	11/07/19 15:19	11/05/19	
Iron	200.8	**60**		ug/L	40	6	1	01/03/20 12:40	01/02/20	
Lead	200.8	**0.092**		ug/L	0.050	0.020	1	11/07/19 15:19	11/05/19	
Magnesium	200.7	**10600**		ug/L	5.3	0.4	1	01/03/20 12:41	01/02/20	
Manganese	200.8	**28.3**		ug/L	4.0	0.8	1	01/03/20 12:40	01/02/20	
Molybdenum	200.8	**1.4**	**J**	ug/L	2.0	0.6	1	01/03/20 12:40	01/02/20	
Nickel	200.8	**0.91**		ug/L	0.20	0.03	1	11/07/19 15:19	11/05/19	
Potassium	200.7	**3650**		ug/L	210	60	1	01/03/20 12:41	01/02/20	
Selenium	200.8	ND	U	ug/L	1.0	0.4	2	01/03/20 08:51	01/02/20	
Silver	200.8	ND	U	ug/L	0.020	0.004	1	11/07/19 15:19	11/05/19	
Sodium	200.7	**38600**		ug/L	210	30	1	01/03/20 12:41	01/02/20	
Strontium	200.8	**485**		ug/L	4.0	1.4	1	01/03/20 12:40	01/02/20	
Thallium	200.8	ND	U	ug/L	0.020	0.008	1	11/07/19 15:19	11/05/19	
Tin	200.8	**6.5**		ug/L	2.0	0.6	1	01/03/20 12:40	01/02/20	
Titanium	200.7	**2.1**		ug/L	2.1	0.7	1	01/03/20 12:41	01/02/20	
Uranium	200.8	**0.57**		ug/L	0.40	0.16	1	01/03/20 12:40	01/02/20	
Vanadium	200.8	**1.0**	**J**	ug/L	4.0	0.8	1	01/03/20 12:40	01/02/20	
Zinc	200.8	**3.05**		ug/L	0.50	0.20	1	11/07/19 15:19	11/05/19	

General Chemistry

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 11:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone A	**Basis:**	NA
Lab Code:	J1906553-001		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Hardness, Total as CaCO3	SM 2340 C	**257**	mg/L	5.0	2.0	1	11/18/19 14:25	11/18/19	

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:30
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone D	**Basis:**	NA
Lab Code:	J1906553-002		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Hardness, Total as CaCO3	SM 2340 C	**218**	mg/L	5.0	2.0	1	11/18/19 14:25	11/18/19	

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Site Water	**Basis:**	NA
Lab Code:	J1906553-003		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Hardness, Total as CaCO3	SM 2340 C	**235**	mg/L	5.0	2.0	1	11/18/19 14:25	11/18/19	

QC Summary Forms

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Semivolatile Organic Compounds by GC

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Client: Water and Air Research **Service Request:** J1906553
Project: USACE Big Fishweir Creek/19-5805-01
Sample Matrix: Water

SURROGATE RECOVERY SUMMARY
Ultra Low Level Organochlorine Pesticides by GC/ECD

Analysis Method: 8081B
Extraction Method: EPA 3535A

Sample Name	Lab Code	Decachlorobiphenyl 19-127	Tetrachloro-m-xylene 20-106
VB-BFWC19-Zone A	J1906553-001	56	40
VB-BFWC19-Zone D	J1906553-002	36	25
VB-BFWC19-Site Water	J1906553-003	38	38
Method Blank	KQ1916178-07	56	47
Lab Control Sample	KQ1916178-01	64	46
Duplicate Lab Control Sample	KQ1916178-02	69	53
Lab Control Sample	KQ1916178-03	58	43
Duplicate Lab Control Sample	KQ1916178-04	77	58
Lab Control Sample	KQ1916178-05	58	47
Duplicate Lab Control Sample	KQ1916178-06	65	48

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/L
Lab Code:	KQ1916178-07	**Basis:**	NA

Ultra Low Level Organochlorine Pesticides by GC/ECD

Analysis Method: 8081B
Prep Method: EPA 3535A

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Aldrin	0.20	U	0.40	0.20	1	11/14/19 20:17	11/4/19	
alpha-BHC	0.19	U	0.40	0.19	1	11/14/19 20:17	11/4/19	
beta-BHC	0.47	U	1.0	0.47	1	11/14/19 20:17	11/4/19	
delta-BHC	0.20	U	0.40	0.20	1	11/14/19 20:17	11/4/19	
gamma-BHC (Lindane)	0.22	U	0.50	0.22	1	11/14/19 20:17	11/4/19	
Chlordane	4.0	U	10	4.0	1	11/14/19 20:17	11/4/19	
cis-Chlordane	0.17	U	0.40	0.17	1	11/14/19 20:17	11/4/19	
trans-Chlordane	0.21	U	0.50	0.21	1	11/14/19 20:17	11/4/19	
4,4'-DDD	0.28	U	1.0	0.28	1	11/14/19 20:17	11/4/19	
4,4'-DDE	0.11	U	0.40	0.11	1	11/14/19 20:17	11/4/19	
4,4'-DDT	0.30	U	1.0	0.30	1	11/14/19 20:17	11/4/19	
Dieldrin	0.23	U	0.50	0.23	1	11/14/19 20:17	11/4/19	
Endosulfan I	0.15	U	0.40	0.15	1	11/14/19 20:17	11/4/19	
Endosulfan II	1.1	Ui	1.1	1.1	1	11/14/19 20:17	11/4/19	
Endosulfan Sulfate	0.84	U	1.0	0.84	1	11/14/19 20:17	11/4/19	
Endrin	0.18	U	0.40	0.18	1	11/14/19 20:17	11/4/19	
Endrin Aldehyde	0.22	U	0.50	0.22	1	11/14/19 20:17	11/4/19	
Endrin Ketone	0.28	U	0.50	0.28	1	11/14/19 20:17	11/4/19	
Heptachlor	0.81	Ui	0.81	0.81	1	11/14/19 20:17	11/4/19	
Heptachlor Epoxide	0.69	U	1.0	0.69	1	11/14/19 20:17	11/4/19	
Methoxychlor	0.22	U	0.50	0.22	1	11/14/19 20:17	11/4/19	
Toxaphene	19	U	50	19	1	11/14/19 20:17	11/4/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	56	19 - 127	11/14/19 20:17	
Tetrachloro-m-xylene	47	20 - 106	11/14/19 20:17	

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QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Analyzed:**	11/14/19
Sample Matrix:	Water	**Date Extracted:**	11/04/19

Duplicate Lab Control Sample Summary
Ultra Low Level Organochlorine Pesticides by GC/ECD

Analysis Method:	8081B	**Units:**	ng/L
Prep Method:	EPA 3535A	**Basis:**	NA
		Analysis Lot:	659954

	Lab Control Sample KQ1916178-01			Duplicate Lab Control Sample KQ1916178-02					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
4,4'-DDD	6.98 P	10.0	70	7.46 P	10.0	75	33-132	7	30
4,4'-DDE	6.44	10.0	64	7.05	10.0	70	41-116	9	30
4,4'-DDT	6.51	10.0	65	7.18	10.0	72	42-143	10	30
Aldrin	5.06	10.0	51	5.63	10.0	56	10-102	11	30
alpha-BHC	5.41	10.0	54	5.61	10.0	56	36-122	4	30
beta-BHC	5.84	10.0	58	6.24	10.0	62	42-125	7	30
cis-Chlordane	6.01	10.0	60	6.73	10.0	67	45-115	11	30
delta-BHC	5.86	10.0	59	6.44	10.0	64	48-123	9	30
Dieldrin	5.71	10.0	57	6.44	10.0	64	50-115	12	30
Endosulfan I	6.04	10.0	60	6.77	10.0	68	35-115	11	30
Endosulfan II	9.00	10.0	90	11.4	10.0	114	28-128	23	30
Endosulfan Sulfate	6.09	10.0	61	6.71	10.0	67	38-118	10	30
Endrin	6.33	10.0	63	6.66	10.0	67	48-126	5	30
Endrin Aldehyde	5.75	10.0	58	6.35	10.0	63	27-104	10	30
Endrin Ketone	6.32	10.0	63	6.93	10.0	69	30-124	9	30
gamma-BHC (Lindane)	5.25	10.0	52	5.70	10.0	57	44-117	8	30
Heptachlor Epoxide	5.36	10.0	54	5.80	10.0	58	49-109	8	30
Methoxychlor	8.08	10.0	81	8.89	10.0	89	43-143	10	30
trans-Chlordane	5.94	10.0	59	6.54	10.0	65	47-113	10	30

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QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Analyzed:**	11/14/19
Sample Matrix:	Water	**Date Extracted:**	11/04/19

Duplicate Lab Control Sample Summary
Ultra Low Level Organochlorine Pesticides by GC/ECD

Analysis Method:	8081B	**Units:**	ng/L
Prep Method:	EPA 3535A	**Basis:**	NA
		Analysis Lot:	659954

	Lab Control Sample KQ1916178-05			Duplicate Lab Control Sample KQ1916178-06					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Chlordane	105	200	52	116	200	58	45-148	10	30
Toxaphene	217	400	54	241	400	60	36-137	11	30

Client: Water and Air Research **Service Request:** J1906553
Project: USACE Big Fishweir Creek/19-5805-01
Sample Matrix: Water

SURROGATE RECOVERY SUMMARY
Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method: 8082A
Extraction Method: EPA 3511

Sample Name	Lab Code	Tetrachloro-m-xylene 70-130
VB-BFWC19-Zone A	J1906553-001	101
VB-BFWC19-Zone D	J1906553-002	103
VB-BFWC19-Site Water	J1906553-003	100
Method Blank	KQ1916175-05	108
Lab Control Sample	KQ1916175-01	106
Duplicate Lab Control Sample	KQ1916175-02	103
Lab Control Sample	KQ1916175-03	98
Duplicate Lab Control Sample	KQ1916175-04	90

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/L
Lab Code:	KQ1916175-05	**Basis:**	NA

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method: 8082A
Prep Method: EPA 3511

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
PCB 1	39	U	100	39	1	11/06/19 11:39	11/4/19	
PCB 101	1.9	U	10	1.9	1	11/06/19 11:39	11/4/19	
PCB 105	1.2	U	10	1.2	1	11/06/19 11:39	11/4/19	
PCB 110	2.4	U	10	2.4	1	11/06/19 11:39	11/4/19	
PCB 114	0.88	U	10	0.88	1	11/06/19 11:39	11/4/19	
PCB 118	1.1	U	10	1.1	1	11/06/19 11:39	11/4/19	
PCB 119	1.5	U	10	1.5	1	11/06/19 11:39	11/4/19	
PCB 123	2.1	U	10	2.1	1	11/06/19 11:39	11/4/19	
PCB 126	2.6	U	10	2.6	1	11/06/19 11:39	11/4/19	
PCB 128	1.1	U	10	1.1	1	11/06/19 11:39	11/4/19	
PCB 138	1.6	U	10	1.6	1	11/06/19 11:39	11/4/19	
PCB 132	3.0	U	10	3.0	1	11/06/19 11:39	11/4/19	
PCB 141	1.7	U	10	1.7	1	11/06/19 11:39	11/4/19	
PCB 149	1.4	U	10	1.4	1	11/06/19 11:39	11/4/19	
PCB 151	1.2	U	10	1.2	1	11/06/19 11:39	11/4/19	
PCB 153	1.2	U	10	1.2	1	11/06/19 11:39	11/4/19	
PCB 156	1.9	U	10	1.9	1	11/06/19 11:39	11/4/19	
PCB 157	1.9	U	10	1.9	1	11/06/19 11:39	11/4/19	
PCB 158	1.5	U	10	1.5	1	11/06/19 11:39	11/4/19	
PCB 166	1.7	U	10	1.7	1	11/06/19 11:39	11/4/19	
PCB 167	2.8	U	10	2.8	1	11/06/19 11:39	11/4/19	
PCB 168	1.4	U	10	1.4	1	11/06/19 11:39	11/4/19	
PCB 169	1.8	U	10	1.8	1	11/06/19 11:39	11/4/19	
PCB 170	1.6	U	10	1.6	1	11/06/19 11:39	11/4/19	
PCB 174	1.5	U	10	1.5	1	11/06/19 11:39	11/4/19	
PCB 177	1.8	U	10	1.8	1	11/06/19 11:39	11/4/19	
PCB 18	2.0	U	10	2.0	1	11/06/19 11:39	11/4/19	
PCB 180	2.9	U	10	2.9	1	11/06/19 11:39	11/4/19	
PCB 183	1.5	U	10	1.5	1	11/06/19 11:39	11/4/19	
PCB 184	1.3	U	10	1.3	1	11/06/19 11:39	11/4/19	
PCB 187	1.4	U	10	1.4	1	11/06/19 11:39	11/4/19	
PCB 189	1.8	U	10	1.8	1	11/06/19 11:39	11/4/19	
PCB 194	1.2	U	10	1.2	1	11/06/19 11:39	11/4/19	
PCB 195	1.8	U	10	1.8	1	11/06/19 11:39	11/4/19	
PCB 201	1.8	U	10	1.8	1	11/06/19 11:39	11/4/19	
PCB 203	1.8	U	10	1.8	1	11/06/19 11:39	11/4/19	
PCB 206	2.3	U	10	2.3	1	11/06/19 11:39	11/4/19	
Decachlorobiphenyl	2.8	U	10	2.8	1	11/06/19 11:39	11/4/19	
PCB 28	1.6	U	10	1.6	1	11/06/19 11:39	11/4/19	
PCB 31	0.96	U	10	0.96	1	11/06/19 11:39	11/4/19	
PCB 33	1.7	U	10	1.7	1	11/06/19 11:39	11/4/19	
PCB 37	1.9	U	10	1.9	1	11/06/19 11:39	11/4/19	
PCB 44	3.3	U	10	3.3	1	11/06/19 11:39	11/4/19	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/L
Lab Code:	KQ1916175-05	**Basis:**	NA

Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method: 8082A
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
PCB 49	1.4 U	10	1.4	1	11/06/19 11:39	11/4/19	
PCB 5	1.8 U	10	1.8	1	11/06/19 11:39	11/4/19	
PCB 52	1.4 U	10	1.4	1	11/06/19 11:39	11/4/19	
PCB 56	2.7 U	10	2.7	1	11/06/19 11:39	11/4/19	
PCB 60	0.96 U	10	0.96	1	11/06/19 11:39	11/4/19	
PCB 66	4.2 U	10	4.2	1	11/06/19 11:39	11/4/19	
PCB 70	1.5 U	10	1.5	1	11/06/19 11:39	11/4/19	
PCB 74	1.6 U	10	1.6	1	11/06/19 11:39	11/4/19	
PCB 77	1.9 U	10	1.9	1	11/06/19 11:39	11/4/19	
PCB 8	1.6 U	10	1.6	1	11/06/19 11:39	11/4/19	
PCB 81	1.8 U	10	1.8	1	11/06/19 11:39	11/4/19	
PCB 87	1.3 U	10	1.3	1	11/06/19 11:39	11/4/19	
PCB 90	1.3 U	10	1.3	1	11/06/19 11:39	11/4/19	
PCB 95	1.2 U	10	1.2	1	11/06/19 11:39	11/4/19	
PCB 97	2.3 U	10	2.3	1	11/06/19 11:39	11/4/19	
PCB 99	1.8 U	10	1.8	1	11/06/19 11:39	11/4/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tetrachloro-m-xylene	108	70 - 130	11/06/19 11:39	

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Analyzed:**	11/06/19
Sample Matrix:	Water	**Date Extracted:**	11/04/19

Duplicate Lab Control Sample Summary
Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method:	8082A	**Units:**	ng/L
Prep Method:	EPA 3511	**Basis:**	NA
		Analysis Lot:	658658

	Lab Control Sample KQ1916175-01			Duplicate Lab Control Sample KQ1916175-02					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Decachlorobiphenyl	148	125	118	151	125	121	57-133	2	30
PCB 101	153	125	122	157	125	126	70-130	3	30
PCB 110	141	125	113	145	125	116	70-130	3	30
PCB 114	139	125	111	142	125	113	51-116	2	30
PCB 123	144	125	115	147	125	118	54-121	2	30
PCB 132	159	125	128	160	125	128	70-130	<1	30
PCB 138	151	125	121 *	154	125	123 *	52-116	2	30
PCB 141	144	125	115	149	125	119	70-130	4	30
PCB 151	141	125	113	144	125	115	70-130	2	30
PCB 156	136	125	109	140	125	112	51-126	3	30
PCB 167	136	125	109	139	125	111	52-128	2	30
PCB 177	144	125	115	146	125	117	70-130	1	30
PCB 18	130	125	104	128	125	102	47-131	2	30
PCB 180	158	125	126	162	125	130	54-131	2	30
PCB 183	157	125	125 *	158	125	127 *	52-114	1	30
PCB 184	167	125	133 *	171	125	137 *	55-124	3	30
PCB 187	147	125	117	152	125	121	43-158	3	30
PCB 189	139	125	111	141	125	113	55-122	1	30
PCB 194	153	125	122	155	125	124	70-130	1	30
PCB 195	155	125	124	158	125	127	54-127	2	30
PCB 201	143	125	114	145	125	116	70-130	1	30
PCB 203	139	125	111	139	125	112	70-130	<1	30
PCB 206	132	125	106	134	125	107	49-116	1	30
PCB 28	140	125	112	144	125	115	58-125	3	30
PCB 33	121	125	97	128	125	103	70-130	6	30
PCB 44	140	125	112	144	125	115	55-119	3	30
PCB 52	133	125	106	135	125	108	51-112	2	30
PCB 56	143	125	115	146	125	117	70-130	2	30
PCB 66	126	125	101	128	125	102	59-129	1	30
PCB 70	138	125	110	141	125	112	70-130	2	30
PCB 74	134	125	107	135	125	108	70-130	<1	30
PCB 8	117	125	93	117	125	93	56-128	<1	30
PCB 87	146	125	116	145	125	116	55-116	<1	30
PCB 97	140	125	112	141	125	113	70-130	<1	30
PCB 99	151	125	121	157	125	126	70-130	4	30

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QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Analyzed:**	11/06/19
Sample Matrix:	Water	**Date Extracted:**	11/04/19

Duplicate Lab Control Sample Summary
Polychlorinated Biphenyl (PCB) Congeners by GC/ECD

Analysis Method:	8082A	**Units:**	ng/L
Prep Method:	EPA 3511	**Basis:**	NA
		Analysis Lot:	658658

	Lab Control Sample KQ1916175-03			Duplicate Lab Control Sample KQ1916175-04					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
PCB 1	1000	1250	80	952	1250	76	70-130	5	30
PCB 105	150	125	120	149	125	119	46-120	1	30
PCB 118	146	125	117	147	125	118	42-118	<1	30
PCB 119	150	125	120	149	125	119	70-130	<1	30
PCB 126	139	125	111	141	125	113	48-129	1	30
PCB 128	149	125	119 *	149	125	119 *	43-114	<1	30
PCB 149	146	125	117	146	125	116	70-130	<1	30
PCB 153	149	125	119 *	147	125	118 *	40-115	1	30
PCB 157	148	125	119 *	152	125	121 *	46-118	2	30
PCB 158	163	125	130 *	163	125	130 *	49-124	<1	30
PCB 166	165	125	132 *	162	125	129	70-130	2	30
PCB 168	176	125	141 *	171	125	137 *	70-130	3	30
PCB 169	147	125	118	153	125	123 *	44-119	4	30
PCB 170	151	125	121	148	125	118	46-121	3	30
PCB 174	157	125	125	153	125	123	70-130	2	30
PCB 31	140 P	125	112	135 P	125	108	70-130	4	30
PCB 37	153	125	123	152	125	122	70-130	<1	30
PCB 49	144	125	115	143	125	115	70-130	<1	30
PCB 5	131	125	105	121	125	97	70-130	8	30
PCB 60	158	125	126	155	125	124	31-138	2	30
PCB 77	149	125	119 *	153	125	122 *	40-111	3	30
PCB 81	155	125	124 *	152	125	121 *	47-114	2	30
PCB 90	152	125	121	153	125	122	31-132	<1	30
PCB 95	155	125	124	148	125	119	70-130	4	30

Metals

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
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QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	12/31/19
		Date Analyzed:	01/02/20

Matrix Spike/Duplicate Matrix Spike Summary
Total Metals

Sample Name:	Batch QC	Units:	ng/L
Lab Code:	K1912161-001MS, K1912161-001MSD	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	ALS Acceptance Limits	Relative Percent Difference	Result Notes
Mercury	METHOD	1631E	2.5	250	250	132	369	364	95	93	71-125	1	

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QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	NA
		Date Analyzed:	01/02/20

Ongoing Precision and Recovery (OPR) Sample Summary
Total Metals

Sample Name: Ongoing Precision and Recovery (Initial)

Units: ng/L
Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	ALS Percent Recovery Acceptance Limits	Result Notes
Mercury	METHOD	1631E	5.00	5.26	105	77-123	

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QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	NA
		Date Analyzed:	01/02/20

Ongoing Precision and Recovery (OPR) Sample Summary
Total Metals

Sample Name: Ongoing Precision and Recovery (Final)

Units: ng/L
Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	ALS Percent Recovery Acceptance Limits	Result Notes
Mercury	METHOD	1631E	5.00	5.27	105	77-123	

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QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	12/31/19
		Date Analyzed:	01/02/20

Quality Control Sample (QCS) Summary
Total Metals

Sample Name: Quality Control Sample

Units: ng/L
Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	ALS Percent Recovery Acceptance Limits	Result Notes
Mercury	METHOD	1631E	5.00	4.89	98	77-123	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	KQ2000016-01		

Total Metals

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Boron	200.7	ND	U	ug/L	21	3	1	01/03/20 12:26	01/02/20	
Calcium	200.7	ND	U	ug/L	21	3	1	01/03/20 12:26	01/02/20	
Magnesium	200.7	**1.8**	**J**	ug/L	5.3	0.4	1	01/03/20 12:26	01/02/20	
Potassium	200.7	ND	U	ug/L	210	60	1	01/03/20 12:26	01/02/20	
Sodium	200.7	ND	U	ug/L	210	30	1	01/03/20 12:26	01/02/20	
Titanium	200.7	ND	U	ug/L	2.1	0.7	1	01/03/20 12:26	01/02/20	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	KQ2000014-04		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Selenium	200.8	ND U	ug/L	1.0	0.4	2	01/03/20 08:44	01/02/20	

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Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	KQ1916256-01		

Total Metals

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	ND	U	ug/L	0.50	0.06	1	11/07/19 15:09	11/05/19	
Beryllium	200.8	ND	U	ug/L	0.020	0.007	1	11/07/19 15:09	11/05/19	
Cadmium	200.8	ND	U	ug/L	0.020	0.003	1	11/07/19 15:09	11/05/19	
Chromium	200.8	**0.04**	**J**	ug/L	0.20	0.02	1	11/07/19 15:09	11/05/19	
Cobalt	200.8	ND	U	ug/L	0.020	0.007	1	11/07/19 15:09	11/05/19	
Copper	200.8	ND	U	ug/L	0.10	0.02	1	11/07/19 15:09	11/05/19	
Lead	200.8	ND	U	ug/L	0.050	0.020	1	11/07/19 15:09	11/05/19	
Nickel	200.8	ND	U	ug/L	0.20	0.03	1	11/07/19 15:09	11/05/19	
Silver	200.8	ND	U	ug/L	0.020	0.004	1	11/07/19 15:09	11/05/19	
Thallium	200.8	ND	U	ug/L	0.020	0.008	1	11/07/19 15:09	11/05/19	
Zinc	200.8	ND	U	ug/L	0.50	0.20	1	11/07/19 15:09	11/05/19	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	KQ2000015-01		

Total Metals

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Aluminum	200.8	**0.8**	**J**	ug/L	4.0	0.5	1	01/03/20 12:30	01/02/20	
Antimony	200.8	ND	U	ug/L	0.050	0.020	1	01/03/20 12:30	01/02/20	
Barium	200.8	ND	U	ug/L	0.050	0.020	1	01/03/20 12:30	01/02/20	
Iron	200.8	ND	U	ug/L	2.0	0.3	1	01/03/20 12:30	01/02/20	
Manganese	200.8	ND	U	ug/L	0.20	0.04	1	01/03/20 12:30	01/02/20	
Molybdenum	200.8	ND	U	ug/L	0.10	0.03	1	01/03/20 12:30	01/02/20	
Strontium	200.8	ND	U	ug/L	0.20	0.07	1	01/03/20 12:30	01/02/20	
Tin	200.8	ND	U	ug/L	0.10	0.03	1	01/03/20 12:30	01/02/20	
Uranium	200.8	ND	U	ug/L	0.020	0.008	1	01/03/20 12:30	01/02/20	
Vanadium	200.8	ND	U	ug/L	0.20	0.04	1	01/03/20 12:30	01/02/20	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19
Sample Matrix:	Water	**Date Received:**	10/31/19
		Date Analyzed:	01/03/20

Replicate Sample Summary
Total Metals

Sample Name:	VB-BFWC19-Zone A	**Units:**	ug/L
Lab Code:	J1906553-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ2000016-03 Result	Average	RPD	RPD Limit
Boron	200.7	21	3	110	107	109	3	20
Calcium	200.7	21	3	68500	67400	68000	2	20
Magnesium	200.7	5.3	0.4	18400	18500	18500	<1	20
Potassium	200.7	210	60	7170	7140	7160	<1	20
Sodium	200.7	210	30	115000	115000	115000	<1	20
Titanium	200.7	2.1	0.7	13.7	8.0	10.9	53 #	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 01/03/20 4:13:04 PM

Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19
Sample Matrix:	Water	**Date Received:**	10/31/19
		Date Analyzed:	01/03/20

Replicate Sample Summary
Total Metals

Sample Name:	VB-BFWC19-Zone A	**Units:**	ug/L
Lab Code:	J1906553-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ2000014-01 Result	Average	RPD	RPD Limit
Selenium	200.8	1.0	0.4	ND U	ND U	ND	-	20

Results flagged with an asterisk (*) indicate values outside control criteria.

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Superset Reference:

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19
Sample Matrix:	Water	**Date Received:**	10/31/19
		Date Analyzed:	01/03/20

Replicate Sample Summary
Total Metals

Sample Name:	VB-BFWC19-Zone A	**Units:**	ug/L
Lab Code:	J1906553-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ2000015-03 Result	Average	RPD	RPD Limit
Aluminum	200.8	80	10	345	341	343	1	20
Antimony	200.8	1.0	0.4	0.8 J	0.8 J	0.8	<1	20
Barium	200.8	1.0	0.4	62.0	59.4	60.7	4	20
Iron	200.8	40	6	167	161	164	4	20
Manganese	200.8	4.0	0.8	85.7	86.3	86.0	<1	20
Molybdenum	200.8	2.0	0.6	8.6	7.4	8.0	15	20
Strontium	200.8	4.0	1.4	365	365	365	<1	20
Tin	200.8	2.0	0.6	10.9	10.8	10.9	<1	20
Uranium	200.8	0.40	0.16	3.81	3.80	3.81	<1	20
Vanadium	200.8	4.0	0.8	3.0 J	2.6 J	2.8	14	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19
Sample Matrix:	Water	**Date Received:**	10/31/19
		Date Analyzed:	01/3/20
		Date Extracted:	01/2/20

Matrix Spike Summary
Total Metals

Sample Name:	VB-BFWC19-Zone A	**Units:**	ug/L
Lab Code:	J1906553-001	**Basis:**	NA
Analysis Method:	200.7		
Prep Method:	EPA CLP ILM04.0		

Matrix Spike
KQ2000016-04

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Boron	110	613	500	101	70-130
Calcium	68500	77100	10000	87 #	70-130
Magnesium	18400	28200	10000	97	70-130
Potassium	7170	17000	10000	98	70-130
Sodium	115000	124000	10000	92 #	70-130
Titanium	13.7	10200	10000	102	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19
Sample Matrix:	Water	**Date Received:**	10/31/19
		Date Analyzed:	01/3/20
		Date Extracted:	01/2/20

Matrix Spike Summary
Total Metals

Sample Name:	VB-BFWC19-Zone A	**Units:**	ug/L
Lab Code:	J1906553-001	**Basis:**	NA
Analysis Method:	200.8		
Prep Method:	EPA CLP ILM04.0		

Matrix Spike
KQ2000014-02

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Selenium	ND U	55.0	50.0	110	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19
Sample Matrix:	Water	**Date Received:**	10/31/19
		Date Analyzed:	01/3/20
		Date Extracted:	01/2/20

Matrix Spike Summary
Total Metals

Sample Name:	VB-BFWC19-Zone A	**Units:**	ug/L
Lab Code:	J1906553-001	**Basis:**	NA
Analysis Method:	200.8		
Prep Method:	EPA CLP ILM04.0		

Matrix Spike
KQ2000015-04

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Aluminum	345	2360	2000	101	70-130
Antimony	0.8 J	199	200	99	70-130
Barium	62.0	2140	2000	104	70-130
Iron	167	1230	1000	106	70-130
Manganese	85.7	571	500	97	70-130
Molybdenum	8.6	493	500	97	70-130
Strontium	365	912	500	109	70-130
Tin	10.9	532	500	104	70-130
Uranium	3.81	509	500	101	70-130
Vanadium	3.0 J	487	500	97	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Analyzed:**	01/03/20
Sample Matrix:	Water		

Lab Control Sample Summary
Total Metals

Units:ug/L
Basis:NA

Lab Control Sample
KQ2000016-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Boron	200.7	523	500	105	85-115
Calcium	200.7	12900	12500	103	85-115
Magnesium	200.7	12800	12500	103	85-115
Potassium	200.7	12800	12500	102	85-115
Sodium	200.7	12600	12500	101	85-115
Titanium	200.7	10600	10000	106	85-115

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Analyzed:**	01/03/20
Sample Matrix:	Water		

Lab Control Sample Summary
Total Metals

Units:ug/L
Basis:NA

Lab Control Sample
KQ2000014-03

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Selenium	200.8	50.7	50.0	101	85-115

ALS Group USA, Corp.
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QA/QC Report

Client: Water and Air Research
Project: USACE Big Fishweir Creek/19-5805-01
Sample Matrix: Water

Service Request: J1906553
Date Analyzed: 01/03/20

Lab Control Sample Summary
Total Metals

Units:ug/L
Basis:NA

Lab Control Sample
KQ2000015-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Aluminum	200.8	96.6	100	97	85-115
Antimony	200.8	9.76	10.0	98	85-115
Barium	200.8	101	100	101	85-115
Iron	200.8	51.2	50.0	102	85-115
Manganese	200.8	24.6	25.0	99	85-115
Molybdenum	200.8	23.6	25.0	95	85-115
Strontium	200.8	25.7	25.0	103	85-115
Tin	200.8	25.5	25.0	102	85-115
Uranium	200.8	24.9	25.0	99	85-115
Vanadium	200.8	24.2	25.0	97	85-115

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Water and Air Research
Project: USACE Big Fishweir Creek/19-5805-01
Sample Matrix: Water

Service Request: J1906553
Date Analyzed: 11/07/19

Duplicate Lab Control Sample Summary
Total Metals

Units:ug/L
Basis:NA

			Lab Control Sample		Duplicate Lab Control Sample					
			KQ1916256-02		KQ1916256-03					
Analyte Name	**Analytical Method**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Arsenic	200.8	1.96	2.00	98	2.00	2.00	100	71-124	2	20
Beryllium	200.8	1.28	2.00	64	1.23	2.00	62	39-114	4	20
Cadmium	200.8	2.00	2.00	100	2.06	2.00	103	80-114	3	20
Chromium	200.8	1.99	2.00	99	2.01	2.00	100	78-118	<1	20
Cobalt	200.8	1.98	2.00	99	1.99	2.00	100	80-112	<1	20
Copper	200.8	2.00	2.00	100	2.01	2.00	101	63-128	<1	20
Lead	200.8	2.06	2.00	103	2.07	2.00	104	82-113	<1	20
Nickel	200.8	1.99	2.00	99	1.98	2.00	99	88-112	<1	20
Silver	200.8	0.993	1.00	99	1.04	1.00	104	80-110	5	20
Thallium	200.8	2.04	2.00	102	2.05	2.00	102	79-110	<1	20
Zinc	200.8	2.11	2.00	105	2.04	2.00	102	79-133	3	20

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	J1906553-MB		

General Chemistry Parameters

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Hardness, Total as CaCO3	SM 2340 C	0.8	U	mg/L	1.6	0.8	1	11/18/19 14:25	11/18/19	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Analyzed:**	11/18/19
Sample Matrix:	Water	**Date Extracted:**	11/18/19

Lab Control Sample Summary
Hardness, Total as CaCO3

Analysis Method:	SM 2340 C	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	660324

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	J1906553-LCS	30.4	31.4	97	90-110

November 12, 2019 Service Request No:J1906553

Mr. Bryan Cotter
Water and Air Research
6821 S.W. Archer Road.
Gainesville, FL 32608

Laboratory Results for: USACE Big Fishweir Creek

Dear Mr.Cotter,

Enclosed are the results of the sample(s) submitted to our laboratory October 31, 2019
For your reference, these analyses have been assigned our service request number **J1906553.**

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 7475. You may also contact me via email at Meghan.Pedro@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Meghan Pedro
Project Manager

ADDRESS 1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
PHONE +1 585 288 5380 | FAX +1 585 288 8475
ALS Group USA, Corp.
dba ALS Environmental

Narrative Documents

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

1565 Jefferson Rd, Building 300, Rochester, NY 14623 | 585-288-5380 | www.alsglobal.com

Client: Water and Air Research
Project: USACE Big Fishweir Creek
Sample Matrix: Water

Service Request: J1906553
Date Received: 10/31/2019

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Three water samples were received for analysis at ALS Environmental on 10/31/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivoa GC:

Method 8151A, 11/05/2019: The Relative Percent Difference criterion was exceeded for one or more analytes in the Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD). All spike recoveries are within limits. The sample data is not significantly affected. No further corrective action was appropriate.

Approved by A. Juell Date 11/12/2019

Sample Receipt Information

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Client: Water and Air Research **Service Request:**J1906553
Project: USACE Big Fishweir Creek/19-5805-01

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
J1906553-001	VB-BFWC19-Zone A	10/30/2019	1155
J1906553-002	VB-BFWC19-Zone D	10/30/2019	1230
J1906553-003	VB-BFWC19-Site Water	10/30/2019	1255

Intra-Network Chain of Custody

9143 Philips Highway, Suite 200 • Jacksonville, FL 32256 • 904-739-2277 • FAX 904-739-2011

ALS Contact: Mandy Sullivan

Project Name: USACE Big Fishweir Creek
Project Number: 19-5805-01
Project Manager: Bryan Cotter
Company: Water and Air Research
QAP: LAB QAP

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Date Received	Send To	HERB 8151A
J1906553-001	VB-BFWC19-Zone A		Water	10/30/19	1155	10/31/19	ROCHESTER	II
J1906553-002	VB-BFWC19-Zone D		Water	10/30/19	1230	10/31/19	ROCHESTER	II
J1906553-003	VB-BFWC19-Site Water		Water	10/30/19	1255	10/31/19	ROCHESTER	II

Special Instructions/Comments

pH Checked _____

Turnaround Requirements

____ **RUSH** (Surcharges Apply)

PLEASE CIRCLE WORK DAYS
1 2 3 4 5

____ **STANDARD**

Requested FAX Date: _____

Requested Report Date: 11/21/19

Report Requirements

____ I. Results Only

____ II. Results + QC Summaries

____ III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

PQL/MDL/J Y
EDD ~N

Invoice Information

PO# 53J1906553

Bill to

Relinquished By: _____ Received By: _____ 11-1-19 09:25 Airbill Number: _____

J1906553 5
Water and Air Research
USACE Big Fishweir Creek

____ **Ship To: ROCHESTER**
ALS Environmental
1565 Jefferson Rd, Building 300
Suite 360
Rochester, NY 14623

PC _____ Date _____

SMO _____ Date _____

Instructions:

Ice _____

Dry Ice _____

No Ice _____

Shipping:

Overnight _____

2nd Day _____

Ground _____

Bill to Client Account _____

Comments:

J1906553
Water and Air Research
USACE Big Fishweir Creek
5

J1906553 5
Water and Air Research
USACE Big Fishweir Creek

Cooler Receipt and Preservation Check Form

Project/Client ALS-Jacksonville Folder Number _____

Cooler received on 11-1-19 by: KE

COURIER: ALS UPS FEDEX VELOCITY CLIENT

1	Were **Custody seals** on outside of cooler?	Y N	5a	**Perchlorate** samples have required headspace?	Y N NA
2	**Custody papers** properly completed (ink, signed)?	Y N	5b	Did VOA vials, Alk,or Sulfide have sig* **bubbles**?	Y N NA
3	Did all bottles arrive in good **condition** (unbroken)?	Y N	6	Where did the bottles originate?	ALS/ROC CLIENT
4	Circle: **Wet Ice** **Dry Ice** **Gel packs** present?	Y N	7	Soil VOA received as: Bulk Encore 5035set	NA

8. Temperature Readings Date: 11-1-19 Time: 09:38 ID: IR#7 IR#10 From: Temp Blank Sample Bottle

Observed Temp (°C)	1.7						
Correction Factor (°C)	0						
Corrected Temp (°C)	1.7						
Temp from:Type of bottle	—						
Within 0-6°C?	Y N	Y N	Y N	Y N	Y N	Y N	Y N
If <0°C, were samples frozen?	Y N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: _____ Ice melted Poorly Packed (described below) Same Day Rule

&Client Approval to Run Samples: _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: R-OUR by KE on 11-1-19 at 09:44
5035 samples placed in storage location: _____ by _____ on _____ at _____

Cooler Breakdown/Preservation Check**: Date: _____ Time: _____ by: _____

9. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? YES NO
10. Did all bottle labels and tags agree with custody papers? YES NO
11. Were correct containers used for the tests indicated? YES NO
12. Were 5035 vials acceptable (no extra labels, not leaking)? YES NO N/A
13. Air Samples: Cassettes / Tubes Intact with MS? Canisters Pressurized Tedlar® Bags Inflated N/A

pH	Lot of test paper	Reagent	Preserved? Yes	Preserved? No	Lot Received	Exp	Sample ID Adjusted	Vol. Added	Lot Added	Final pH
≥12		NaOH								
≤2		HNO_3								
≤2		H_2SO_4								
<4		$NaHSO_4$								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN, Phenol, 625, 608pest, 522			If +, contact PM to add $Na_2S_2O_3$ (625, 608, CN), ascorbic (phenol).					
		$Na_2S_2O_3$								
		ZnAcetate	-	-						
		HCl	**	**						

**VOAs and 1664 Not to be tested before analysis. Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).

Bottle lot numbers: _____

Explain all Discrepancies/ Other Comments:

CLRES	BULK
DO	FLDT
HPROD	HGFB
HTR	LL3541
PH	SUB
SO3	MARRS
ALS	REV

Labels secondary reviewed by: _____

PC Secondary Review: _____

*significant air bubbles: VOA > 5-6 mm : WC >1 in. diameter

Miscellaneous Forms

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
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REPORT QUALIFIERS AND DEFINITIONS

U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.

J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).

B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.

E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.

E Organics- Concentration has exceeded the calibration range for that specific analysis.

D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.

* Indicates that a quality control parameter has exceeded laboratory limits. Under the "Notes" column of the Form I, this qualifier denotes analysis was performed out of Holding Time.

H Analysis was performed out of hold time for tests that have an "immediate" hold time criteria.

Spike was diluted out.

+ Correlation coefficient for MSA is <0.995.

N Inorganics- Matrix spike recovery was outside laboratory limits.

N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.

S Concentration has been determined using Method of Standard Additions (MSA).

W Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.

P Concentration >40% difference between the two GC columns.

C Confirmed by GC/MS

Q DoD reports: indicates a pesticide/Aroclor is not confirmed (≥100% Difference between two GC columns).

X See Case Narrative for discussion.

MRL Method Reporting Limit. Also known as:
LOQ Limit of Quantitation (LOQ)
The lowest concentration at which the method analyte may be reliably quantified under the method conditions.

MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).

LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.

ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

Rochester Lab ID # for State Certifications[1]

Connecticut ID # PH0556	Maine ID #NY0032	Pennsylvania ID# 68-786
Delaware Approved	New Hampshire ID # 2941	Rhode Island ID # 158
DoD ELAP #65817	New York ID # 10145	Virginia #460167
Florida ID # E87674	North Carolina #676	

[1] Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to https://www.alsglobal.com/locations/americas/north-america/usa/new-york/rochester-environmental

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Client: Water and Air Research **Service Request:** J1906553
Project: USACE Big Fishweir Creek/19-5805-01

Sample Name: VB-BFWC19-Zone A **Date Collected:** 10/30/19
Lab Code: J1906553-001 **Date Received:** 10/31/19
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
200.8	MYOUNG	JCHAN
8082A	JDUNFIELD	MCHAPPELLE
8151A	KSERCU	JMISIUREWICZ
8270D	ECOMOR	TYEREMYANTS
8270D SIM	ECOMOR	TYEREMYANTS

Sample Name: VB-BFWC19-Zone A **Date Collected:** 10/30/19
Lab Code: J1906553-001.R01 **Date Received:** 10/31/19
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
8081B	JDUNFIELD	SHERBELIN

Sample Name: VB-BFWC19-Zone D **Date Collected:** 10/30/19
Lab Code: J1906553-002 **Date Received:** 10/31/19
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
200.8	MYOUNG	JCHAN
8082A	JDUNFIELD	MCHAPPELLE
8151A	KSERCU	JMISIUREWICZ
8270D	ECOMOR	TYEREMYANTS
8270D SIM	ECOMOR	TYEREMYANTS

Sample Name: VB-BFWC19-Zone D **Date Collected:** 10/30/19
Lab Code: J1906553-002.R01 **Date Received:** 10/31/19
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
8081B	JDUNFIELD	SHERBELIN

Client: Water and Air Research **Service Request:** J1906553
Project: USACE Big Fishweir Creek/19-5805-01

Sample Name: VB-BFWC19-Site Water **Date Collected:** 10/30/19
Lab Code: J1906553-003 **Date Received:** 10/31/19
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
200.8	MYOUNG	JCHAN
8082A	JDUNFIELD	MCHAPPELLE
8151A	KSERCU	JMISIUREWICZ
8270D	ECOMOR	TYEREMYANTS
8270D SIM	ECOMOR	TYEREMYANTS

Sample Name: VB-BFWC19-Site Water **Date Collected:** 10/30/19
Lab Code: J1906553-003.R01 **Date Received:** 10/31/19
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
8081B	JDUNFIELD	SHERBELIN

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9014 Cyanide Reactivity	SW846 Ch7, 7.3.4.2
9034 Sulfide Reactivity	SW846 Ch7, 7.3.4.2
9034 Sulfide Acid Soluble	9030B
9056A Bomb (Halogens)	5050A
9066 Manual Distillation	9065
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7196A	3060A
7199	3060A
9056A Halogens/Halides	5050
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction

For analytical methods not listed, the preparation method is the same as the analytical method reference.

Sample Results

ALS Environmental—Rochester Laboratory
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Semivolatile Organic Compounds by GC

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www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 11:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone A	**Units:**	ug/L
Lab Code:	J1906553-001	**Basis:**	NA

Chlorinated Herbicides by GC

Analysis Method: 8151A
Prep Method: Method

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4,5-T	0.21	U	0.50	0.21	1	11/05/19 23:20	11/4/19	
2,4,5-TP	0.19	U	0.50	0.19	1	11/05/19 23:20	11/4/19	
2,4-D	0.31	U	0.50	0.31	1	11/05/19 23:20	11/4/19	
Dicamba	0.20	U	0.50	0.20	1	11/05/19 23:20	11/4/19	
Dinoseb	0.17	U	0.50	0.17	1	11/05/19 23:20	11/4/19	
Pentachlorophenol (PCP)	0.26	U	0.50	0.26	1	11/05/19 23:20	11/4/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4-Dichlorophenylacetic Acid	53	10 - 136	11/05/19 23:20	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:30
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone D	**Units:**	ug/L
Lab Code:	J1906553-002	**Basis:**	NA

Chlorinated Herbicides by GC

Analysis Method: 8151A
Prep Method: Method

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4,5-T	0.21	U	0.50	0.21	1	11/05/19 23:36	11/4/19	
2,4,5-TP	0.19	U	0.50	0.19	1	11/05/19 23:36	11/4/19	
2,4-D	0.31	U	0.50	0.31	1	11/05/19 23:36	11/4/19	
Dicamba	0.20	U	0.50	0.20	1	11/05/19 23:36	11/4/19	
Dinoseb	0.17	U	0.50	0.17	1	11/05/19 23:36	11/4/19	
Pentachlorophenol (PCP)	0.26	U	0.50	0.26	1	11/05/19 23:36	11/4/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4-Dichlorophenylacetic Acid	54	10 - 136	11/05/19 23:36	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Site Water	**Units:**	ug/L
Lab Code:	J1906553-003	**Basis:**	NA

Chlorinated Herbicides by GC

Analysis Method: 8151A
Prep Method: Method

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4,5-T	0.21	U	0.50	0.21	1	11/05/19 23:53	11/4/19	
2,4,5-TP	0.19	U	0.50	0.19	1	11/05/19 23:53	11/4/19	
2,4-D	0.31	U	0.50	0.31	1	11/05/19 23:53	11/4/19	
Dicamba	0.20	U	0.50	0.20	1	11/05/19 23:53	11/4/19	
Dinoseb	0.17	U	0.50	0.17	1	11/05/19 23:53	11/4/19	
Pentachlorophenol (PCP)	0.26	U	0.50	0.26	1	11/05/19 23:53	11/4/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4-Dichlorophenylacetic Acid	48	10 - 136	11/05/19 23:53	

QC Summary Forms

ALS Environmental—Rochester Laboratory
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Semivolatile Organic Compounds by GC

ALS Environmental—Rochester Laboratory
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Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Client: Water and Air Research **Service Request:** J1906553
Project: USACE Big Fishweir Creek/19-5805-01
Sample Matrix: Water

SURROGATE RECOVERY SUMMARY
Chlorinated Herbicides by GC

Analysis Method: 8151A
Extraction Method: Method

Sample Name	Lab Code	2,4-Dichlorophenylacetic Acid 10-136
VB-BFWC19-Zone A	J1906553-001	53
VB-BFWC19-Zone D	J1906553-002	54
VB-BFWC19-Site Water	J1906553-003	48
Method Blank	RQ1912802-01	35
Lab Control Sample	RQ1912802-02	36
Duplicate Lab Control Sample	RQ1912802-03	45

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	RQ1912802-01	**Basis:**	NA

Chlorinated Herbicides by GC

Analysis Method: 8151A
Prep Method: Method

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4,5-T	0.21	U	0.50	0.21	1	11/05/19 22:29	11/4/19	
2,4,5-TP	0.19	U	0.50	0.19	1	11/05/19 22:29	11/4/19	
2,4-D	0.31	U	0.50	0.31	1	11/05/19 22:29	11/4/19	
Dicamba	0.20	U	0.50	0.20	1	11/05/19 22:29	11/4/19	
Dinoseb	0.17	U	0.50	0.17	1	11/05/19 22:29	11/4/19	
Pentachlorophenol (PCP)	0.26	U	0.50	0.26	1	11/05/19 22:29	11/4/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4-Dichlorophenylacetic Acid	35	10 - 136	11/05/19 22:29	

Client: Water and Air Research
Project: USACE Big Fishweir Creek/19-5805-01
Sample Matrix: Water

Service Request: J1906553
Date Analyzed: 11/05/19

Duplicate Lab Control Sample Summary
Chlorinated Herbicides by GC

Units:ug/L
Basis:NA

			Lab Control Sample RQ1912802-02		Duplicate Lab Control Sample RQ1912802-03					
Analyte Name	**Analytical Method**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
2,4,5-T	8151A	0.998	2.50	40	1.41	2.50	56	21-125	34*	30
2,4,5-TP	8151A	0.996	2.50	40	1.35	2.50	54	21-120	30	30
2,4-D	8151A	0.980	2.50	39	1.26	2.50	51	26-154	25	30
Dicamba	8151A	0.950	2.50	38	1.12	2.50	45	22-125	16	30
Dinoseb	8151A	0.930	2.50	37	1.28	2.50	51	13-112	32*	30
Pentachlorophenol (PCP)	8151A	0.975	2.50	39	1.23	2.50	49	18-127	23	30

November 19, 2019 Service Request No:J1906553

Mr. Bryan Cotter
Water and Air Research
6821 S.W. Archer Road.
Gainesville, FL 32608

Laboratory Results for: USACE Big Fishweir Creek

Dear Mr.Cotter,

Enclosed are the results of the sample(s) submitted to our laboratory October 31, 2019
For your reference, these analyses have been assigned our service request number **J1906553.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and except as noted in the laboratory case narrative provided. All results are intended to be considered in their entirety and ALS Environmental is not responsible for use of less than the complete final report. Results apply only to the items submitted to the laboratory, as received for analysis. In accordance with the current TNI Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Corey Grandits
Project Manager

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ALS Group USA, Corp.
dba ALS Environmental

Certificate of Analysis

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
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www.alsglobal.com

ALS Environmental

Client:	Water & Air Research	**Service Request No.:**	J1906553
Project:	USACE Big Fishweir Creel	**Date Received:**	11/01/19
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Three samples were received for analysis at ALS Environmental in Houston on 11/01/19.

The samples were received at 0.5°C in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

Precision and Accuracy:

EQ1900367: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in lieu of a MS/MSD for this extraction batch. The LCS and DLCS recoveries are within QC limits.

B flags – Method Blank

The Method Blank EQ1900367-01 contained low levels of target dioxin and furan compounds above the EDL however below the Method Reporting Limit (MRL).

The associated compounds in the samples are flagged with 'B' flags where the sample result is less than ten times the level detected in the method blank

Y flags – Labeled Standards

Select labeled standard recoveries were below control limits. Quantification of the native 2,3,7,8-substituted congeners is based on isotopic dilution, which automatically corrects for variation in extraction efficiency and provides accurate values even with poor recovery. Samples that had recoveries of labeled standards outside the acceptance limits are qualified with 'Y' flags on the Labeled Compound summary pages. In all cases, the signal-to-noise ratios are greater than 10:1 and detection limits were below the Method Reporting Limits.

K flags

EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

2378-TCDF

Samples analyzed on the DB-5MSUI column were analyzed under conditions where sufficient separation between 2,3,7,8-TCDF and its closest eluter was achieved. Confirmation of this result was not required.

Detection Limits

Detection limits are calculated for each analyte in each sample by measuring the height of the noise level for each quantitation ion for the associated labeled standard. The concentration equivalent to 2.5 times the height of the noise is then calculated using the appropriate response factor and the weight of the sample. The calculated concentration equals the detection limit.

The TEQ Summary results for each sample have been calculated by ALS/Houston to include:

- WHO-2005 TEFs, The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds (M. Van den Berg et al., Toxicological Sciences 93(2):223-241, 2006)
- 2378-TCDF from the DB-225 column, when confirmation required
- Non-detected compounds are not included in the 'Total'

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS group USA Corp dba ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

Client: Water and Air Research **Service Request:**J1906553
Project: USACE Big Fishweir Creek/19-5805-01

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
J1906553-001	VB-BFWC19-Zone A	10/30/2019	1155
J1906553-002	VB-BFWC19-Zone D	10/30/2019	1230
J1906553-003	VB-BFWC19-Site Water	10/30/2019	1255

Service Request Summary

Folder #: **J1906553**
Client Name: Water and Air Research
Project Name: USACE Big Fishweir Creek
Project Number: 19-5805-01

Report To: Bryan Cotter
Water and Air Research
6821 S.W. Archer Road.
Gainesville, FL 32608
USA
Phone Number: 352-372-1500
Cell Number:
Fax Number:
E-mail: bcotter@waterandair.com

Project Chemist: Mandy Sullivan
Originating Lab: JAX
Logged By: BBRANCH
Date Received: 10/31/19
Internal Due Date: 11/21/2019
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number:
EDD: No EDD Specified

30 1000 mL-Glass Bottle WM AMBER Teflon Liner Unpreserved
6 125 mL-Plastic Bottle HDPE WM CLEAR Unpreserved
3 500 ml-Plastic Bottle WM CLEAR HNO3
3 250 mL-Plastic Bottle NM CLEAR HNO3
6 125 mL-Glass Bottle NM AMBER Teflon Liner Unpreserved

Location: J-006-Q1, J-007-F56, EHRMS-WIC 8B, K-METALS, SMO, K-Disposed, K-DELILAH, R-002, In Lab

Pressure Gas:

				KELSO	KELSO		KELSO		ROCHESTER	JAX		HOUSTON
Lab Samp No.	**Client Samp No**	**Matrix**	**Collected**	Hard Titr T/SM 2340 C	Hardness Calc/SM 2340 B	Metals Redppt T/200.8	PCB Congeners/8082A	Pest OC ULL/8081B	HERB/8151A	SVO SIM BN/8270D SIM	SVO/8270D	Dioxins Furans/1613B
J1906553-001	VB-BFWC19-Zone A	Water	10/30/19 1155	II	II	II	II	II	II	II	II	II
J1906553-002	VB-BFWC19-Zone D	Water	10/30/19 1230	II	II	II	II	II	II	II	II	II
J1906553-003	VB-BFWC19-Site Water	Water	10/30/19 1255	II	II	II	II	II	II	II	II	II

Service Request Summary

Folder #:	**J1906553**
Client Name:	Water and Air Research
Project Name:	USACE Big Fishweir Creek
Project Number:	19-5805-01
Report To:	Bryan Cotter Water and Air Research 6821 S.W. Archer Road. Gainesville, FL 32608 USA
Phone Number:	352-372-1500
Cell Number:	
Fax Number:	
E-mail:	bcotter@waterandair.com

Project Chemist:	Mandy Sullivan
Originating Lab:	JAX
Logged By:	BBRANCH
Date Received:	10/31/19
Internal Due Date:	11/21/2019
QAP:	LAB QAP
Qualifier Set:	Lab Standard
Formset:	Lab Standard
Merged?:	Y
Report to MDL?:	Y
P.O. Number:	
EDD:	No EDD Specified

30	1000 mL-Glass Bottle WM AMBER Teflon Liner Unpreserved
6	125 mL-Plastic Bottle HDPE WM CLEAR Unpreserved
3	500 ml-Plastic Bottle WM CLEAR HNO3
3	250 mL-Plastic Bottle NM CLEAR HNO3
6	125 mL-Glass Bottle NM AMBER Teflon Liner Unpreserved

Location: J-006-Q1, J-007-F56, EHRMS-WIC 8B, K-METALS, SMO, K-Disposed, K-DELILAH, R-002, In Lab

Pressure Gas:

Test Comments:

Group	Test/Method	Samples	Comments
Metals	Metals Redppt T/200.8	3	See Folder Attachment tab for Project Analytes and Detection Limits.
Semivoa GC	PCB Congeners/8082A	3	See Folder Attachment tab for Project Analytes and Detection Limits.
Semivoa GC	Pest OC ULL/8081B	6	See Folder Attachment tab for Project Analytes and Detection Limits.

Data Qualifiers

HRMS Qualifier Set

B Indicates the associated analyte was found in the method blank at >1/10th the reported value.
E Estimated value. The reported concentration is above the calibration range of the instrument.
H Sample extracted and/or analyzed out of suggested holding time.
J Estimated value. The reported concentration is below the MRL.
K The ion abundance ratio between the primary and secondary ions were outside of theoretical acceptance limits.The concentration of this analyte should be considered as an estimate.
P Chlorodiphenyl ether interference was present at the retention time of the target analyte. Reported result should be considered an estimate.
Q Monitored lock-mass indicates matrix-interference. Reported result is estimated.
S Signal saturated detector. Result reported from dilution.
U Compound was analyzed for, but was not detected (ND).
X See Case Narrative.
Y Isotopically Labeled Standard recovery outside of acceptance limits. In all cases, the signal-to-nois ratios are greater than 10:1, making the recoveries acceptable.
i The MDL/MRL have been elevated due to a matrix interference.

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

ALS Environmental

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
American Association for Laboratory Accreditation	2897.01	11/30/2019
Arizona Department of Health Services	AZ0793	5/27/2020
Arkansas Department of Environmental Quality	19-028-0	3/27/2020
California Department of Health Services	2919	4/30/2020
Department of Defense	A2LA 2897.01	11/30/2019
Florida Department of Health	E87611	6/30/2020
Hawaii Department of Health	TX02694	4/30/2020
Illinois Environmental Protection Agency	2000322019-2	5/9/2020
Kansas Department of Health and Environment	E-10352	7/31/2020
Louisiana Department of Environmental Quality	03087	6/30/2020
Louisiana Department of Health and Hospitals	LA028	12/31/2019
Maine Center for Disease Control and Prevention	201815	6/5/2020
Maryland Department of the Environment	343	6/30/2020
Minnesota Department of Health	1556965	12/31/2019
Nebraska Department of Health and Human Services	NE-OS-25-13	4/30/2020
Nevada Department of Concervation and Natural Resources	TX026932019-1	7/31/2020
New Hampshire Environmental Laboratory Accreditation Program	209419	4/24/2020
New Jersey Department of Environmental Protection	NLC190001	6/30/2020
New York Department of Health	11707	3/31/2020
Oklahoma Department of Environmental Quality	2019-067	8/31/2020
Pennsylvania Department of Environmental Protection	68-03441-013	6/30/2020
Tennessee Department of Environment and Concervation	04016	6/30/2020
Texas Commision on Environmental Quality	TX104704231-19-25	4/30/2020
United States Department of Agriculture	P330-18-00368	12/14/2019
Utah Department of Health Environmental Laboratory Certification	TX026932019-9	7/31/2020
West Virginia Department of Environmental Protection	347	6/30/2020

ALS ENVIRONMENTAL – Houston
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID J1 906553 DB-5MSUI SPB-Octyl

First Level - Data Processing - to be filled by person generating the forms

Date: 11/15/19 Analyst: JC Samples: 001, 002

Second Level - Data Review – to be filled by person doing peer review

Date: 11/15/19 Analyst: KN Samples: 001, 002

ALS ENVIRONMENTAL – Houston
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID J1906553

DB-5MSUI SPB-Octyl

First Level - Data Processing - to be filled by person generating the forms

Date:	Analyst:	Samples:
11/19/19	LKL	-003

Second Level - Data Review – to be filled by person doing peer review

Date:	Analyst:	Samples:
11/19/19	KW	003

HS-HRMSREVIEW R1.0

PEER REVIEW PAGE2015

Chain of Custody

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
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Intra-Network Chain of Custody

9143 Philips Highway, Suite 200 • Jacksonville, FL 32256 • 904-739-2277 • FAX 904-739-2011

ALS Contact: Mandy Sullivan

Project Name: USACE Big Fishweir Creek
Project Number: 19-5805-01
Project Manager: Bryan Cotter
Company: Water and Air Research
QAP: LAB QAP

J1906553 5
Water and Air Research
USACE Big Fishweir Creek

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Date Received	Send To	Dioxins Furans 1613B
J1906553-001	VB-BFWC19-Zone A		Water	10/30/19	1155	10/31/19	HOUSTON	II
J1906553-002	VB-BFWC19-Zone D		Water	10/30/19	1230	10/31/19	HOUSTON	II
J1906553-003	VB-BFWC19-Site Water		Water	10/30/19	1255	10/31/19	HOUSTON	II

Special Instructions/Comments

pH Checked _____

Turnaround Requirements

_____ **RUSH** (Surcharges Apply)

PLEASE CIRCLE WORK DAYS
1 2 3 4 5

____ **STANDARD**

Requested FAX Date: _____

Requested Report Date: 11/21/19

Report Requirements

____ I. Results Only

____ II. Results + QC Summaries

____ III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

PQL/MDL/J Y
EDD N

Invoice Information

PO#
53J1906553

Bill to

Relinquished By: _____

Received By: _____ 11/1/19 0900

Airbill Number: _____

Cooler Receipt Form

ALS Environmental

Project Chemist: CA

Client/Project: ALS-3

Thermometer ID: SMC4

Date/Time Received: 11/1/19 Initials: CA

Date/Time Logged in: 11/1/19 Initials: CA

1. Method of delivery: ○ US Mail ☑ Fed Ex ○ UPS ○ DHL ○ Courier ○ Client

2. Samples received in: ☑ Cooler ○ Box ○ Envelope ○ Other

3. Were custody seals on coolers? ○ Yes ☑ No

Were they intact? ○ Yes ○ No ☑ N/A

Were they signed and dated? ○ Yes ○ No ☑ N/A

If yes, how many and where?

4. Packing Material: ○ Inserts ☑ Baggies ☑ Bubble Wrap ○ Gel Packs ☑ Wet Ice ○ Sleeves ○ Other

5. Foreign or Regulated Soil? ○ Yes ○ No Location of Sampling:

Cooler Tracking Number	COC ID	Date Opened	Time Opened	Opened By	Temp. °C	Temp Blank?
TRK# 0201 6666 8257 6325		11/1/19	0900	CA	0.1/0.5	☐
						☐
						☐
						☐

6. Were custody papers properly filled out (ink, signed, dated, etc)? ☑ Yes ○ No

7. Did all bottles arrive in good condition (not broken, no signs of leakage)? ☑ Yes ○ No

8. Were all sample labels complete (i.e., sample ID, analysis, preservation, etc)? ☑ Yes ○ No

9. Were appropriate bottles/containers and volumes received for the requested tests? ☑ Yes ○ No

10. Did sample labels and tags agree with custody documents? ☑ Yes ○ No

Notes, Discrepancies, & Resolutions:

Service request Label: J1906553 5

Water and Air Research
USACE Big Fishweir Creek

10450 Stancliff Rd., Suite 210
Houston, TX 77099
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SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6ºC.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10ºC.
- ✓ Air samples are shipped and stored cold, at 0 to 6ºC
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

Preparation Information Benchsheets

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Preparation Information Benchsheet

Prep Run#: 348041 **Prep WorkFlow:** OrgExtAq(365) **Status:** Prepped
Team: Semivoa GCMS/DBOTROS **Prep Method:** Method Sep Funnel/Jar **Prep Date/Time:** 11/5/19 10:00

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E1900708-001	AQ 1.5- LOD - 1613	.01	1613B/Dioxins Furans			Water	1000mL	@75ul MDL 0.02-0.2ng/mlClear
2	E1900708-002	AQ 5.0- LOQ - 1613	.01	1613B/Dioxins Furans			Water	1000mL	@250ul MDL 0.02-0.2ng/mlClear
3	E1900708-003	AQ 3.0- LOD - 1613	.01	1613B/Dioxins Furans			Water	1000mL	@150ul MDL 0.02-0.2ng/mlClear
4	E1900763-001	Process Outfall - Composite	.01	1613B/Dioxins Furans			Water	914mL	clear
5	E1900774-001	Effluent (1910C66-01A)	.01	1613B/Dioxins Furans			Wastewater	955mL	yellow
6	E1900778-001	New Well	.01	1613B/Dioxins Furans			Aqueous Liquid	1007mL	clear
7	E1900787-001	VCS-OU1-WW-WI-102819	.01	1613B/Dioxins Furans			Wastewater	960mL	clear
8	E1900787-002	VCS-OU1-WW-WI-102819-FD	.02	1613B/Dioxins Furans			Wastewater	946mL	clear
9	E1900791-001	9K01005	.01	1613B/Dioxins Furans			Water	968mL	green
10	EQ1900367-01	MB		1613B/Dioxins Furans			Liquid	1000mL	
11	EQ1900367-02	LCS		1613B/Dioxins Furans			Liquid	1000mL	
12	EQ1900367-03	DLCS		1613B/Dioxins Furans			Liquid	1000mL	
13	EQ1900367-04	AQ 5.0- LOQ - 1613 DUP	.02	1613B/Dioxins Furans			Liquid	1000mL	
14	J1906553-001	VB-BFWC19-Zone A	.05	1613B/Dioxins Furans			Water	1014mL	murky
15	J1906553-002	VB-BFWC19-Zone D	.05	1613B/Dioxins Furans			Water	1019mL	yellow tint
16	J1906553-003	VB-BFWC19-Site Water	.05	1613B/Dioxins Furans			Water	1033mL	clear
17	K1910014-001	Bleach Plant Effluent	.01	1613B/Dioxins Furans			Water	928mL	orange
18	K1910014-002	Secondary Effluent	.01	1613B/Dioxins Furans			Water	978mL	yellow

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Spiking Solutions

Name: 1613B/23/TO-9A MDL Native Solution Inventory ID 201620 Logbook Ref: 201620 JG 8/1/19 Expires On: 01/21/2020

E1900708-001	75.00µL	E1900708-002	250.00µL	E1900708-003	150.00µL	EQ1900367-04	250.00µL

Name: 8290/1613B Cleanup Working Standard Inventory ID 204071 Logbook Ref: 204071 tw 10/24/19 8ng/ml Expires On: 03/16/2020

E1900708-001	100.00µL	E1900708-002	100.00µL	E1900708-003	100.00µL	E1900763-001	100.00µL	E1900774-001	100.00µL	E1900778-001	100.00µL
E1900787-001	100.00µL	E1900787-002	100.00µL	E1900791-001	100.00µL	EQ1900367-01	100.00µL	EQ1900367-02	100.00µL	EQ1900367-03	100.00µL
EQ1900367-04	100.00µL	J1906553-001	100.00µL	J1906553-002	100.00µL	J1906553-003	100.00µL	K1910014-001	100.00µL	K1910014-002	100.00µL

Name: 1613B Matrix Working Standard Inventory ID 204428 Logbook Ref: 204428 db 11/04/19 2-20ng/ml Expires On: 04/05/2020

EQ1900367-02	100.00µL	EQ1900367-03	100.00µL

Name: 1613B Labeled Working Standard Inventory ID 204475 Logbook Ref: 110519DB 204475 2-4ng/ml Expires On: 03/24/2020

E1900708-001	1,000.00µL	E1900708-002	1,000.00µL	E1900708-003	1,000.00µL	E1900763-001	1,000.00µL	E1900774-001	1,000.00µL	E1900778-001	1,000.00µL

Preparation Information Benchsheet

Prep Run#: 348041 **Prep WorkFlow:** OrgExtAq(365) **Status:** Prepped

Team: Semivoa GCMS/DBOTROS **Prep Method:** Method Sep Funnel/Jar **Prep Date/Time:** 11/5/19 10:00

E1900787-001	1,000.00µL	E1900787-002	1,000.00µL	E1900791-001	1,000.00µL	EQ1900367-01	1,000.00µL	EQ1900367-02	1,000.00µL	EQ1900367-03	1,000.00µL
EQ1900367-04	1,000.00µL	J1906553-001	1,000.00µL	J1906553-002	1,000.00µL	J1906553-003	1,000.00µL	K1910014-001	1,000.00µL	K1910014-002	1,000.00µL

Preparation Materials

Carbon, High Purity	tw 10/28/19 (204202)	Ethyl Acetate 99.9% Minimum EtOAc	JG 7/16/19 (201129)	Glass Wool	JG 8/1/19 (201624)
Hexanes 95%	tw 10/28/19 hexanes (204197)	Chlorine Test Strips	JG 7/30/2019 (201540)	Dichloromethane (Methylene Chloride) 99.9% MeCl2	JG 7/19/19 (201263)
Sodium Chloride 5%	308051706 (202016)	Sodium Hydroxide 1N NaOH	sodsium hydroxide 1n (202287)	Sodium Sulfate Anhydrous Reagent Grade Na2SO4	JG 8/14/19 (202064)
Tridecane (n-Tridecane)	JG 6/25/19 (200486)	Silica Gel	tw 10/15/19 (204490)	sulfuric acid	tw sulfric acid 10/1 (203771)
Toluene 99.9% Minimum	toluene tw 10/14/19 (203768)	ColorpHast pH-Indicator Strips	AL 8/20/18 (192603)		

Preparation Steps

Step:	Extraction	Step:	Acid Clean	Step:	Silica Gel Clean	Step:	Final Volume
Started:	11/5/19 10:00	Started:	11/6/19 10:00	Started:	11/6/19 13:00	Started:	11/7/19 12:00
Finished:	11/5/19 14:30	Finished:	11/6/19 11:00	Finished:	11/6/19 16:00	Finished:	11/7/19 15:00
By:	TWOODS	By:	TWOODS	By:	TWOODS	By:	TWOODS
Comments		Comments		Comments		Comments	

Comments: _____

Reviewed By: LKL Date: 11/13/19

Chain of Custody

Relinquished By: _____ Date: _____

Received By: _____ Date: _____

Extracts Examined

Yes No

Analytical Results

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 11:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone A	**Units:**	pg/L
Lab Code:	J1906553-001	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/12/19 03:48
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	11/5/19
Sample Amount:	1014mL	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P619986	**Blank File Name:**	P619969
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P619980

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.493	4.93			1
1,2,3,7,8-PeCDD	1.06**BJ**		0.339	24.7	1.39	1.001	1
1,2,3,4,7,8-HxCDD	0.468**BJ**		0.199	24.7	1.39	1.000	1
1,2,3,6,7,8-HxCDD	0.656**BJK**		0.186	24.7	1.58	1.000	1
1,2,3,7,8,9-HxCDD	0.609**BJK**		0.177	24.7	0.82	1.007	1
1,2,3,4,6,7,8-HpCDD	17.8**J**		0.343	24.7	0.94	1.000	1
OCDD	195		0.837	49.3	0.90	1.000	1
2,3,7,8-TCDF	ND	U	0.215	4.93			1
1,2,3,7,8-PeCDF	ND	U	0.501	24.7			1
2,3,4,7,8-PeCDF	1.32**J**		0.408	24.7	1.59	1.002	1
1,2,3,4,7,8-HxCDF	1.05**BJ**		0.111	24.7	1.36	1.001	1
1,2,3,6,7,8-HxCDF	0.704**BJK**		0.125	24.7	0.71	1.000	1
1,2,3,7,8,9-HxCDF	0.610**BJ**		0.137	24.7	1.20	1.000	1
2,3,4,6,7,8-HxCDF	0.971**BJK**		0.138	24.7	0.84	1.001	1
1,2,3,4,6,7,8-HpCDF	5.28**J**		0.178	24.7	0.91	1.001	1
1,2,3,4,7,8,9-HpCDF	0.494**BJ**		0.208	24.7	1.03	1.000	1
OCDF	14.6**J**		0.512	49.3	0.87	1.005	1

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 11:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone A	**Units:**	pg/L
Lab Code:	J1906553-001	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/12/19 03:48
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	11/5/19
Sample Amount:	1014mL	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P619986	**Blank File Name:**	P619969
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P619980

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.493	4.93			1
Total Penta-Dioxins	1.06**J**		0.339	24.7	1.39		1
Total Hexa-Dioxins	3.50**J**		0.187	24.7	1.42		1
Total Hepta-Dioxins	42.0		0.343	24.7	1.08		1
Total Tetra-Furans	4.88**J**		0.215	4.93	0.68		1
Total Penta-Furans	25.9		0.445	24.7	1.41		1
Total Hexa-Furans	13.8**J**		0.127	24.7	1.14		1
Total Hepta-Furans	15.0**J**		0.192	24.7	0.91		1

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 11:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone A	**Units:**	Percent
Lab Code:	J1906553-001	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/12/19 03:48
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	11/5/19
Sample Amount:	1014mL	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P619986	**Blank File Name:**	P619969
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P619980

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	902.807	45		25-164	0.78	1.019
13C-1,2,3,7,8-PeCDD	2000	730.688	37		25-181	1.63	1.172
13C-1,2,3,4,7,8-HxCDD	2000	966.659	48		32-141	1.35	0.992
13C-1,2,3,6,7,8-HxCDD	2000	1082.356	54		28-130	1.23	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	771.739	39		23-140	1.06	1.066
13C-OCDD	4000	1091.709	27		17-157	0.90	1.141
13C-2,3,7,8-TCDF	2000	856.681	43		24-169	0.78	0.993
13C-1,2,3,7,8-PeCDF	2000	372.212	19	**Y**	24-185	1.56	1.132
13C-2,3,4,7,8-PeCDF	2000	540.852	27		21-178	1.61	1.163
13C-1,2,3,4,7,8-HxCDF	2000	1022.896	51		26-152	0.52	0.972
13C-1,2,3,6,7,8-HxCDF	2000	899.441	45		26-123	0.51	0.975
13C-1,2,3,7,8,9-HxCDF	2000	903.104	45		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	864.450	43		28-136	0.53	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	744.885	37		28-143	0.44	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	777.612	39		26-138	0.44	1.079
37Cl-2,3,7,8-TCDD	800	385.650	48		35-197	NA	1.020

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 11:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone A	**Units:**	pg/L
Lab Code:	J1906553-001	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Sep Funnel/Jar

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.493	4.93	1	1	
1,2,3,7,8-PeCDD	**1.06**	0.339	24.7	1	1	1.06
1,2,3,4,7,8-HxCDD	**0.468**	0.199	24.7	1	0.1	0.0468
1,2,3,6,7,8-HxCDD	**0.656**	0.186	24.7	1	0.1	0.0656
1,2,3,7,8,9-HxCDD	**0.609**	0.177	24.7	1	0.1	0.0609
1,2,3,4,6,7,8-HpCDD	**17.8**	0.343	24.7	1	0.01	0.178
OCDD	**195**	0.837	49.3	1	0.0003	0.0585
2,3,7,8-TCDF	ND	0.215	4.93	1	0.1	
1,2,3,7,8-PeCDF	ND	0.501	24.7	1	0.03	
2,3,4,7,8-PeCDF	**1.32**	0.408	24.7	1	0.3	0.396
1,2,3,4,7,8-HxCDF	**1.05**	0.111	24.7	1	0.1	0.105
1,2,3,6,7,8-HxCDF	**0.704**	0.125	24.7	1	0.1	0.0704
1,2,3,7,8,9-HxCDF	**0.610**	0.137	24.7	1	0.1	0.0610
2,3,4,6,7,8-HxCDF	**0.971**	0.138	24.7	1	0.1	0.0971
1,2,3,4,6,7,8-HpCDF	**5.28**	0.178	24.7	1	0.01	0.0528
1,2,3,4,7,8,9-HpCDF	**0.494**	0.208	24.7	1	0.01	0.00494
OCDF	**14.6**	0.512	49.3	1	0.0003	0.00438
		Total TEQ				2.26

2005 WHO TEFs, ND = 0

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:30
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone D	**Units:**	pg/L
Lab Code:	J1906553-002	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/12/19 04:37
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	11/5/19
Sample Amount:	1019mL	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P619987	**Blank File Name:**	P619969
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P619980

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.490	4.91			1
1,2,3,7,8-PeCDD	ND	U	0.716	24.5			1
1,2,3,4,7,8-HxCDD	1.13**BJ**		0.169	24.5	1.41	1.000	1
1,2,3,6,7,8-HxCDD	2.18**BJ**		0.160	24.5	1.41	1.000	1
1,2,3,7,8,9-HxCDD	1.77**BJ**		0.153	24.5	1.27	1.007	1
1,2,3,4,6,7,8-HpCDD	67.7		0.405	24.5	1.07	1.000	1
OCDD	960		0.631	49.1	0.90	1.000	1
2,3,7,8-TCDF	0.615**JK**		0.151	4.91	0.93	1.000	1
1,2,3,7,8-PeCDF	0.722**BJK**		0.632	24.5	0.66	1.001	1
2,3,4,7,8-PeCDF	1.46**JK**		0.627	24.5	0.77	1.001	1
1,2,3,4,7,8-HxCDF	1.97**BJK**		0.129	24.5	1.02	1.000	1
1,2,3,6,7,8-HxCDF	1.75**BJ**		0.145	24.5	1.29	1.000	1
1,2,3,7,8,9-HxCDF	0.581**BJK**		0.158	24.5	2.30	1.001	1
2,3,4,6,7,8-HxCDF	2.51**BJK**		0.155	24.5	1.49	1.000	1
1,2,3,4,6,7,8-HpCDF	26.6		0.199	24.5	1.00	1.000	1
1,2,3,4,7,8,9-HpCDF	2.82**BJ**		0.234	24.5	0.88	1.000	1
OCDF	224		0.400	49.1	0.85	1.005	1

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:30
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone D	**Units:**	pg/L
Lab Code:	J1906553-002	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/12/19 04:37
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	11/5/19
Sample Amount:	1019mL	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P619987	**Blank File Name:**	P619969
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P619980

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.490	4.91			1
Total Penta-Dioxins	ND	U	0.716	24.5			1
Total Hexa-Dioxins	22.2**J**		0.160	24.5	1.24		1
Total Hepta-Dioxins	165		0.405	24.5	1.03		1
Total Tetra-Furans	ND	U	0.151	4.91			1
Total Penta-Furans	57.6		0.631	24.5	1.62		1
Total Hexa-Furans	30.2		0.147	24.5	1.09		1
Total Hepta-Furans	60.2		0.215	24.5	1.00		1

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:30
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone D	**Units:**	Percent
Lab Code:	J1906553-002	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/12/19 04:37
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	11/5/19
Sample Amount:	1019mL	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P619987	**Blank File Name:**	P619969
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P619980

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1017.982	51		25-164	0.77	1.018
13C-1,2,3,7,8-PeCDD	2000	417.072	21	**Y**	25-181	1.70	1.171
13C-1,2,3,4,7,8-HxCDD	2000	1003.233	50		32-141	1.28	0.992
13C-1,2,3,6,7,8-HxCDD	2000	1106.817	55		28-130	1.28	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	793.973	40		23-140	1.06	1.066
13C-OCDD	4000	1168.153	29		17-157	0.89	1.141
13C-2,3,7,8-TCDF	2000	974.241	49		24-169	0.80	0.993
13C-1,2,3,7,8-PeCDF	2000	300.542	15	**Y**	24-185	1.55	1.132
13C-2,3,4,7,8-PeCDF	2000	289.111	14	**Y**	21-178	1.60	1.162
13C-1,2,3,4,7,8-HxCDF	2000	1078.041	54		26-152	0.52	0.972
13C-1,2,3,6,7,8-HxCDF	2000	932.830	47		26-123	0.52	0.975
13C-1,2,3,7,8,9-HxCDF	2000	950.761	48		29-147	0.51	1.008
13C-2,3,4,6,7,8-HxCDF	2000	894.941	45		28-136	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	754.852	38		28-143	0.45	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	803.469	40		26-138	0.44	1.079
37Cl-2,3,7,8-TCDD	800	461.706	58		35-197	NA	1.020

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:30
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Zone D	**Units:**	pg/L
Lab Code:	J1906553-002	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Sep Funnel/Jar

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.490	4.91	1	1	
1,2,3,7,8-PeCDD	ND	0.716	24.5	1	1	
1,2,3,4,7,8-HxCDD	**1.13**	0.169	24.5	1	0.1	0.113
1,2,3,6,7,8-HxCDD	**2.18**	0.160	24.5	1	0.1	0.218
1,2,3,7,8,9-HxCDD	**1.77**	0.153	24.5	1	0.1	0.177
1,2,3,4,6,7,8-HpCDD	**67.7**	0.405	24.5	1	0.01	0.677
OCDD	**960**	0.631	49.1	1	0.0003	0.288
2,3,7,8-TCDF	**0.615**	0.151	4.91	1	0.1	0.0615
1,2,3,7,8-PeCDF	**0.722**	0.632	24.5	1	0.03	0.0217
2,3,4,7,8-PeCDF	**1.46**	0.627	24.5	1	0.3	0.438
1,2,3,4,7,8-HxCDF	**1.97**	0.129	24.5	1	0.1	0.197
1,2,3,6,7,8-HxCDF	**1.75**	0.145	24.5	1	0.1	0.175
1,2,3,7,8,9-HxCDF	**0.581**	0.158	24.5	1	0.1	0.0581
2,3,4,6,7,8-HxCDF	**2.51**	0.155	24.5	1	0.1	0.251
1,2,3,4,6,7,8-HpCDF	**26.6**	0.199	24.5	1	0.01	0.266
1,2,3,4,7,8,9-HpCDF	**2.82**	0.234	24.5	1	0.01	0.0282
OCDF	**224**	0.400	49.1	1	0.0003	0.0672
		Total TEQ				3.04

2005 WHO TEFs, ND = 0

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Site Water	**Units:**	pg/L
Lab Code:	J1906553-003	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/15/19 13:08
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	11/5/19
Sample Amount:	1033mL	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P620069	**Blank File Name:**	P619969
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P620065

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.518	4.84			1
1,2,3,7,8-PeCDD	0.626**BJ**		0.170	24.2	1.64	1.000	1
1,2,3,4,7,8-HxCDD	0.668**BJ**		0.0940	24.2	1.24	1.000	1
1,2,3,6,7,8-HxCDD	0.767**BJ**		0.0843	24.2	1.30	1.000	1
1,2,3,7,8,9-HxCDD	0.914**BJ**		0.0823	24.2	1.32	1.007	1
1,2,3,4,6,7,8-HpCDD	9.14**J**		0.194	24.2	1.02	1.000	1
OCDD	91.5		0.372	48.4	0.93	1.000	1
2,3,7,8-TCDF	ND	U	0.186	4.84			1
1,2,3,7,8-PeCDF	0.555**BJK**		0.153	24.2	1.26	1.000	1
2,3,4,7,8-PeCDF	0.676**J**		0.174	24.2	1.37	1.001	1
1,2,3,4,7,8-HxCDF	0.583**BJ**		0.0872	24.2	1.22	1.001	1
1,2,3,6,7,8-HxCDF	0.471**BJK**		0.0969	24.2	1.70	1.000	1
1,2,3,7,8,9-HxCDF	0.757**BJ**		0.113	24.2	1.18	1.000	1
2,3,4,6,7,8-HxCDF	0.606**BJ**		0.109	24.2	1.25	1.001	1
1,2,3,4,6,7,8-HpCDF	0.976**BJK**		0.0998	24.2	0.81	1.000	1
1,2,3,4,7,8,9-HpCDF	0.537**BJK**		0.125	24.2	1.28	1.000	1
OCDF	5.32**BJ**		0.286	48.4	0.95	1.005	1

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Site Water	**Units:**	pg/L
Lab Code:	J1906553-003	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/15/19 13:08
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	11/5/19
Sample Amount:	1033mL	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P620069	**Blank File Name:**	P619969
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P620065

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.518	4.84			1
Total Penta-Dioxins	0.626**J**		0.170	24.2	1.64		1
Total Hexa-Dioxins	3.44**J**		0.0872	24.2	1.13		1
Total Hepta-Dioxins	24.4		0.194	24.2	1.04		1
Total Tetra-Furans	ND	U	0.186	4.84			1
Total Penta-Furans	0.676**J**		0.163	24.2	1.37		1
Total Hexa-Furans	1.95**J**		0.101	24.2	1.22		1
Total Hepta-Furans	2.36**J**		0.112	24.2	1.11		1

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Site Water	**Units:**	Percent
Lab Code:	J1906553-003	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/15/19 13:08
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	11/5/19
Sample Amount:	1033mL	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P620069	**Blank File Name:**	P619969
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P620065

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	923.871	46		25-164	0.78	1.019
13C-1,2,3,7,8-PeCDD	2000	1000.752	50		25-181	1.58	1.172
13C-1,2,3,4,7,8-HxCDD	2000	1013.013	51		32-141	1.27	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1152.593	58		28-130	1.26	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	846.240	42		23-140	1.06	1.065
13C-OCDD	4000	1320.082	33		17-157	0.90	1.141
13C-2,3,7,8-TCDF	2000	829.129	41		24-169	0.80	0.993
13C-1,2,3,7,8-PeCDF	2000	958.342	48		24-185	1.55	1.133
13C-2,3,4,7,8-PeCDF	2000	838.221	42		21-178	1.55	1.163
13C-1,2,3,4,7,8-HxCDF	2000	1115.410	56		26-152	0.51	0.972
13C-1,2,3,6,7,8-HxCDF	2000	972.643	49		26-123	0.52	0.975
13C-1,2,3,7,8,9-HxCDF	2000	930.309	47		29-147	0.51	1.008
13C-2,3,4,6,7,8-HxCDF	2000	913.090	46		28-136	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	832.552	42		28-143	0.45	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	847.667	42		26-138	0.45	1.079
37Cl-2,3,7,8-TCDD	800	381.952	48		35-197	NA	1.019

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	10/30/19 12:55
Sample Matrix:	Water	**Date Received:**	10/31/19 12:42
Sample Name:	VB-BFWC19-Site Water	**Units:**	pg/L
Lab Code:	J1906553-003	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Sep Funnel/Jar

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.518	4.84	1	1	
1,2,3,7,8-PeCDD	**0.626**	0.170	24.2	1	1	0.626
1,2,3,4,7,8-HxCDD	**0.668**	0.0940	24.2	1	0.1	0.0668
1,2,3,6,7,8-HxCDD	**0.767**	0.0843	24.2	1	0.1	0.0767
1,2,3,7,8,9-HxCDD	**0.914**	0.0823	24.2	1	0.1	0.0914
1,2,3,4,6,7,8-HpCDD	**9.14**	0.194	24.2	1	0.01	0.0914
OCDD	**91.5**	0.372	48.4	1	0.0003	0.0275
2,3,7,8-TCDF	ND	0.186	4.84	1	0.1	
1,2,3,7,8-PeCDF	**0.555**	0.153	24.2	1	0.03	0.0167
2,3,4,7,8-PeCDF	**0.676**	0.174	24.2	1	0.3	0.203
1,2,3,4,7,8-HxCDF	**0.583**	0.0872	24.2	1	0.1	0.0583
1,2,3,6,7,8-HxCDF	**0.471**	0.0969	24.2	1	0.1	0.0471
1,2,3,7,8,9-HxCDF	**0.757**	0.113	24.2	1	0.1	0.0757
2,3,4,6,7,8-HxCDF	**0.606**	0.109	24.2	1	0.1	0.0606
1,2,3,4,6,7,8-HpCDF	**0.976**	0.0998	24.2	1	0.01	0.00976
1,2,3,4,7,8,9-HpCDF	**0.537**	0.125	24.2	1	0.01	0.00537
OCDF	**5.32**	0.286	48.4	1	0.0003	0.00160
		Total TEQ				1.46

2005 WHO TEFs, ND = 0

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	pg/L
Lab Code:	EQ1900367-01	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/11/19 13:38
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	11/5/19
Sample Amount:	1000mL	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P619969	**Blank File Name:**	P619969
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P619968

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	1.89	5.00			1
1,2,3,7,8-PeCDD	0.681**JK**		0.151	25.0	0.50	1.000	1
1,2,3,4,7,8-HxCDD	0.517**J**		0.246	25.0	1.39	1.000	1
1,2,3,6,7,8-HxCDD	0.366**JK**		0.217	25.0	0.72	1.000	1
1,2,3,7,8,9-HxCDD	0.697**J**		0.213	25.0	1.41	1.007	1
1,2,3,4,6,7,8-HpCDD	0.571**JK**		0.250	25.0	1.70	1.001	1
OCDD	1.65**JK**		0.333	50.0	1.09	1.000	1
2,3,7,8-TCDF	ND	U	0.786	5.00			1
1,2,3,7,8-PeCDF	0.799**JK**		0.282	25.0	1.30	1.001	1
2,3,4,7,8-PeCDF	ND	U	0.299	25.0			1
1,2,3,4,7,8-HxCDF	0.286**JK**		0.219	25.0	1.57	1.000	1
1,2,3,6,7,8-HxCDF	0.589**J**		0.246	25.0	1.08	1.000	1
1,2,3,7,8,9-HxCDF	1.09**JK**		0.254	25.0	1.49	1.000	1
2,3,4,6,7,8-HxCDF	0.568**JK**		0.243	25.0	0.87	1.000	1
1,2,3,4,6,7,8-HpCDF	0.220**JK**		0.188	25.0	0.56	1.000	1
1,2,3,4,7,8,9-HpCDF	0.353**JK**		0.231	25.0	2.06	1.000	1
OCDF	0.564**JK**		0.395	50.0	0.57	1.005	1

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	pg/L
Lab Code:	EQ1900367-01	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/11/19 13:38
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	11/5/19
Sample Amount:	1000mL	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P619969	**Blank File Name:**	P619969
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P619968

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	1.89	5.00			1
Total Penta-Dioxins	ND	U	0.151	25.0			1
Total Hexa-Dioxins	1.21**J**		0.224	25.0	1.39		1
Total Hepta-Dioxins	ND	U	0.250	25.0			1
Total Tetra-Furans	ND	U	0.786	5.00			1
Total Penta-Furans	ND	U	0.290	25.0			1
Total Hexa-Furans	0.589**J**		0.240	25.0	1.08		1
Total Hepta-Furans	ND	U	0.208	25.0			1

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	Percent
Lab Code:	EQ1900367-01	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/11/19 13:38
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	11/5/19
Sample Amount:	1000mL	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P619969	**Blank File Name:**	P619969
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P619968

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	880.917	44		25-164	0.79	1.019
13C-1,2,3,7,8-PeCDD	2000	1350.630	68		25-181	1.60	1.171
13C-1,2,3,4,7,8-HxCDD	2000	1324.564	66		32-141	1.26	0.992
13C-1,2,3,6,7,8-HxCDD	2000	1585.979	79		28-130	1.27	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1339.286	67		23-140	1.06	1.065
13C-OCDD	4000	2670.412	67		17-157	0.91	1.141
13C-2,3,7,8-TCDF	2000	810.992	41		24-169	0.79	0.993
13C-1,2,3,7,8-PeCDF	2000	1197.891	60		24-185	1.59	1.132
13C-2,3,4,7,8-PeCDF	2000	1115.260	56		21-178	1.56	1.162
13C-1,2,3,4,7,8-HxCDF	2000	1365.966	68		26-152	0.52	0.972
13C-1,2,3,6,7,8-HxCDF	2000	1222.987	61		26-123	0.52	0.975
13C-1,2,3,7,8,9-HxCDF	2000	1275.682	64		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1254.365	63		28-136	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1242.838	62		28-143	0.44	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	1260.810	63		26-138	0.44	1.079
37Cl-2,3,7,8-TCDD	800	358.708	45		35-197	NA	1.019

Accuracy & Precision

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Analyzed:**	11/11/19
Sample Matrix:	Water	**Date Extracted:**	11/05/19

Duplicate Lab Control Sample Summary
Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Units:**	pg/L
Prep Method:	Method Sep Funnel/Jar	**Basis:**	NA
		Analysis Lot:	659722

	Lab Control Sample EQ1900367-02			Duplicate Lab Control Sample EQ1900367-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
1,2,3,4,6,7,8-HpCDD	942	1000	94	967	1000	97	70-140	3	50
1,2,3,4,7,8-HxCDD	994	1000	99	1010	1000	101	70-164	1	50
1,2,3,6,7,8-HxCDD	906	1000	91	915	1000	91	76-134	<1	50
1,2,3,7,8,9-HxCDD	786	1000	79	822	1000	82	64-162	4	50
1,2,3,7,8-PeCDD	932	1000	93	947	1000	95	70-142	2	50
2,3,7,8-TCDD	205	200	102	223	200	111	67-158	9	50
OCDD	1990	2000	99	2040	2000	102	78-144	3	50
1,2,3,4,6,7,8-HpCDF	957	1000	96	1120	1000	112	82-122	16	50
1,2,3,4,7,8,9-HpCDF	958	1000	96	1000	1000	100	78-138	4	50
1,2,3,4,7,8-HxCDF	874	1000	87	907	1000	91	72-134	4	50
1,2,3,6,7,8-HxCDF	951	1000	95	970	1000	97	84-130	2	50
1,2,3,7,8,9-HxCDF	958	1000	96	953	1000	95	78-130	<1	50
1,2,3,7,8-PeCDF	883	1000	88	897	1000	90	80-134	2	50
2,3,4,6,7,8-HxCDF	985	1000	98	990	1000	99	70-156	<1	50
2,3,4,7,8-PeCDF	971	1000	97	1010	1000	101	68-160	4	50
2,3,7,8-TCDF	187	200	93	197	200	98	75-158	5	50
OCDF	2100	2000	105	2910	2000	145	63-170	32	50

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	pg/L
Lab Code:	EQ1900367-02	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/11/19 20:11
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	11/5/19
Sample Amount:	1000mL	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P619977	**Blank File Name:**	P619969
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P619968

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	205		0.909	5.00	0.78	1.001	1
1,2,3,7,8-PeCDD	932		0.384	25.0	1.58	1.000	1
1,2,3,4,7,8-HxCDD	994		0.303	25.0	1.25	1.000	1
1,2,3,6,7,8-HxCDD	906		0.293	25.0	1.24	1.000	1
1,2,3,7,8,9-HxCDD	786		0.275	25.0	1.26	1.006	1
1,2,3,4,6,7,8-HpCDD	942		0.238	25.0	1.03	1.000	1
OCDD	1990		1.43	50.0	0.88	1.000	1
2,3,7,8-TCDF	187		0.403	5.00	0.75	1.001	1
1,2,3,7,8-PeCDF	883		0.222	25.0	1.54	1.001	1
2,3,4,7,8-PeCDF	971		0.245	25.0	1.54	1.000	1
1,2,3,4,7,8-HxCDF	874		0.267	25.0	1.22	1.000	1
1,2,3,6,7,8-HxCDF	951		0.288	25.0	1.23	1.000	1
1,2,3,7,8,9-HxCDF	958		0.366	25.0	1.23	1.000	1
2,3,4,6,7,8-HxCDF	985		0.326	25.0	1.24	1.000	1
1,2,3,4,6,7,8-HpCDF	957		0.416	25.0	1.03	1.000	1
1,2,3,4,7,8,9-HpCDF	958		0.477	25.0	1.03	1.000	1
OCDF	2100		0.921	50.0	0.90	1.005	1

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	pg/L
Lab Code:	EQ1900367-02	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/11/19 20:11
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	11/5/19
Sample Amount:	1000mL	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P619977	**Blank File Name:**	P619969
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P619968

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	205		0.909	5.00	0.78		1
Total Penta-Dioxins	932		0.384	25.0	1.58		1
Total Hexa-Dioxins	2690		0.290	25.0	1.25		1
Total Hepta-Dioxins	962		0.238	25.0	1.13		1
Total Tetra-Furans	187		0.403	5.00	0.75		1
Total Penta-Furans	1860		0.232	25.0	1.54		1
Total Hexa-Furans	3770		0.308	25.0	1.22		1
Total Hepta-Furans	1910		0.445	25.0	1.03		1

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1900367-02	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/11/19 20:11
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	11/5/19
Sample Amount:	1000mL	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P619977	**Blank File Name:**	P619969
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P619968

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	871.221	44		25-164	0.78	1.019
13C-1,2,3,7,8-PeCDD	2000	1050.660	53		25-181	1.62	1.171
13C-1,2,3,4,7,8-HxCDD	2000	1062.545	53		32-141	1.28	0.992
13C-1,2,3,6,7,8-HxCDD	2000	1147.342	57		28-130	1.27	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	726.875	36		23-140	1.06	1.066
13C-OCDD	4000	1044.243	26		17-157	0.90	1.141
13C-2,3,7,8-TCDF	2000	834.082	42		24-169	0.78	0.993
13C-1,2,3,7,8-PeCDF	2000	1000.281	50		24-185	1.55	1.132
13C-2,3,4,7,8-PeCDF	2000	890.161	45		21-178	1.59	1.162
13C-1,2,3,4,7,8-HxCDF	2000	1120.342	56		26-152	0.52	0.972
13C-1,2,3,6,7,8-HxCDF	2000	1004.180	50		26-123	0.52	0.975
13C-1,2,3,7,8,9-HxCDF	2000	891.261	45		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	922.693	46		28-136	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	693.197	35		28-143	0.44	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	759.138	38		26-138	0.43	1.079
37Cl-2,3,7,8-TCDD	800	367.886	46		35-197	NA	1.020

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	pg/L
Lab Code:	EQ1900367-03	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/11/19 21:00
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	11/5/19
Sample Amount:	1000mL	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P619978	**Blank File Name:**	P619969
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P619968

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	223		0.848	5.00	0.79	1.000	1
1,2,3,7,8-PeCDD	947		0.365	25.0	1.58	1.000	1
1,2,3,4,7,8-HxCDD	1010		0.295	25.0	1.25	1.000	1
1,2,3,6,7,8-HxCDD	915		0.274	25.0	1.26	1.000	1
1,2,3,7,8,9-HxCDD	822		0.262	25.0	1.29	1.007	1
1,2,3,4,6,7,8-HpCDD	967		0.406	25.0	1.06	1.000	1
OCDD	2040		0.948	50.0	0.88	1.000	1
2,3,7,8-TCDF	197		0.377	5.00	0.77	1.001	1
1,2,3,7,8-PeCDF	897		0.371	25.0	1.54	1.001	1
2,3,4,7,8-PeCDF	1010		0.425	25.0	1.54	1.000	1
1,2,3,4,7,8-HxCDF	907		0.250	25.0	1.23	1.000	1
1,2,3,6,7,8-HxCDF	970		0.260	25.0	1.24	1.000	1
1,2,3,7,8,9-HxCDF	953		0.317	25.0	1.23	1.000	1
2,3,4,6,7,8-HxCDF	990		0.286	25.0	1.22	1.000	1
1,2,3,4,6,7,8-HpCDF	1120		1.52	25.0	1.01	1.000	1
1,2,3,4,7,8,9-HpCDF	1000		1.97	25.0	1.01	1.000	1
OCDF	2910		0.447	50.0	0.88	1.005	1

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	pg/L
Lab Code:	EQ1900367-03	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/11/19 21:00
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	11/5/19
Sample Amount:	1000mL	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P619978	**Blank File Name:**	P619969
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P619968

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	223		0.848	5.00	0.79		1
Total Penta-Dioxins	947		0.365	25.0	1.58		1
Total Hexa-Dioxins	2740		0.276	25.0	1.25		1
Total Hepta-Dioxins	987		0.406	25.0	0.90		1
Total Tetra-Furans	198		0.377	5.00	0.77		1
Total Penta-Furans	1910		0.396	25.0	1.54		1
Total Hexa-Furans	3830		0.276	25.0	1.06		1
Total Hepta-Furans	2170		1.73	25.0	1.01		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Water and Air Research	**Service Request:**	J1906553
Project:	USACE Big Fishweir Creek/19-5805-01	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1900367-03	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/11/19 21:00
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	11/5/19
Sample Amount:	1000mL	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P619978	**Blank File Name:**	P619969
ICAL Date:	10/04/19	**Cal Ver. File Name:**	P619968

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	966.927	48		25-164	0.79	1.019
13C-1,2,3,7,8-PeCDD	2000	1114.064	56		25-181	1.59	1.171
13C-1,2,3,4,7,8-HxCDD	2000	1097.287	55		32-141	1.29	0.992
13C-1,2,3,6,7,8-HxCDD	2000	1209.269	60		28-130	1.25	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	812.902	41		23-140	1.05	1.065
13C-OCDD	4000	1245.697	31		17-157	0.90	1.141
13C-2,3,7,8-TCDF	2000	926.690	46		24-169	0.80	0.993
13C-1,2,3,7,8-PeCDF	2000	1074.616	54		24-185	1.57	1.131
13C-2,3,4,7,8-PeCDF	2000	938.823	47		21-178	1.58	1.162
13C-1,2,3,4,7,8-HxCDF	2000	1130.448	57		26-152	0.52	0.972
13C-1,2,3,6,7,8-HxCDF	2000	1026.285	51		26-123	0.52	0.975
13C-1,2,3,7,8,9-HxCDF	2000	951.571	48		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	976.727	49		28-136	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	811.423	41		28-143	0.44	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	817.237	41		26-138	0.45	1.079
37Cl-2,3,7,8-TCDD	800	434.817	54		35-197	NA	1.019

March 10, 2020 Service Request No:J2001199

Mr. Bryan Cotter
Water and Air Research
6821 S.W. Archer Road.
Gainesville, FL 32608

Laboratory Results for: USACE Big Fishweir Creek

Dear Mr.Cotter,

Enclosed are the results of the sample(s) submitted to our laboratory October 30, 2019
For your reference, these analyses have been assigned our service request number **J2001199.**

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and ALS Environmental is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. In accordance with the TNI 2016 Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Please contact me if you have any questions. My extension is 4406. You may also contact me via email at Mandy.Sullivan@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Mandy Sullivan
Project Manager

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dba ALS Environmental

Narrative Documents

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9143 Philips Highway, Suite 200, Jacksonville, FL 32256 | 904-739-2277 | www.alsglobal.com

Client: Water and Air Research
Project: USACE Big Fishweir Creek
Sample Matrix: Sediment

Service Request: J2001199
Date Received: 10/30/2019

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Six sediment samples were received for analysis at ALS Environmental on 10/30/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivoa GC:

Sample(s) J2001199-001, -002, -003, -004, -005, and -006 were diluted due to the physical characteristics of the sample(s).

Method FL-PRO: The control criteria for the following surrogates in sample J2001199-002 and -006 are not applicable: n-Nonatriacontane. The analysis of the sample required a dilution, which resulted in a surrogate concentration below the Method Reporting Limit (MRL). No further corrective action was appropriate.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by _____ Date 03/10/2020

SAMPLE DETECTION SUMMARY

CLIENT ID: VB-BFWC19-Zone A			Lab ID: J2001199-001			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Solids, Total	63.6				Percent	160.3 Modified

CLIENT ID: VB-BFWC19-Zone B Upstream			Lab ID: J2001199-002			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Solids, Total	74.1				Percent	160.3 Modified

CLIENT ID: VB-BFWC19-Zone B Downstream			Lab ID: J2001199-003			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Solids, Total	57.7				Percent	160.3 Modified
FL-PRO (C8 - C40)	138	J	65.7	730	mg/Kg	FL-PRO

CLIENT ID: VB-BFWC19-Zone C			Lab ID: J2001199-004			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Solids, Total	45.7				Percent	160.3 Modified
FL-PRO (C8 - C40)	68.6	J	20.1	223	mg/Kg	FL-PRO

CLIENT ID: VB-BFWC19-Zone D			Lab ID: J2001199-005			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Solids, Total	72.5				Percent	160.3 Modified
FL-PRO (C8 - C40)	40.3	J	13.1	145	mg/Kg	FL-PRO

CLIENT ID: VB-BFWC19-Zone D DUP			Lab ID: J2001199-006			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Solids, Total	71.3				Percent	160.3 Modified
FL-PRO (C8 - C40)	13.9	J	13.4	148	mg/Kg	FL-PRO

Sample Receipt Information

ALS Environmental—Jacksonville Laboratory
9143 Philips Highway, Suite 200, Jacksonville, FL 32256
Phone (904) 739-2277 Fax (904) 739-2011
www.alsglobal.com

Client: Water and Air Research **Service Request:**J2001199
Project: USACE Big Fishweir Creek

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
J2001199-001	VB-BFWC19-Zone A	10/25/2019	0935
J2001199-002	VB-BFWC19-Zone B Upstream	10/24/2019	1535
J2001199-003	VB-BFWC19-Zone B Downstream	10/24/2019	1024
J2001199-004	VB-BFWC19-Zone C	10/23/2019	1610
J2001199-005	VB-BFWC19-Zone D	10/22/2019	1725
J2001199-006	VB-BFWC19-Zone D DUP	10/22/2019	1725

Mandy Sullivan

From: Bryan Cotter <bcotter@waterandair.com>
Sent: Friday, February 28, 2020 10:52 AM
To: Mandy Sullivan
Cc: Teresa Collins
Subject: Re: [EXTERNAL] - Big Fishweir Creek TRPH/MADEP

60537
-001 -005

Hi Mandy,

Please run the five Big Fishweir Creek sediment samples for FL PRO with a 3-day TAT. Also please run one of the samples as a duplicate (six samples total). If any of the samples exceed the 2600mg/kg criteria, we'll need to run those using the MADEP (EPH/VPH) method with a 5-day TAT. Please acknowledge receipt of this email.

Thanks and have a good weekend,
Bryan

TB

RUSH

On Thu, Feb 20, 2020 at 3:11 PM Mandy Sullivan <Mandy.Sullivan@alsglobal.com> wrote:

Yes, that pricing is correct. The 50% upcharge for 3 day TAT is applicable to the FL PRO, I think 5 day is the fastest TAT available for the EPH/VPH due to the nature of the tests.

2001199 5
ater and Air Research
ACE Big Fishweir Creek

Mandy M. Sullivan
Project Manager, Environmental
USA

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F +1 904 739 2011 M +1 904 463 9118

mandy.sullivan@alsglobal.com

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Jacksonville, Florida 32256

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From: Bryan Cotter [mailto:bcotter@waterandair.com]
Sent: Thursday, February 20, 2020 12:59 PM
To: Mandy Sullivan <Mandy.Sullivan@alsglobal.com>
Subject: Re: [EXTERNAL] - Big Fishweir Creek TRPH/MADEP

Hi Mandy,

Miscellaneous Forms

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REPORT QUALIFIERS AND DEFINITIONS

INORGANIC DATA

* The result is an outlier. See case narrative.
# The control limit criteria are not applicable. See case narrative.
B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
E The result is an estimated amount because the value exceeded the instrument calibration range.
J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
Z Too many colonies were present (TNTC). The numeric value represents the filtration volume.
i The MRL/MDL has been elevated due to matrix interference.
X See case narrative.

METALS DATA

* The result is an outlier. See case narrative.
# The control limit criteria are not applicable. See case narrative.
J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
E The reported value is estimated because of the presence of matrix interference.
M The duplicate injection precision was not met.
N The Matrix Spike sample recovery is not within control limits. See case narrative.
S The result was determined by Method of Standard Additions (MSA).
U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i The MRL/MDL has been elevated due to matrix interference.
X See case narrative.
+ The correlation coefficient for the MSA is less than 0.995.

ORGANIC DATA

* The result is an outlier. See case narrative.
# The control limit criteria are not applicable. See case narrative.
A The tentatively identified compound is a suspected aldol-condensation product.
B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D The reported result is from a dilution.
E The result is an estimated amount because the value exceeded the instrument calibration range.
J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P The GC or HPLC confirmation criteria were exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides)
U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i The MRL/MDL has been elevated due to a chromatographic interference.
X See case narrative.

PETROLEUM HYDROCARBON SPECIFIC

F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.

Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.

Z The chromatographic fingerprint does not resemble a petroleum product.

Jacksonville Lab ID # for State Certifications[1]

Agency	Number	Expiration Date
Department of Defense	66206	6/30/2020
Florida Department of Health	E82502	6/30/2020
Georgia Department of Natural Resources	958	6/30/2020
Kentucky Division of Waste Management	123042	6/30/2020
Louisiana Department of Environmental Quality	02086	6/30/2020
Maine Department of Health and Human Services	2019004	2/3/2021
New York State Department of Health	12113	4/1/2020
North Carolina Department of Environment and Natural Resources	527	12/31/2019
South Carolina Department of Health and Environmental Control	96021001	6/30/2019
Texas Commission on Environmental Quality	T104704197-19-12	5/31/2020
Virginia Environmental Accreditation Program	460191	12/14/2019

[1] Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the laboratory case narrative provided. For a specific list of accredited analytes, refer to http://www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads/North-America-Downloads

ACRONYMS

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Client: Water and Air Research
Project: USACE Big Fishweir Creek/
Service Request: J2001199

Sample Name: VB-BFWC19-Zone A
Lab Code: J2001199-001
Sample Matrix: Sediment
Date Collected: 10/25/19
Date Received: 10/30/19

Analysis Method	Extracted/Digested By	Analyzed By
160.3 Modified		MMASSEY
FL-PRO	ECOMOR	ECOMOR

Sample Name: VB-BFWC19-Zone B Upstream
Lab Code: J2001199-002
Sample Matrix: Sediment
Date Collected: 10/24/19
Date Received: 10/30/19

Analysis Method	Extracted/Digested By	Analyzed By
160.3 Modified		MMASSEY
FL-PRO	ECOMOR	ECOMOR

Sample Name: VB-BFWC19-Zone B Downstream
Lab Code: J2001199-003
Sample Matrix: Sediment
Date Collected: 10/24/19
Date Received: 10/30/19

Analysis Method	Extracted/Digested By	Analyzed By
160.3 Modified		MMASSEY
FL-PRO	ECOMOR	ECOMOR

Sample Name: VB-BFWC19-Zone C
Lab Code: J2001199-004
Sample Matrix: Sediment
Date Collected: 10/23/19
Date Received: 10/30/19

Analysis Method	Extracted/Digested By	Analyzed By
160.3 Modified		MMASSEY
FL-PRO	ECOMOR	ECOMOR

Client: Water and Air Research
Project: USACE Big Fishweir Creek/
Service Request: J2001199

Sample Name: VB-BFWC19-Zone D
Lab Code: J2001199-005
Sample Matrix: Sediment
Date Collected: 10/22/19
Date Received: 10/30/19

Analysis Method	Extracted/Digested By	Analyzed By
160.3 Modified		MMASSEY
FL-PRO	ECOMOR	ECOMOR

Sample Name: VB-BFWC19-Zone D DUP
Lab Code: J2001199-006
Sample Matrix: Sediment
Date Collected: 10/22/19
Date Received: 10/30/19

Analysis Method	Extracted/Digested By	Analyzed By
160.3 Modified		MMASSEY
FL-PRO	ECOMOR	ECOMOR

Sample Results

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Semivolatile Organic Compounds by GC

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Phone (904)739-2277 Fax (904)739-2011
www.alsglobal.com

Client:	Water and Air Research	**Service Request:**	J2001199
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/25/19 09:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone A	**Units:**	mg/Kg
Lab Code:	J2001199-001	**Basis:**	Dry

Petroleum-Range Organics by GC-FID for State of Florida

Analysis Method: FL-PRO
Prep Method: EPA 3546

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
FL-PRO (C8 - C40)	61.0 U	677	61.0	20	03/03/20 02:01	3/3/20	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
o-Terphenyl	85	62 - 109	03/03/20 02:01	
n-Nonatriacontane	69	60 - 118	03/03/20 02:01	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Water and Air Research	**Service Request:**	J2001199
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 15:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Upstream	**Units:**	mg/Kg
Lab Code:	J2001199-002	**Basis:**	Dry

Petroleum-Range Organics by GC-FID for State of Florida

Analysis Method: FL-PRO
Prep Method: EPA 3546

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
FL-PRO (C8 - C40)	1250 U	13800	1250	100	03/03/20 02:55	3/3/20	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
o-Terphenyl	105	62 - 109	03/03/20 02:55	
n-Nonatriacontane	0 *	60 - 118	03/03/20 02:55	D

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Water and Air Research	**Service Request:**	J2001199
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 10:24
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Downstream	**Units:**	mg/Kg
Lab Code:	J2001199-003	**Basis:**	Dry

Petroleum-Range Organics by GC-FID for State of Florida

Analysis Method: FL-PRO
Prep Method: EPA 3546

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
FL-PRO (C8 - C40)	**138 J**	730	65.7	20	03/03/20 03:22	3/3/20	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
o-Terphenyl	95	62 - 109	03/03/20 03:22	
n-Nonatriacontane	75	60 - 118	03/03/20 03:22	

Client:	Water and Air Research	**Service Request:**	J2001199
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/23/19 16:10
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone C	**Units:**	mg/Kg
Lab Code:	J2001199-004	**Basis:**	Dry

Petroleum-Range Organics by GC-FID for State of Florida

Analysis Method: FL-PRO
Prep Method: EPA 3546

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
FL-PRO (C8 - C40)	**68.6 J**	223	20.1	5	03/03/20 03:49	3/3/20	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
o-Terphenyl	65	62 - 109	03/03/20 03:49	
n-Nonatriacontane	44 *	60 - 118	03/03/20 03:49	*

Client:	Water and Air Research	**Service Request:**	J2001199
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/22/19 17:25
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone D	**Units:**	mg/Kg
Lab Code:	J2001199-005	**Basis:**	Dry

Petroleum-Range Organics by GC-FID for State of Florida

Analysis Method: FL-PRO
Prep Method: EPA 3546

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
FL-PRO (C8 - C40)	**40.3 J**	145	13.1	5	03/03/20 04:16	3/3/20	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
o-Terphenyl	84	62 - 109	03/03/20 04:16	
n-Nonatriacontane	66	60 - 118	03/03/20 04:16	

Client:	Water and Air Research	**Service Request:**	J2001199
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/22/19 17:25
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone D DUP	**Units:**	mg/Kg
Lab Code:	J2001199-006	**Basis:**	Dry

Petroleum-Range Organics by GC-FID for State of Florida

Analysis Method: FL-PRO
Prep Method: EPA 3546

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
FL-PRO (C8 - C40)	**13.9 J**	148	13.4	5	03/03/20 04:43	3/3/20	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
o-Terphenyl	73	62 - 109	03/03/20 04:43	
n-Nonatriacontane	55 *	60 - 118	03/03/20 04:43	*

General Chemistry

ALS Environmental—Jacksonville Laboratory
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Client:	Water and Air Research	**Service Request:**	J2001199
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/25/19 09:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone A	**Basis:**	As Received
Lab Code:	J2001199-001		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Solids, Total	160.3 Modified	**63.6**	Percent	-	-	1	03/03/20 10:22	

Client:	Water and Air Research	**Service Request:**	J2001199
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 15:35
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Upstream	**Basis:**	As Received
Lab Code:	J2001199-002		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Solids, Total	160.3 Modified	**74.1**	Percent	-	-	1	03/03/20 10:22	

Client:	Water and Air Research	**Service Request:**	J2001199
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/24/19 10:24
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone B Downstream	**Basis:**	As Received
Lab Code:	J2001199-003		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Solids, Total	160.3 Modified	**57.7**	Percent	-	-	1	03/03/20 10:22	

Client:	Water and Air Research	**Service Request:**	J2001199
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/23/19 16:10
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone C	**Basis:**	As Received
Lab Code:	J2001199-004		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Solids, Total	160.3 Modified	**45.7**	Percent	-	-	1	03/03/20 10:22	

Client:	Water and Air Research	**Service Request:**	J2001199
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/22/19 17:25
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone D	**Basis:**	As Received
Lab Code:	J2001199-005		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Solids, Total	160.3 Modified	**72.5**	Percent	-	-	1	03/03/20 10:22	

Client:	Water and Air Research	**Service Request:**	J2001199
Project:	USACE Big Fishweir Creek	**Date Collected:**	10/22/19 17:25
Sample Matrix:	Sediment	**Date Received:**	10/30/19 12:13
Sample Name:	VB-BFWC19-Zone D DUP	**Basis:**	As Received
Lab Code:	J2001199-006		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Solids, Total	160.3 Modified	**71.3**	Percent	-	-	1	03/03/20 10:22	

QC Summary Forms

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Semivolatile Organic Compounds by GC

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Client: Water and Air Research **Service Request:** J2001199
Project: USACE Big Fishweir Creek
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Petroleum-Range Organics by GC-FID for State of Florida

Analysis Method: FL-PRO
Extraction Method: EPA 3546

Sample Name	Lab Code	o-Terphenyl 62-109	n-Nonatriacontane 60-118
VB-BFWC19-Zone A	J2001199-001	85	69
VB-BFWC19-Zone B Upstream	J2001199-002	105	0*
VB-BFWC19-Zone B Downstream	J2001199-003	95	75
VB-BFWC19-Zone C	J2001199-004	65	44*
VB-BFWC19-Zone D	J2001199-005	84	66
VB-BFWC19-Zone D DUP	J2001199-006	73	55*
Method Blank	JQ2001134-01	86	86
Lab Control Sample	JQ2001134-02	89	92
Duplicate Lab Control Sample	JQ2001134-03	89	97

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Water and Air Research	**Service Request:**	J2001199
Project:	USACE Big Fishweir Creek	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	mg/Kg
Lab Code:	JQ2001134-01	**Basis:**	Dry

Petroleum-Range Organics by GC-FID for State of Florida

Analysis Method: FL-PRO
Prep Method: EPA 3546

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
FL-PRO (C8 - C40)	0.900 U	10.0	0.900	1	03/03/20 21:59	3/3/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
o-Terphenyl	86	62 - 109	03/03/20 21:59	
n-Nonatriacontane	86	60 - 118	03/03/20 21:59	

Client:	Water and Air Research	**Service Request:**	J2001199
Project:	USACE Big Fishweir Creek	**Date Analyzed:**	03/03/20
Sample Matrix:	Sediment	**Date Extracted:**	03/03/20

Duplicate Lab Control Sample Summary
Petroleum-Range Organics by GC-FID for State of Florida

Analysis Method:	FL-PRO	**Units:**	mg/Kg
Prep Method:	EPA 3546	**Basis:**	Dry
		Analysis Lot:	672320

	Lab Control Sample JQ2001134-02			Duplicate Lab Control Sample JQ2001134-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
FL-PRO (C8 - C40)	8.98 J	11.3	80	8.57 J	11.3	76	63-143	5	20

General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Water and Air Research	**Service Request:**	J2001199
Project	USACE Big Fishweir Creek	**Date Collected:**	10/23/19
Sample Matrix:	Sediment	**Date Received:**	10/30/19
		Date Analyzed:	03/03/20

Replicate Sample Summary
Inorganic Parameters

Sample Name:	VB-BFWC19-Zone C	**Units:**	Percent
Lab Code:	J2001199-004	**Basis:**	As Received

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample J2001199-004DUP Result	Average	RPD	RPD Limit
Solids, Total	160.3 Modified	-	-	45.7	45	45.4	2	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.